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E-tender for"ThoroughRefurbishment of KoPT Head Office (Main & Annexe) including Interior Beautification, Civil, Sanitary and Plumbing, Electrical, HVAC, Fire Fighting, ELV work at 15, Strand Road, Kolkata-700 001".

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**Civil Engineering Department  
KOLKATA PORT TRUST**

**TENDER NO. : KOPT/KDS/CIV /T/2402/64      DT. 16.08.2019**

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**Kolkata Port Trust**  
**Civil Engineering Department**

**1.0 NOTICE INVITING TENDER**

**NIT NO. : KOPT/KDS/CIV /T/2402/64      DT. 16.08.2019**

E-Tender under single stage two part system (Part I: Techno-Commercial Bid and Part II: Price Bid) are invited from reliable, bonafide & experienced agency with required experience as per Prequalification criteria stipulated in Tender Document for "**Thorough Refurbishment of KoPT Head Office (Main & Annexe) including interior beautification, civil, sanitary and plumbing, electrical, HVAC, fire fighting, ELV work at 15, Strand Road, Kolkata-700 001**" as per Bill Of Quantities. The Bid Document may be seen from the Central Public Procurement Portal (CPPP). Corrigenda or clarifications, if any, shall be hosted on the above mentioned website only. The tender is also published on KoPT website ([www.kolkataporttrust.gov.in](http://www.kolkataporttrust.gov.in)). **The tenderer should check the website from time to time and collect such documents, if any, from time to time.**

**SCHEDULE OF TENDER (SOT)**

a. NIT NO.	<b>KOPT/KDS/CIV /T/2402/64      DT. 16.08.2019</b>
b. MODE OF TENDER	e-Procurement System (Online TWO part Techno-Commercial Bid and Price Bid through CPP Portal <a href="https://eprocure.gov.in/eprocure/app">https://eprocure.gov.in/eprocure/app</a> ) The intending bidders are required to submit their offers electronically through e-tendering portal. No physical tender is acceptable by KOLKATA PORT TRUST.
c)i) Estimated Cost Of Work	<b>Rs.40,32,11,690.05 (Rupees Forty Crore Thirty Two Lakh Eleven Thousand Six Hundred Ninety &amp; paise five only)</b>
ii) Earnest Money Deposit @2% upto Rs. 10.00 Crores & @1% beyond 10.00 Crores.	The intending firms would require to submit an EMD of <b>Rs.50,32,200.00 (Rupees Fifty Lakh Thirty Two Thousand Two Hundred Only)</b> by i) NEFT/RTGS to the Bank Account as detailed below: A/C: Kolkata Port Trust A/C. No. 2270020000000018 IFSC: IOBA0002270 MICR:700020072 Bank Name: Indian Overseas Bank Branch Name: KPT Fairlie Place Branch OR ii) by Banker's Cheque/Bank Draft/Pay Order payable to Kolkata Port Trust & payable at Kolkata within 3 working days of last date of submission of bid at the following address : Office of the Chief Engineer, Kolkata Port Trust, 15 Strand Road, Kolkata-700001.

iii) Tender Document fee ( <b>non-refundable</b> )	The intending bidders should submit the tender cost of <b>Rs.5900/- (Rupees Five Thousand &amp; Nine Hundred only) including @18% GST</b> (non-refundable) separately as mentioned above.
d. Date of NIT available to parties to download	<b>27.08.2019 to 26.09.2019</b> (up to <b>14:00 hrs.</b> )
f. Pre – Bid Meeting date & Time	<b>11-30 AM on 12.09.19</b> in the chamber of the Chief Engineer at Head Office at 15, Strand Road,Kolkata-1
g. Last date of issue of EMD & Tender Document fee in favour of Kolkata Port Trust. Last date of physically submission of Demand Draft/Cheque/Bank Draft.	<b>27.09.2019</b> <b>30.09.2019</b>
h. Date of Starting of e-Tender for submission of online Techno-Commercial Bid and price Bid at CPP Portal	<b>27.08.2019 (From 15:00 hours onwards)</b>
i. Date of closing of online e-tender for submission of Techno-Commercial Bid & Price Bid.	<b>26.09.2019 (Up to 3:00 P.M.)</b>
j. Date & time of opening of Techno-Commercial Bid.	<b>27.09.2019 (After 3:00 P.M.)</b>

**Note:** In the event of any unforeseen closure of work / holiday on any of the above days, the same will be opened / held on the next working day without any further notice.

**List of Annexure:**

Important Instructions for E- procurement	:- Annexure -A
Commercial Terms & Conditions	:- Annexure -B
Techno Commercial Bid(Cover-I)	:- Annexure -C
List of Scanned Documents required to be uploaded	:-Annexure – D
Technical Specifications and Approved Make List	:-Annexure – E
Price Bid (Cover-II)	:- Annexure – F
General Conditions of Contract	:-Annexure – G

**A.K. Jain**  
**Chief Engineer**  
**KOLKATA PORT TRUST**  
Tender Inviting Authority

### **Annexure-A**

## **2.0 Important Instructions for e-Tender**

Bidders are requested to use internet Browsers Firefox version below 50 / Internet Explorer version 8 or above, and Java 8 Update 151 or 161.

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

- Bidders Manual Kit
- Help for Contractors
- FAQ

### **Contact Persons (Kolkata Port Trust):**

1. S.Mitra, Superintending Engineer(Contract)
2. S.K.Halder Ex.Engineer(Contract)
3. G.Basak, Ex.Engineer(Design)
4. S. Das, Ex. Engineer(Contract)

Phone nos. 9836298680, 9836298649, **03371012486, 03371012380, 03371012398**  
 e-mail :- **santanumitra@kolkataporttrust.gov.in & cecontract@kolkataporttrust.gov.in**

### Contact persons (CPP Portal):

1. Shri Nazmush – Mob: 9563251950 email: **webhelpdesk@gmail.com**  
 See CPP Portal for contact details.

1	Bidding in e-tender : a. Bidder(s) need to submit necessary EMD & Tender fees to be eligible to bid online in the e-tender. Tender fees is non refundable. No interest will be paid on EMD. EMD of the unsuccessful bidder(s) will be refunded by KOPT. b. The process involves Electronic Bidding for submission of Technical and Commercial Bid.
2	Any order resulting from this tender shall be governed by the terms and conditions mentioned therein.
3	All entries in the tender should be entered in online Technical & Commercial Formats without any ambiguity.
4	E-tender cannot be accessed after the due date and time mentioned in NIT.
5	KoPT 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.
6	Any order resulting from this tender shall be governed by the terms and conditions mentioned therein.
7	No deviation to the technical and commercial terms & conditions are allowed.
8	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.
9	The bid will be evaluated based on the filled-in technical & commercial formats.

10	<p>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.” .</p> <p><b>A declaration in this regard is to be made by the bidder.</b></p>
11	<p>(A) Part-I i.e. Techno commercial bid will be opened electronically on specified date and time as mentioned in the NIT. Bidder’s can witness electronic opening of Bid.</p> <p>(B) Part-II i.e. Price Bid will be opened electronically of only those bidder(s) whose offer will be techno commercially qualified and accepted by KoPT. Such bidder(s) will be intimated the date of opening of Price Bid( Part-II) in due course through valid email confirmed by them.</p> <p>(C) Necessary addendum/corrigendum (if any) of the tender would only be hoisted in the Central Public Procurement Portal (CPPP).</p>

**Annexure –B**

KOLKATA PORT TRUST  
**Office of the Chief Engineer**  
**Head Office Building, 15, Strand Road,**  
**Kolkata 700 001.**  
**Tele – 033 2230-3451 Extension:398,399,400**  
**Fax - (033) 2230-0413**  
**E-mailid:**[santanumitra@kolkataporttrust.gov.in](mailto:santanumitra@kolkataporttrust.gov.in) &  
**cecontract@kolkataporttrust.gov.in**

**3.0 Commercial Terms & Conditions**

- 1 Mere participation in e-tender will not mean that a particular bidder will be automatically considered qualified and their bids will be entertained. Such qualification will be reviewed at the time of techno-commercial evaluation of bids also.
- 2 Copy of valid NSIC Certificate or MSE Certificate under **MSME** has to be submitted along with the bid.
- 3 **EARNEST MONEY : As Per NIT**
- 4 E-Tenders submitted without requisite Earnest Money are liable to be summarily rejected excepting in case of Micro & Small Enterprises (MSEs) registered with NSIC (under single point registration scheme) or MSME for items for which the tender is invited.
- 5 **SCOPE OF WORK :**  
As per E-Tender Document
- 6 The Terms and Conditions of E-Tender shall be read in conjunction with the General Conditions of Contract, Specifications, Bill of Quantities and other documents forming part of this Contract wherever the Contract so requires.
- 7 The several documents forming the Contract shall be taken, as mutually explanatory to one another and in case of any discrepancies; the Bill of Quantities shall prevail over the Specifications and the Terms and Conditions over the General Conditions of Contract of Ko.P.T. In case of any dispute, question or difference either during the execution of the Contract or any other time as to any matter or thing connected with or arising out of this Contract, the decision of the Chief Engineer , KOLKATA PORT TRUST, thereon shall be final and binding upon all parties.
- 8 The Contract will include the Client's Bid Documents with the General Conditions of Contract and the Bidder's Offer as finally accepted by the Client, together with Addenda, if there be any. Trustees' General Conditions of contract is the integral part of the tender / contract. The above mentioned General Conditions of Contract may be inspected at the office of the undersigned on any working day before quoting for the Tender.
- 9 The Trustees are not bound to accept the lowest or any Tender and reserve the right to accept a tender in full or in part and / or reject a tender in full or in part without assigning any reason thereof.

- 10 The contract shall be governed by all relevant Indian Acts applicable only within the jurisdiction of the High Court at Calcutta.
- 11 Intending bidders must take into account any cost or expense incurred by them in connection with the preparation and submission of their bids or for any other expenses incurred in connection with such bidding.
- 12 Bidders are advised to visit the site of work prior to submission of their bid. Bidder shall get himself thoroughly familiarized with the site conditions, existing road facilities for carrying materials etc. before submission of the e-tender. He may contact the Chief Engineer/**Superintending Engineer (Kol.)** or his authorized representative at his office at 15, Strand Road, Kolkata 700001 in this regard. Non compliance of the same will in no way relieve the successful bidder of any of his obligations in performing the work in accordance with this Bid Document within the quoted price.

13 **VALIDITY :**

The tender shall remain open for acceptance for a period of **4 months** from the date of opening of techno-commercial bid.

If before expiry of this validity period, the Bidder amends his quoted rates or tender, making them unacceptable to the Trustees and / or withdraws his tender, the Earnest Money deposited shall be liable to forfeiture at the option of the Trustees / sanctioning Authority.

14 **NON- RESPONSIVE BIDDER :-**

The offer/tender shall be treated as non-responsive, if it :

- (i) is not accompanied by requisite Earnest Money /valid NSIC Registration Certificate /MSME Registration Certificate.
- (ii) is not accompanied by requisite Tender paper cost / or valid NSIC/MSME Registration Certificate.
- (iii) validity of the offer is less than tender stipulation,
- (iv) does not meet the Qualification Criteria as stipulated in the NIT.
- (v) The bidder submits conditional offer / impose own terms and conditions / does not accept tender conditions completely/offer or tender if submitted with any deviation from the tender terms & conditions.

In addition to above, a bidder may be disqualified if –

- a) The bidder provides misleading or false information in the statements and documents submitted.
- b) 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 Kolkata Port Trust in this regard shall be final and binding on the Bidder.  
Offer / tender is submitted with any deviation from the tender terms & conditions.

15 **EARNEST MONEY AND SECURITY DEPOSIT : As per short NIT in annexure-C**



- 16 Performance Guarantee : Not Applicable
- 17 In the event of the successful bidder failing to execute the order within the stipulated delivery period without sufficient reasons acceptable to the Trustees, the Security Deposit may be forfeited and the order be cancelled at the option of the Trustees' **apart from other actions**.
- 18 PRICES: As per BOQ given in the tender document.
- 19 The bidder shall quote his price as per the Bill of Quantities in the Price bid
- 20 Orders may be placed in full/part to the lowest bidder.
- 21 Price(s) to be quoted should remain firm over the contract period.
- 22 **The prices quoted shall be including all statutory levies excluding GST, which shall be paid extra.**
- 23 **EVALUATION CRITERIA: As per relevant clause of Tender document.**
- 24 PAYMENT: As per Tender document.
- 25 Location: As per Tender document.
- 26 Time of Completion: As per Tender document.
- 27 Work is to be carried out as per terms & condition of the contract document.
- 28 JURISDICTION OF COURT :  
The contract shall be governed by all relevant Indian Acts applicable within the jurisdiction of Kolkata.
- 29 PERSONAL PROTECTIVE EQUIPMENT (PPE):  
Contractor and their workmen including driver & helper must use PPE i.e. safety helmet etc. at the time of work inside the dock premises. For safety measure Cl. No.25, page-23 may be referred to.
- 30 Compensation (Liquidated Damages) against failure to complete the work within the stipulated time as per tender condition.
- 31 Price adjustment clause: As per Tender document.
- 32 Technical capacity: As stipulated in Tender document.
- 33 Financial capacity: As stipulated in Tender document.
- 34 Deleted.
- 35 The bidder may offer a Bank Guarantee in the Trustees' specified proforma from any Scheduled/ Nationalized Bank of India having Branch at Kolkata in lieu of Earnest Money /Security Deposit beyond **Rupees 10(Ten) lakhs**.

**Besides the above conditions all other conditions as stated in the NIT, BOQ, Special Conditions of Contract, Instruction to the tenderers, G.C.C. shall have to be agreed by the Bidders.**

कोलकाता पत्तन न्यास  
Kolkata Port Trust  
सिविल इंजीनियरिंग विभाग  
CIVIL ENGINEERING DEPARTMENT  
15, स्ट्रैंडरोड, कोलकाता -700001  
15, Strand Road, Kolkata – 700001

NIT No.: **KOPT/KDS/CIV/T/2402/64**      **DT. 16.08.2019**

NOTE: Last Date of **Download** of tenderdocuments : **26.09.2019(up to 14.00 hours)**

Tender is due for submission by 3:00 P.M. On **26.09.2019**

Tender is due to open on **27.09.2019** (After 15.00 Hours)

**Techno-Commercial Bid**

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**Thorough Refurbishment of KoPT Head Office including Interior Beautification, Civil, Sanitary and  
Plumbing, Electrical, HVAC, Fire Fighting, ELV work at 15, Strand Road, Kolkata-700 001.**

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### **SHORT TENDER NOTICE**

E-Tender under single stage two part system (Part I: Techno-Commercial Bid and Part II: Price Bid) are invited from reliable, bonafide & experienced agency with required experience as per Prequalification criteria stipulated in Tender Document for the following work at Kolkata Port Trust.

<b>Name of work</b>	:	<b>Thorough Refurbishment of KoPT Head Office including interior &amp; exterior painting, civil, sanitary and plumbing, electrical, HVAC, fire fighting, ELV &amp; IT infrastructure at Strand Road, Kolkata-700 001.</b>
<b>NIT No</b>	:	<b>KOPT/KDS/CIV /T/2402/64 DT. 16.08.2019</b>
<b>Estimated Cost</b>	:	<b>Rs.40,32,11,690.05 (Rupees Forty Crore Thirty Two Lakh Eleven Thousand Six Hundred Ninety &amp; paise five only)</b>
<b>Period Of Execution</b>	:	<b>11 (Eleven) Months.</b>
<b>Earnest Money</b>	:	<b>Rs.50,32,200.00 (Rupees Fifty Lakh Thirty Two Thousand Two Hundred Only)</b>
<b>Period of Download of E-Tender (Both Days Inclusive)</b>	:	<b>27.08.2019 to 26.09.2019 (UPTO 14:00 HRS.)</b> (Bid document will be available on Central Public Procurement Portal (CPPP).
<b>Date and Time for pre-bid meeting &amp; site visit</b>	:	<b>11-30 AM on 12.09.19</b> in the chamber of the Chief Engineer at Head Office at 15, Strand Road, Kolkata-1
<b>Last date of submission of e-tender and opening of the tender</b>	:	<b>Submission on 26.09.2019 Up to 15:00 hrs.</b> <b>Opening on 27.09.2019 After 15:00 hrs.</b>
<b>Cost of Tender Document (Non-refundable)</b>	:	<b>Rs. 5900/-(Rupees Five Thousand &amp; Nine Hundred only) including @18% GST)</b>
<b>➤ Contact Person.</b>	:	<b>S. Mitra, Superintending Engineer(Contract)</b> <b>G.Basak, Ex. Engineer(Design)</b> <b>S.K.Halder Ex. Engineer(Contract)</b> <b>M.Mandal, Ex. Engineer(Kol)</b> <b>9836298680,9836298649,03371012486, 03371012380,03371012398</b>

## **5.0: INSTRUCTIONS TO BIDDER**

**E-TENDER FOR "Thorough Refurbishment of KoPT Head Office including interior beautification, civil, sanitary and plumbing, electrical, HVAC, fire fighting, ELV work at 15, Strand Road, Kolkata-700 001"**

**NIT NO : KOPT/KDS/CIV /T/2402/64      DT. 16.08.2019**

### **1.0 GENERAL**

The work as described in the tender shall be executed in Kolkata and in accordance with the attached General Conditions of Contract, Special Conditions of Contract, Particular Specifications, and Drawings (if any) & detailed Bill of Quantities. Location Plan of the place of work might be inspected at the office of the **Superintending Engineer (Kol) for Civil works & Superintending Engineer(Elec-I) for Electrical works** on any working day before quoting for the tender.

**2.0** Earnest money and cost of tender paper are to be submitted by **NEFT/RTGS or** to be physically deposited at the office of Chief Engineer at 15, Strand Road, Kolkata-700001 by vendors/contractors through Bank Draft/Banker's Cheque/Demand Draft/Pay Order etc. in favour of Kolkata Port Trust, payable at Kolkata, within 3 days after closing of tender.

**2.1** Details of cost of e-tender paper remitted should be entered by the participating vendor/contractor in the space provided in the e-tender as indicated hereunder:

- a) Name of remitting vendor/contractor      :
- b) Tender No.      :
- c) Amount remitted      :
- d) Date of remittance      :
- e) Bank Draft / Cheque No.      :

**2.2** Details of Earnest money remitted should be entered by the participating vendor/contractor in the space provided in the e-tender as indicated hereunder:

- a) Name of remitting vendor/contractor      :
- b) Tender No.      :
- c) Amount remitted      :
- d) Date of remittance      :
- e) Bank Draft / Cheque No.      :

Tender submitted without requisite Earnest Money and cost of tender paper will be liable for rejection.

### **3.0 MODE OF SUBMISSION OF BID :**

**3.1** All bidders must submit their offers through e- tendering in accordance with the terms and conditions set out in the bid documents and no deviation will be accepted.

**3.2** A Bid shall contain the following *scanned copies* of which are to be uploaded (Refer Annexure D):-

- i) GST registration certificate.
- ii) Valid Trade Licence(Valid for current period & also for type of work).
- iiib) The Firm has to submit copy of Valid Electrical Contractor License or the Firm has to submit the copy of **electrical supervisory License of the person who will carry out the electrical job.**

- iii) Valid Professional Tax Clearance Certificate / Up to date tax payment challan. If this is not applicable, the bidder must submit a declaration in this regard.
- iv) Proof of possessing valid Employees' Provident Fund (EPF) Account. EPF Registration Certificate.
- v) Proof of being registered with Employees' State Insurance Corporation (ESIC), ESI Registration Certificate.
- vi) Details of the firm as per Schedule-O (in Part-I) of the tender document duly filled up.
- vii) Credentials in the form of copies of Letters of Award of Works along with corresponding/successful Completion Certificates from owners to justify that the intending bidder satisfies the earlier mentioned pre-qualification criteria.
- viii) Last three years balance sheet and profit & loss account in support of Annual Financial turnover (i.e. **2016 –17, 2017-18 and 2018-19**) The same should be audited as per relevant norms wherever required.
- ix) PAN Card
- x) NEFT/RTGS online payment receipt/ Bank Draft/Banker's Cheque/ Pay order etc./ valid NSIC/MSME certificate regarding EMD & Cost of Tender documents.
- xi) A list of technically qualified and skilled persons would be engaged to supervise and execute the work
- xii) Self declaration of the bidder that the Bidding Firm has Not been debarred / de-listed by any Govt / Quasi Govt. / Public Sector undertaking in India **(to be mentioned in the letter head of the Firm)**.
- xiii) Self-declaration regarding the proprietor/partner(s)/authorized signatory of the bidding firm (in the case of proprietorship firm /partnership firm /limited company, as the case may be) is/are not associated with any other firm bidding for the same work **(to be mentioned in the letter head of the Firm)**.
- xiv) A list of works which are in hand at the time of submitting the offer as per the enclosed proforma titled 'Concurrent Commitments of The Bidder' vide 'Annexure-C' (Schedule –T) in Part-I of the tender document.
- xv) Undertaking of the tenderer to be submitted as per enclosed Pro-forma (Annexure –D-1) in lieu of submission of signed copies of the full Tender document ,G.C.C,addenda & corrigendum **in the letter head of the Firm.**
- xvi) Last page of "Bill Of Quantities" & the "Form Of Tender" duly filled up (without price quoted) shall be duly signed and stamped by the Bidder.

**N. B.-1The bidder will have to produce the original documents or any additional documents, if asked for, to satisfy the Authorities for clarification of his documents or credibility.**

**N.B.-2**Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements and their **EMD will be forfeited for such action.**

3.3 All the bidders should submit the e-tender in accordance with the Mode of submission of Bid as afore-said.

#### 4.0 **SECURITY DEPOSIT:-**

**4.1** For the successful Bidder, the Earnest Money deposit will be converted to part of Security Deposit and the remaining security deposit will be recovered from the contractors each and every On-Account Bill [including the final bill, if necessary] at the percentage of each such bills as set forth in **Clause. 3.4, 3.5 & 3.6 of the General Conditions of Contract.**

**4.2** Refund of S.D. and forfeiture S.D. shall be guided by Cl. 3.5 (i) & (ii) of the G.C.C.

#### 5.0 **Delay/ Extension of time/ Liquidated Damage/ Termination of Contract.**

Clause 8.0 of G.C.C. to be referred regarding Delay/ Extension of time/ Liquidated Damage/

Termination of Contract.

## 6.0 REFUND OF EARNEST MONEY:-

The Earnest Money received, will be refunded or released as the case may be to the unsuccessful Bidders without any interest after opening of Price bid (Part – II) of the e-Tender document.

## 7.0 VALIDITY OF OFFER:-

The e-tender shall remain valid for a period of **4 (four) months** from the date of opening the same. If before expiry of this validity period, the Bidder amends his quoted rates or tender, making them unacceptable to the Trustees and / or withdraws his e-tender, the Earnest Money deposited shall be liable to forfeiture at the option of the Trustees/ Sanctioning Authority/Engineer.

## 8.0 DETAILED SCRUTINY OF E-TENDERERS :

8.1 During the course of examination of Part-I of the bid, the bidders, if asked for, shall furnish any or additional document(s) for the purpose of evaluation of his / their bids.

9.1 During techno-Commercial Evaluation, i.e. evaluation of Part-I of tender, an offer shall be considered non-responsive in case it :-

- (i) is not accompanied by requisite Earnest Money /NSIC /MSME Registration certificate.
- (ii) is not accompanied by requisite Tender paper cost /NSIC /MSME Registration certificate.
- (iii) validity of the offer is less than tender stipulation,
- (iv) does not meet the Qualification Criteria as stipulated in the NIT.
- (v) The bidder submits conditional offer / impose own terms and conditions / does not accept tender conditions completely/offer or tender if submitted with any deviation from the tender terms &conditions.

In addition to above, a bidder may be disqualified if –

- a) The bidder provides misleading or false information in the statements and documents submitted.
  - b) 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 Kolkata Port Trust in this regard shall be final and binding on the Bidder.

10. An amount of **Cess** calculated at the rate of **1% of the billed amount** shall be progressively recovered from each running bill as well as from the final bill of the contractor for onward transmission of the same by the appropriate authority statutory deductions will also be made as applicable at the time of payment.

## 11. For Micro & Small Enterprises (MSEs) registered with NSIC& or MSME:-

- 11.1 Micro & Small Enterprises (MSEs) registered with NSIC (under single point registration scheme) or **MSME** are exempted from depositing Cost of Tender Document and Earnest Money.
- 11.2 If Micro & Small Enterprises (MSEs) registered with **NSIC or MSME** intends to participate in the tender, for the items they are not registered with NSIC, then they will have to deposit cost of Tender Document, full amount of Earnest Money as per NIT. **Otherwise their offer will not be considered.**

11.3 Copy of valid NSIC Certificate for MSEs has to be submitted along with bid.

## **12.0 EVALUATION CRITERIA:-**

12.1 During evaluation of Part-II i.e. Price Part, provided that the bidder submits his offer following e-tender stipulations & specifications, **the overall lowest offer received** shall be considered for acceptance by the Trustees as the L-1 Bidder.

## **13.0 ACCEPTANCE OF TENDER:-**

13.1 Kolkata Port Trust reserves the right to accept / reject any / all offer(s) without assigning any reason thereof and also reserve the right to accept the tender in part or as a whole.

13.2 Any attempt to exercise undue influence in the matter of acceptance of Tender is strictly prohibited and any Tenderer who resorts to this will render his tender liable to rejection.

13.3 The successful Tenderer will be notified in writing of the acceptance of his tender. The “Tenderer” then becomes the “Contractor” and he shall forthwith take steps to execute the Contract Agreement within six weeks of issue of Letter Of acceptance and fulfill all his obligations as required by the Contract.

## **14.0 MISCELLANEOUS:**

- i) Bidder shall submit his offer for complete scope of work, strictly in accordance with the tender documents. Any deviation from the tender documents and / or any incomplete tender shall not be considered.
- ii) The bidder shall not impose his own terms & conditions in his offer or quote his rates based on his own terms and conditions, such E-Tenderers are liable to rejection at the option of the Trustees without further reference to the bidder.
- iii) All materials shall have to be procured by the successful Bidder and shall be of the best and approved quality conforming to relevant specifications. The successful Bidder shall also arrange for the supply of all labour, tools and plants as stipulated in the Special Conditions of Contract, required for efficient execution of the work.
- iv) All measuring units are in Metric System and rates and sums in the tender are in Indian Currency. The language used throughout shall be in English.
- v) The Tender Documents with all the enclosures, appendices, Abstract Form of Tender and Form of Tender shall be required to be complete, duly filled in and signed and uploaded.
- vi) Enlisted/registered contractor of KoPT will get the benefit of exemption of deposition of Earnest Money **up to the prescribed limit**. They are to upload the scan copy of the original T.R. issued to them by KoPT during registration to KoPT relating to **Permanent Security Deposit**.

- .....
- vii) **The Bidder shall give a declaration about the names of their relations employed in Kolkata Port Trust. It is not the intention to debar the Contractors from working if their relatives are working in Ko.P.T, but such a declaration is necessary in the interest of Trustees against any possible lapses.**
- .....

## **6.0: SPECIAL CONDITIONS OF CONTRACT**

**E-TENDER FOR "Thorough Refurbishment of KoPT Head Office(Main & Annexe) including interior beautification, civil, sanitary and plumbing, electrical, HVAC, fire fighting, ELV work at 15, Strand Road, Kolkata-700 001".**

### **1. GENERAL:**

These provisions though given in a separate section are part of the tender documents which must be read as a whole, the various sections being complementary to one another and are to be taken as mutually explanatory. These provisions shall be read in conjunction with the other parts of the tender documents viz. General Conditions of Contract, Notice Inviting E-Tender, and Instructions to Bidder, Particular Specifications, Drawings, Bill of Quantities and other documents forming part of the Contract. In case of any discrepancy or ambiguity in the documents, the order of precedence of the documents as stated below will apply. In particular, these provisions will override those in the General Conditions provided there is discrepancy between them.

### **2. Priority of Contract Documents:**

The several documents forming the Contract are to be taken as mutually explanatory to one another, but in case of ambiguity or discrepancies, the same shall be explained and adjudicated by the Engineer of the Contract (EIC), who shall thereupon issue to the Contractor instructions thereon which will be final and binding on the Contractor. Unless otherwise provided in the Contract, if the stipulations in the various documents forming apart of the Contract are found to be in variation in any respect then, unless a different intention appears, the provision(s) of one will override others (but only to the extent these are at variance) in order of precedence as given in the list below i.e. a particular item in the list will take precedence over all those placed lower down the list:

The following order of documents of the Contract Agreement will be in the following sequence of Precedence i.e. any particular item placed in the list will take precedence over all other items placed lower down the list.

- a) Letter of Intent (LoI) / Work Order
- b) Bill of Quantities
- c) Drawings
- d) Particular Specifications in Scope of Work
- e) Special Conditions of Contract
- f) General Conditions of Contract

2.1. Custodian Certificate: After delivery at site the supplied materials are to be verified by KoPT Officials and the custodian certificate is to be issued by the Contractor in this regard, for consumption of such materials in the instant work.

2.2 Termination of contract and Risk Purchase Clause: Will be applicable as per clause No. 8 of KoPT's General Conditions of Contract.

2.3. Special / Additional Security may be arranged by the contractor at the site at no extra cost to KoPT over and above the General Security provided within KoPT premises by Port Security Authority.

2.4. 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 in Charge, Kolkata Port Trust, thereon shall be final and binding upon all parties.



2.5 All other terms and conditions excepting those mentioned separately shall be governed by KoPT's General Condition of Contract.

The execution of work shall conform minutely to the approved & assigned drawings & specification & any other details drawings which shall be provided /duly approved by the Engineer during the progress of the work as to such other drawings those have formed part of the contract documents.

### **3. PRE-QUALIFICATION CRITERIA FOR BIDDERS: -**

i) The intending bidder must have successfully completed **Restoration, Repairing of old buildings, Retrofitting and Refurbishment of the interior of heritage building, interior decoration including civil, electrical, Heating, Ventilating & Air-Conditioning, Electronics Low Voltage, sanitary and plumbing and Fire fighting, illumination work** during the last 7(seven) years ending last day of month previous to one in which applications are invited and the experience should be either of the following:

Either (i) 03 (Three) completed works each costing not less than **Rs. 16,12,84,676.02.**

Or (ii) 02 (Two) completed works each costing not less than **Rs. 20,16,05,845.02.**

Or (iii) 01 (One) completed work costing not less than **Rs. 32,25,69,352.04.**

ii) **The Average Annual Financial Turnover of the bidding firm during the last three years, ending on 31-03-2019, should be at least Rs. 12,09,63,507.01(30% of the estimated value put to tender).**

iii) Work experience as a sub -contractor shall not be considered as the requisite qualification.

### **4. BRIEF SCOPE OF WORK:**

#### **Interior Work:**

- Dismantling of Brick Work, PCC,RCC work
- providing new Brickwork, RCC work, PCC work, lime concrete work.
- Repairing as well as newwork for plaster work (with Lime mortar, cement mortar) & painting on existing as well as new wall
- Repairing, removing existing and laying of new flooring
- Repairing, removing existing &fixing new door & window, jamb& lintel lining (as required)
- Repairing, removingexisting & fixing new False ceiling including moulding
- Repairing, removing existing& fixing new Partition, panelling etc
- Repairing ,Removing existing & fixingnew sanitary & plumbing fittings & fixtures
- Removing existing & fixing new electrical fittings & fixtures
- Removal of and/ or augmentation with all existing building service connection
- Civil Building repairing work
- Obtaining approvals for works from statutory bodies and obtaining completion certifications for Fire compliances and Elevator installations.
- Structural steel work
- Structural retrofitting work, repairing work
- Crack repairing work in wall & ceiling
- Access control system
- Public Address system
- CCTV and Surveillance system

- HVAC work.
- Fire fighting & fire detection system
- Scaffolding work as required
- Cleaning & removing rubbish, debris and other materials etc.
- Liaisoning with the Kolkata Municipal Corporation and other statutory bodies in respect of execution of works including compliances relating to restoration, conservation for the Project (if required). All necessary expenses and fees other than any official fees are to be borne by the Contractor in such regards.

The contractor shall at all times keep the site and working areas free from all surplus materials, rubbish, other excavated/ offensive matter etc all of which shall be disposed off in a manner to be approved by the Engineer's Representative.

On completion of the works the contractor shall reinstate & make good at his own expense any property or land which might have been disturbed and/or damaged by his works. He should also clean the site as required during execution and fully clear the site after completion of all the works.

The contractor shall forward any usable materials found during the course of construction at the work site or its vicinity to KoPT stores/yards, dispose off the debris beyond the port area all at his own expenses by his own transport and labour and clean out all part of the work and leave everything clean and tidy to the entire satisfaction of the Engineer, failing which suitable deduction will be made from final bill as per discretion of the Engineer/ Engineer's representative

Including all appurtenant works as described & set forth in the Bill of Quantities, Special Conditions of Contract, Technical Specifications of work as per latest IS / IRC etc guidelines with all additional or varied works which may thereafter be required in accordance with clause – 7 of General Conditions of Contract & as per direction and upto the satisfaction of the Engineer or his representatives.

**The intended tenderer shall inspect the site of work in consultation with the S.E (Kol), Civil Engineering Department Superintending Engineer (Elec-I)** for electrical works and acquaint himself with the nature of the work before preparing tender. The Tenderer's attention is drawn to Clause No. 3.1 of the General Conditions of Contract in this regards. No excuse or ignorance as to the site conditions, or change in site due to natural factor or availability of space for storing material and approaches to the site etc. will be entertained.

Unless otherwise specified, the work to be provided for by the contractor shall include but not be limited to the following:-

- a) Provide all materials, supervision, services, scaffolding, shoring, strutting, form work, reinforcements, vibrators, other tools and plants, transportation, water supply, temporary drainage, dewatering of surface, necessary approaches, temporary fencing and temporary lighting as required for safety and work purposes etc.
- b) Prepare and submit for review and assessment to the Engineer documents, bar chart etc showing how the work is actually going to be done including storage of materials, fencing etc., as well as sequence of construction and all other details as may be required by him.
- c) Providing all survey equipment with competent personnel to carry out survey works required for execution of the work.
- d) Providing temporary drainage diversion works during execution of the work.

e) To exercise rigid quality control in execution of the work and to carry out sampling, testing, and furnishing the test results to the Engineer for the quality of construction materials and the quality of the work done.

f) The contractor shall at all-time carry out work in a manner creating least interference to the existing services/Traffic operation while consistent with the satisfactory execution of the same. For all works , the Contractor shall, in accordance with the direction of the Engineer-In-Charge provide and maintain during the execution of the work, measures taken for safety of workers and the users of the facilitation.

g) The contractor shall carry out the work in phased manner as per availability of the site as the roads & the areas are very busy & cannot be blocked wholly at a time & also for a long period so that normal day to day activities are not affected for which no such extra payment will be entertained.

## **5. LOCATION:**

The site is located at 15, Strand Road, Kolkata-700001.

## **6. ACCESS TO THE SITE:**

(a) By Road: Strand Road

(b) By Rail : Howrah Railway Station

## **7. WORK SITE:**

The work site is at 15, Strand Road, Kolkata-700001. The building consists of two parts: A. Main Building, B. Annex Building. The Main Building is a three-storied heritage building of colonial style whereas the Annex building is seven stories high & modern in style The intending tenderer should contact **Superintending Engineer (Kol)** for Civil works & **Superintending Engineer (Elec-I)** for electrical works to make the site inspection along with his representative.

## **8. INSPECTION OF SITE:**

The Bidder shall inspect the site of work and thoroughly familiarise himself with the nature of work, site conditions, and access to the site and location before submission of the tender. He should contact the **Superintending Engineer (Kol)** for Civil works & **Superintending Engineer (Elec-I)** for electrical works for collecting information about the site before submission of the tender. No excuse will be entertained afterwards on the above ground. In case any part of the site cannot be handed over to the successful Bidder in time, no compensation for loss of labour or any other cause nor any claim will be entertained by the Trustees. Suitable extension of time shall, however, be granted to the successful Bidder on that ground if applied for which shall be strictly at the consideration of the EIC.

## **9. SITE CONDITIONS & METHOD OF WORK:**

The work site is located at 15, Strand Road, Kolkata-700001 as detailed in the Scope of Work & B.O.Q. The contractor shall take adequate measures so as to execute the work with due regard to the above. The cost of which shall have to be included in the quoted rates.

Further, if so required by the Engineer in the interests of normal working of the Port Office, if it is found necessary to shift / suspend some construction activity for some duration, this shall be done in compliance with the instructions of the Engineer and as per relevant clause of the G.C.C. The bidder shall consider all the above points while quoting as no separate claim for idle charges towards labour, material will be considered for payment.

Proper care should be taken to provide adequate protection to the existing structures and cables (telephone, computer, etc.) all such installations against any damage at the Contractor's risk and expense. Any damage / defect to existing structures arising due to the faulty execution of the work

shall have to be rectified forthwith as directed to the satisfaction of the Engineer, without charging extra.

#### **10. TIME OF COMPLETION**

The work is urgent in nature and must be commenced immediately on receipt of the work order and to be completed in all respects within **11(Eleven) months** including preliminary time from the date of placement of work order.

#### **11. SUFFICIENCY OF TENDER:**

- i) The tender drawings and all data / information as furnished herein or inspected and / or collected by the tenderer for the purpose of the work should be properly assessed or utilised in his offer at his own responsibility and KoPT does not guarantee sufficiency or adequacy of the data / information so supplied to him or collected or understood by the tenderer.
- ii) The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates stated in the priced Bill of Quantities and the rates shall cover all his obligations under the contract and all matters and things necessary for the proper construction, completion, commissioning and maintenance of the work.
- iii) In case rate of particular item is printed erroneously in B.O.Q., the rate stated in the schedule of rates will prevail over the rate misprinted in B.O.Q.

#### **12. ACCESSIBILITY FOR CHECKING AND SUPERVISION:**

The engaged Contractor is to provide necessary arrangement for free access to the KoPT officer's and personnel for supervision and checking of the subject work at his own cost.

#### **13. PROGRAMME AND PROGRESS:**

The contractor shall submit a detailed programme of work within 7 [seven] days from the date of issue of Work Order / L.O.I. showing the commencement, duration and completion time of all major items of work including procurement of all materials etc,. The Contractor shall have to detail out all procurement, execution, etc. In the form of Bar Charts/ Gantt Charts/ Networking diagrams, CPM and/ or PERT Charts, Project Work Breakdown structures, etc. From time to time as would be required by the KoPT or its authorised representatives. The sequence of work shown in the programme must be practicable and compatible with technical specifications and conditions prevailing at site.

The contractor shall maintain the progress of work as per the approved programme. In case of any slippage of programme the engineer may require the contractor to augment the input of plant, equipment, labour of any item as he may deem fit. The contractor shall comply with the engineer's directive in this regard, without any extra charge whatsoever.

In case of delays caused due to conditions or circumstances beyond the control of the contractor, the delays must individually be informed to the Engineer forthwith in writing and his acceptance in writing obtained.

#### **14. RESPONSIBILITY OF THE CONTRACTOR FOR METHODOLOGY OF WORKS:**

- i) The Contractor shall be solely responsible for the methodology and detailed working for the whole of the works, keeping in mind the site conditions and shall supply to the Engineer such particulars thereof as he may require from time to time.

ii) The Contractor shall submit within the time stipulated by the Engineer in writing, the details of actual methods that would be adopted by the Contractor for the execution of each item of the work supported by necessary details.

iii) Approval, for the Drawings and sketches, if necessary including those of the plant and machinery that would be used, their locations, arrangements for conveying and handling materials etc., should be obtained from the Engineer well in advance for starting each item of work. The Engineer reserves the right to suggest modifications or make concrete changes in the methods proposed by the Contractor whether accepted previously or not at any stage of the work, to obtain the desired accuracy, quality and progress of the work, which will be final and binding on the Contractor.

### **15. MATERIALS:**

It will be the responsibility of the contractor to make timely procurement of all materials for both temporary and permanent works required in accordance with the Bill of Quantities or for any extra/additional work required as per the directions of the Engineer. The contractor shall procure cement, reinforcement steel, Lime, Surki and other materials from manufacturers approved by the Consultant/Architect/Engineer in keeping with the list of approved make for all the materials.

The contractor will be allowed to take away surplus materials on completion of the work, subject to Engineer's verification of contractor's records of entry and consumption of materials in the works.

### **16. QUALITY CONTROL:**

Quality control is an essential part in the construction of and must be based on proper objective and qualitative measurement. The Contractor will have the full responsibility for quality control and delivering the acceptable quality in the field. Regular appraisal of the quality control to the Engineer should be made for effecting improvements in the construction techniques to ensure satisfactory quality of work. The quality control function shall include but not be limited to the following items.

### **17. SAMPLING AND TESTING OF CONSTRUCTION MATERIALS:**

**For Civil Part:** Sampling and testing essentially to be carried out on the materials brought to site for construction work unless permitted otherwise by the Engineer. The Contractor shall undertake all field tests and laboratory tests for all such materials and workmanships as directed by the Engineer or one of his representatives at his own cost. The samples shall be taken for test jointly by the representatives of the Engineer and the contractor at the worksite and tested /sent to a Govt. registered laboratory or Institutional laboratory as may be decided by the Engineer for testing. In case of field test, the contractor shall undertake the test by his own testing equipments or by any approved agency in presence of the Engineer and the contractor at the worksite. All the testing charges and all incidental charges like packaging and transporting the test samples, equipments etc. shall be borne by the Contractor.

**For Electrical Part:** Inspection and testing will be carried out by KOPT Engineer. Inspection will be carried out as applicable as per relevant Standard/ Technical Specification/Approved Drawing etc. Manufacturer's Test and guarantee certificate as applicable will have to be submitted for verification.

Inspection and testing will comprise prototype testing including mechanical and electrical measurements such as stress, temperature, voltage, current, and moisture test. Non- destructive test techniques such as ultrasonic test should be shown to indicate the thermal cycle, accelerated life cycle, mechanical impact, fatigue, etc of the panel prior commissioning are to be carried out. Insulation Resistance, Earth Continuity and Earth Resistance tests etc. as applicable prior to commissioning are to be carried out for LT cable. All pre commissioning tests of the

panels/equipments etc as applicable shall be carried out by the authorized representative of the firm having valid Supervisor's Certificate of Competency

#### **18. SPECIFICATIONS/ CODES AND STANDARDS:**

All works under this contract will be executed according to the Trustees' Specification for works.

Whenever the details are not specifically covered in the specifications, relevant provisions in the latest revision and/ or replacements of the Indian Standard Specifications (IS) or any other International Code of Practice/ CPWD specifications will be followed. The Contractor shall have to procure copies of such codes/ standards for ready reference of his own personnel as well as the Engineer or his representative at site at his own cost and without any additional reimbursement.

#### **19. TEMPORARY WORKS:**

The successful tenderer shall allow for providing labour and materials for the construction and removal of all temporary works, e.g. site office, site store, scaffolding, fencing lighting; watching, tube well and pipe lines etc. required for constructional purpose as well as for drinking water purpose of contractor's men, water supply, vats, platform, etc. as may be necessary for the successful execution, completion and maintenance of works without any extra cost to the Trustees and the rates should be quoted accordingly. No rent shall, however, be charged to the contractor for construction/erection of such temporary sheds and structures.

#### **20. PLANT & CONSTRUCTIONAL EQUIPMENT:**

The contractor shall supply his tools, plants and constructional equipment within his quoted rates. A list of plant as intended to be employed by the tenderers in this construction must be furnished with full details along with the tender.

#### **21. CONTRACT PRICE:**

The "Contract Price" for this contract means the sum named in the tender subject to such additions thereto, deductions there from or reductions due to supply of any materials by the Trustees' as provided for in the Contract.

#### **22. SETTING OUT OF WORK AND INITIAL MEASUREMENTS:**

The Engineer shall provide the initial reference and Bench Mark for the setting out of work. It will be the contractor's responsibility to set out the work accurately and get them checked by the Engineer. The Contractor shall provide at his own expense all necessary instruments, staff and labour for the checking of the survey.

The Contractor shall be responsible for the true setting out of the work and for the correctness of all dimensions, levels, lines, positions and alignment. Any error in any part of the works shall be rectified by the Contractor at his own cost. The Contractor would set up inspection facilities at Site at his own cost.

#### **23. FORWARDING OF MATERIALS:**

The contractor shall have to arrange transport for forwarding any usable/ saleable materials that may be found during the process of execution of the work to the Trustees' Sales yard or any other site/ godown including labourers, transportation, loading, unloading all complete as per the direction of the Engineer or his representative at site. No separate payment will be made to the contractor on this account unless specifically mentioned in the B.O.Q.

## **24. PARTICULARS OF EXISTING WORKS:**

Such information as maybe given in the specification as to the existing features and works other than those now under construction as part of “Kolkata Port Trust” given without warranty of accuracy and neither the Trustees nor the Engineer will be liable for any discrepancies therein.

## **25. 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 further comply with any instruction issued by the Engineer, Trustees’ Safety Officer, Safety Inspector in regards to safety which may relate to temporary, enabling or permanent works, working of tools, plants, machineries, equipment, means of access or any other aspect.

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

The contractor shall provide PPE’s (Personal Protective Equipment) such as, **helmet, safety shoe** etc. to all workers and shall also provide job specific PPE’s e.g. safety belts for working at heights; protective face and eye shield, goggles, hand gloves for welding / gas cutting works; protective foot wear and gloves for hot works; facemasks, gloves and overalls for painting works, mixing and handling materials etc , as directed by the Engineer.

All safety rules shall be strictly followed while working on live electrical systems or installations as stipulated in the relevant safety codes.

Use of hoisting machines and tackles including their attachments, construction tools, machineries and equipment shall comply to the relevant safety codes.

Before allowing workers in sewers, manholes, any duct or covered channel etc, the manhole covers shall have to be kept open and ventilated at least one hour in advance and necessary safety torches / lamps should be inserted first before allowing entry to the worker. Suitable hand gloves and other safety gear will be provided to the worker during handling / removing of slushes / sludge etc. without any extra cost. The contractor shall adopt all the above safety measures at his own cost.

The successful bidder shall also ensure that –

- (i) No damage is caused to plants and vegetation 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 throughout the period of their use and different effluents of the labour hutment shall have to be disposed of suitably.

## **26. 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.

## **27. POWER SUPPLY:**

If available and if required, suitable power supply may be arranged by the Trustees at the nearest existing supply point of the site of work on receipt of request letter from the Contractor to that effect.

All necessary arrangements for the distribution at site will have to be made by the Contractor at his own cost as approved by the Trustees' Engineer or his representative.

Charges for consumption of power shall be periodically recovered from the Contractor's Bill at the rates of KoPT as prevalent amended from time to time including installation and hire charges for meters. The Trustees do not guarantee uninterrupted power supply from the above sources and Contractor shall not be compensated for any delay in providing / irregularity of power supply. The Contractor shall have to arrange for the supply of power at his own cost during such periods.

### **28. WATER:**

The Contractor will arrange for supply of water both for drinking and for construction purposes. However, on written request from the Contractor, water for drinking purposes may be made available free of cost from the exiting water line of the Trustees at a point near the site of work. The contractor will have to arrange for laying pipelines, as necessary, as per approval of the Engineer or his representative, for storing and distributing the same to the work point at his own cost.

i) Under no circumstances, the contractor would be allowed to use such drinking water for constructional works.

### **29. 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.

### **30. PROTECTION OF EXISTING SERVICES:**

The contractor must pay full attention to the fact that the existing service facilities for users are not distributed at any time due to storing of materials and rubbish and take every precaution to keep the entrance passage clear if the same are being used by the laborers.

The contractor shall be held liable for all damage and interference to the existing service, caused by him in execution of works. Should any damage be done to the existing services, in general, the contractor shall make good the same and any further work considered necessary by the Engineer's representative without any delay otherwise the cost of such repairing shall be recovered for his running bill for which Engineer's decision shall be final and binding.

### **31. CLEANING DURING EXECUTION AND AFTER COMPLETION:**

On completion of the works the contractor shall reinstate and make good at his own expense any property or land which might have been disturbed and/or damaged by his works. He should also clean the site as required during execution and fully clear the site after completion of all the works.

The contractor shall forward any usable materials found during the course of construction at the work site or its vicinity to KoPT stores/yards, dispose off the debris beyond the port area all at his own expenses by his own transport and labour and clean out all part of the work and leave everything clean and tidy to the entire satisfaction of the Engineer, failing which suitable deduction will be made from final bill as per discretion of the Engineer/Engineer's representative.

### **32. METHOD OF MEASUREMENT:**

Unless otherwise specified in the Particular Specifications and Bill of Quantities, the work shall be measured according to the current P.W.D.'s (Building, S&P & Road) Schedule of Rates (2017), Govt. of West Bengal with latest amendment and analysed rate. For details of measurement not covered by the above S.P.-27 1987 of B.I.S. shall be referred to.



### **33. ON ACCOUNT PAYMENT:**

On account payment to the Contractor shall be arranged as and when required at the discretion of the Engineer on the basis of measurements of completed works at the quoted rates in the Bill of Quantities.

The terms of payment shall be in accordance with Clause-6 of the General Conditions of Contract. The Bills should be submitted by the contractor **in quadruplicate** to the Office of the respective **Superintending Engineer (Kol) for civil works & Superintending Engineer (Elec-I) for electrical works** with necessary documents in original. Subject to the availability and feasibility of system, KoPT may make payment directly to the contractor's designated bank account. For this purpose, the contractor will have to indicate (i) name of bank (ii) branch name (iii) branch code and (iv) designated account number in the "Abstract Form Of Tender". In case payment is made directly through bank, the contractor may be required to submit a pre-receipt as per instruction of KoPT.

### **34. LABOUR, TOOLS & PLANTS:**

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

### **35. ESCALATION / VARIATION ON PRICES:**

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

### **36. CONTRACT LABOUR LAWS AND INDEMNITY OF KoPT:**

The contractor shall be required to comply with the Minimum wages Acts 1948, Employees Liability Act, 1938, Industrial Disputes Act, 1947, and The Contract Labour (Regulation and Abolition) Act, 1970, or statutory amendments and the modifications thereof, any other laws relating thereto and the rules made there under from time to time. Payment to the labourers to be made as per the minimum wage rates fixed by Chief Labour Commissioner (Central) and as per M.W.A. Govt. of W.B. whichever is higher and revised from time to time.

It will be the duty of the contractor to abide by the provisions of the Act. Ordinances, Rules, Regulations, Byelaws and Procedures as are lawfully necessary in the execution of the works. The contractor will be fully responsible for any delay/damage etc. and keep the Engineer indemnified against all penalties and liabilities of any kind for noncompliance or infringement of such Acts, Ordinances, Rules, Regulations By-laws and Procedures. The Contractor shall comply to the Employees' Bonus rules & to pay Bonus once a year to his workmen accordingly, for which no extra payment shall be made to the Contractor.

The contractor shall indemnify the KoPT against payment to be made under or for the observance of the laws aforesaid without prejudice to his right to claim indemnity from his subcontractor.

The aforesaid regulations shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a Breach of Contract. It will be obligatory on the part of Contractor to obtain necessary. Labour Licence from the Competent Authority for deploying requisite Nos. of labours in the work and submit to the Engineer-In-Charge prior to commencement of the work.

The contractor shall also be required to comply regarding 'Workmen Compensation Act, 1923 as amended by Amendment Act No.65 of 1976'

In addition to the above, the Personal Injuries (Compensation Insurance) Act, 1963 and any modifications thereof and rules made there under from time to time. The contractor shall take into account all the above said financial liabilities in his quoted rates and nothing extra, whatsoever, shall be payable to him on this account.

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 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.

### **37. COMPLIANCE WITH E.P.F & M. P. ACT & ESI Act 1948:**

The successful contractor will have to comply with provision of EPF & MP Act 1952 and also for Employees State Insurance Act 1948 (along with amendments, if any), issued from time to time as applicable.

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. **Superintending Engineer (Kol).**

### **38. 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 Building And Other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996
- c) The Payment of Wages Act, 1936.
- d) The Workmen's Compensation Act, 1923.
- e) The Employees Provident Fund Act, 1952.
- f) The Contract Labour (Regulation and Abolition) Act, 1970; Rules 1971.
- g) The Equal Remuneration Act, 1976.
- h) The Employees State Insurance Act, 1948 & Employees State Insurance (Amendment) Act, 1989
- i) Child Labour (Prohibition and Regulation) Act, 1986.
- j) The Maternity Benefits Act 1961
- k) Interstate Migrant Workmen (Regulation Of Employment & Conditions Of Service) Act, 1979.
- l) Motor Vehicle Act, latest revision.
- m) The payment of Bonus Act, 1965.

### **39. TAXES & DUTIES: -**

The prices quoted shall be including all statutory levies excluding GST, which shall be paid extra. Supplier/service provider to confirm that the GST amount charged in invoice is declared in its returns and payment of taxes is also made.

· The Supplier/ Service Provider agrees to comply with all applicable GST laws, including GST acts ,rules, regulations, procedures, circulars & instructions thereunder applicable in India from time to

time and to ensure that such compliance is done within the time prescribed under such laws. Supplier/Service Provider 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 Supplier/ Service Provider and details available with Kolkata Port Trust, then payments to Supplier/Service Provider to the extent of GST relating to the invoices/s under mismatch may be retained from due payments till such time Kolkata Port Trust is not sure that accurate tax amount is finally reflected in the GSTN to KoPT's Account and is finally available to Kolkata Port Trust in terms of GST laws and that the credit of GST so taken by Kolkata Port Trust is not required to be reversed at a later date along with applicable interest.

- Kolkata Port Trust has the right to recover monetary loss including interest and penalty suffered by it due to any non-compliance of tax laws by the supplier/service provider. Any loss of input tax credit to Kolkata Port Trust for the fault of supplier shall be recovered by Kolkata Port Trust by way of adjustment in the consideration payable.

- Supplementary invoices/Debit note/credit note for price revisions to enable Kolkata Port Trust to claim tax benefit on the same shall be issued by bidder for a particular year before September of the succeeding Financial Year.

The purchase order/ work order shall be void, if at any point of time bidder is found to be a black listed dealer as per GSTN rating system and further no payment shall be entertained.

#### **40. SETTLEMENT OF DISPUTES:**

If a dispute of any kind whatsoever arises between the Employer and the Contractor in connection with or arising out of the contract or the execution of the works, the same shall be dealt as per relevant provisions of the General Conditions of Contract.

#### **41. CONTRACTOR TO EXECUTE CONTRACT AGREEMENT:**

The contractor after acceptance of his tender shall be required to enter into and execute a Contract Agreement to be prepared in the form annexed to the General Conditions of Contract together with such modifications as may be necessary within one month from the date of placement of the order. The contractor shall have to submit copies in sextuplets of all documents; correspondence, connected papers etc. as detailed in the above form of Contract Agreement together with the instrument of Contract Agreement prepared on Non-Judicial stamped paper of requisite denomination having five more copies made on plain paper all at his own cost. The successful tenderer shall have to submit three sets of such Contract Agreement duly executed, sealed, signed and witnessed for execution by the Trustees. The other three sets shall be completed in all respects but not signed. If the successful tenderer or tenderers are a partnership concern, they will have to get Agreement signed by all the partners or by the partner who is authorized to sign for and on behalf of the other partners.

The contractor shall also comply with the requirements of Security Deposit for the due fulfilment of the contract. The blank proforma of tender documents shall be supplied in sextuplets to the successful tenderer free of charge for preparing the documents of the aforesaid Contract Agreement.

The successful tenderer shall have to copy out and prepare the documents of the Contract Agreement neatly and correctly. The necessary amendments, corrections etc. (if any) have to be done at his own cost. The successful contractor shall be required to keep close co-ordination and liaison with the Traffic Department while executing the works. The Superintending Engineer in charge of the construction will direct the representatives of the contractor to maintain liaison with different sections of the other departments and the contractor must keep the concerned Superintending Engineer of the Civil Engineering Department informed and/or posted with the programme contemplated with other departments. The Superintending Engineer of the Civil Engineering Department shall be nodal authority in all these co-ordination and / or liaison and all programmes must be vetted by him. In cases

of exigencies, the contractor or his representatives may establish direct liaison/co-ordination but in all such case the Superintending Engineer should be informed promptly.

#### **42. EMPLOYMENT OF LOCAL RESOURCES:**

The contractor shall pay special attention to engage the maximum possible number of local Engineer, other technical personnel, office workers; labourers (skilled, semiskilled, unskilled) both at site and in office, details of such recruitment etc. shall be submitted to the Engineer periodically or as and when called for.

#### **43. CALCUTTA PORT TRUST:**

The expression “CALCUTTA PORT TRUST” appearing anywhere in the tender documents, shall be construed to read as “KOLKATA PORT TRUST”.

#### **44. CLARIFICATION OF BIDS:**

To assist in the examination and comparison of Tenders, the Employer may, at his discretion, ask any Tenderer for clarification of his Tender, including breakup/analysis of unit rates. The request for clarification and the response shall be in writing, but no change in the price or substance of the Tender shall be sought, offered, or permitted except as required to conform the correction of arithmetic errors discovered by the Employer in the evaluation of the Tenders.

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

Any effort by the Tenderer to influence the Employer’s Tender evaluation, Tender comparison or contract award decisions, may result in the rejection of his Tender.

#### **45. WORKMEN AND WAGES:**

The Contractor shall deliver, if ordered, a weekly return for all labour employed in writing in the requisite form as instructed by the Engineer or his representative.

The contractor shall have to engage sufficient number of technically qualified and skilled persons to supervise and execute the work and this should be mentioned in the “Schedule-T” of the Contract.

#### **46. RATE FOR PAYMENT AGAINST EXTRA ITEMS:**

For any unforeseen work not covered under the Bill of Quantities and Condition of Contract, depending on contingent situation at site, if required for successful completion of the work, extra items have to be carried out by the Contractor. If those items are already available in Trustees’ Schedule of rate, payment will be made on the basis of Trustees’ Schedule of rate; including surcharge in force at the time of acceptance of the tender, if any adopted by the Trustees with due regard to the accepted contractual percentage, if any, thereon, otherwise, if the rates are not available in the KoPT Schedule of Rates, then the Special Rates will be prepared as follows:-

(i) The rate of payment of work involving labour & material shall be fixed on the following basis.

a) Cost of materials consumed including transport and wastage, plus

b) Cost of labour actually engaged in the works, plus

c) Taxes and Duties as applicable, plus

d) 16% on the aggregate of (a) and (b) towards overhead, profit and cess.

(ii) For any work involving only labour, rate of payment shall be fixed on cost of labour actually engaged in the work plus 11% towards profit and cess.

(iii) For only supply of any material at site, rate of payment shall be fixed on actual cost of material plus transport, loading & unloading (if any) plus 11 % towards profit and cess.

**47. DISPARITY IN QUOTED RATE/AMOUNT.**

If there is any disparity between the quoted rate in percentage and the Tender Amount, the rate quoted in percentage shall prevail as the rate quoted by the tenderer and the Tender Amount shall be derived by adding/subtracting (as the case may be) this percentage with/from the Estimated Value put to tender. Similarly in case of disparity between the rate quoted in figures and in words, the rate quoted in words shall prevail.

**48. WORKING PERIOD:**

Normally the work will be carried out between 8 A.M. to 5 P.M. on the Trustees' working days only. However, the tenderer should note that he might be required to carry out the job on Sundays, holidays and after normal working hours and at night in addition to the normal working hours to expedite the progress of the work if permitted by Competent Authority. The tenderer should include in his rates the cost, if any, involved on those accounts.

**49. BANK GUARANTEE IN LIEU OF CASH SECURITY DEPOSIT:**

Security deposit shall be recovered from the On A/C. Bill as per Clause – 3.4 and 3.5 of General Conditions of Contract. However, Bank Guarantee may be considered in lieu of Cash Security Deposit. In that case, the Contractor shall have to submit to the Engineer a performance Bond in the form of an irrevocable guarantee from any Nationalized Bank at Kolkata in the proforma as given in the G.C.C. In this context Clause 3.6 of G.C.C. may be referred to.

**50. MEASURES AGAINST POLLUTION: -**

The contractor shall have to take proper measures against environmental pollution during execution of work as directed by the Engineer.

The contractor shall, abide by all the regulations and rules of Kolkata Port Trust and those that may be issued from time to time without any extra cost to the KoPT.

**51. DEFECT LIABILITY PERIOD:**

The defect liability period for the work is 1 (One) year from the date of completion. During this period, if any defect arises the contractor is bound to repair the same or take any other action as directed by the Engineer including replacement of the defective portion and redoing the same at his own cost within 7 days in case of repairing and 21 days in case of replacement and re-doing from receipt of such instruction failing which the work may be done by the Trustees' by some other agencies and the cost of which including 19 1/4 % departmental charges plus GST will be recovered from the security deposit or any other dues of the contractor.

**52. ERRORS IN THE B.O.Q :**

In case rate of particular item is printed erroneously in BOQ, the rate stated in the Schedule of rates will prevail over the rate misprinted in BOQ.

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## **7.0 RELEVANT INSTRUCTIONS REGARDING REFURBISHMENT WORK IN THE MAIN BUILDING**

**E-TENDER FOR " Thorough Refurbishment of KoPT Head Office(Main & Annexe) including interior beautification, civil, sanitary and plumbing, electrical, HVAC, fire fighting, ELV work at 15, Strand Road, Kolkata-700 001".**

### **Introduction:**

The renovation and refurbishment to be undertaken involve (but not limited to) several works including civil and structural demolition, retrofitting and construction; exterior and interior refurbishment and decoration works.

Besides the Main Building, Annexe Building and the IT Building the premise of 15. Strand Road, Kolkata 700001 houses a few more minor buildings and structures most of which will be removed in due course.

The Main Building is a beautifully decorated English colonial structure. This is also a Grade-I Heritage Building as per the Kolkata Municipal Corporation listing. The Contractor who would be awarded the work, therefore, has to take all initiatives for necessary statutory clearances and compliances from all relevant authorities for execution of any and all works. The Contractor should plan, monitor and control all such works of execution keeping in full view of these.

The Interior refurbishment and decoration including building services will be done in accordance with relevant designs, drawings, specifications, etc.

It may be relevant to be aware about some technique that can be called upon during the renovation & refurbishment work.

### **Re-pointing:**

Mortar bonds masonry together. As well as compressive strength, workability and flexural (bending) capacity are important. Mortar should be weaker than the masonry to accommodate movement in walls, or else cracks will occur. The earliest mortars were lime-based, being water resistant and flexible, but often weak and susceptible to frost action. Later cement mortars, with little or no lime, are strong and fast setting, but with poor and uncertain bonding.

Masonry cement is a pre-blended mixture of lime, Portland cement and other ingredients that can vary to suit conditions. When repointing

- Duplicate the original mortar mix
- Match the original mortar joint

In applying the mortar, ensure the adjacent bricks are wet and that the mortar dries slowly under the shade of a tarpaulin if it is sunny. Allow it to cure properly.

### **Mortar mixes:**

The right mortar mix for a masonry wall is very important, so that it moves with the wall. If the original mortar has fared well, the intent is to duplicate its mix. The following is a rough guide of mortars for different types of brick and stone.

### **Cleaning:**

Cleaning masonry is one of the most difficult jobs there is, particularly, when trying to remove paint. In general, there is no way to remove paint that will not also damage the surface of the masonry. The only solutions are to let the paint wear off over many years or repaint. Cleaning dirt off masonry is a

simpler and safer procedure, although dirt does not, generally harm masonry and, in fact, can provide attractive qualities of character and age. Cleaning methods include the following:

#### Water:

Cleaning masonry with water is the simplest, safest and least expensive method. It softens the dirt and rinses deposits from the surface. When water-cleaning, ensure the wall is watertight and mortar and caulking joints are sound, the least amount of water is used, and there are two to five weeks of dry weather before frost. The different techniques are as follows:

Hand-scrubbing - using a mild detergent and hosing down when complete. This is simple and effective.

Spraying - using regular water pressure to create a fine mist applied periodically over several hours and hosing down when complete.

Pressure Washing - using mechanized pressure. Great care should be taken on soft masonry and mortar, which can be destroyed if the pressure is too high and spray duration too long.

#### Chemical:

Chemicals are usually used to remove paint. It can, and usually does, destroy the surface of masonry. If contemplated, a test patch should be done to determine the extent of the damage.

The general approach to chemical cleaning involves wetting down the masonry, applying the chemical and rinsing off. The different cleaners are as follows:

Acid - usually hydrofluoric (HFI), is mixed in a maximum concentration of 5%, preferably 1%-3%. Acid should not be used to clean limestone, marble or sandstone.

Alkali - can be used on acid-sensitive masonry such as limestone, marble and glazed brick. It has a potassium hydroxide, ammonia or caustic soda base. Alkali should not be used on stone with a high iron content.

Paint removers - are often the only means of removing paint. Reaction with the masonry can vary, therefore a test patch should be conducted first.

#### Sandblasting:

Abrasive cleaning, usually sandblasting, is not acceptable for old and historic masonry. It removes the hard exterior surface of brick in particular, which then taken on moisture and rapidly deteriorates. Many older brick buildings which were sandblasted have subsequently been re-plastered as the brick became porous and crumbled. On stone, it can destroy details and texture.

#### Stucco:

##### Traditional Composition

Stucco was originally a lime and sand mix and applied in three coats to the wood lath. The first "scratch" coat bound the mix to the lath, the second coat built up the strength and the finish coat provided texture and colour. Animal hair and straw can sometimes be found in old stucco and were used as binders. In the early 1900's, Portland cement was added to the mix for additional strength. In conserving and restoring traditional stucco, the traditional composition and application should be revived.

Stucco is an ancient material going back many centuries. Initially, stucco was applied directly over masonry and later applied onto a wood or metal lath. When applied correctly, it will last indefinitely. Architecturally, over the past two hundred years stucco has had an uneven history. In the early to mid-1800s, it was used in a number of ways. One was to cover over rough field stone on a building elevation. The stucco was incised with lines to make the elevation appear as cut stone. This same technique was used also with lath and stucco on wood frame buildings.

#### Repair:

The most common damage to traditional stucco is cracking or falling away at the sides or edges. These can be repaired by removing to the lath base. Wetting the area and applying new coats of a mix as close as possible to the original. This should be left to dry slowly. Bulging is a more serious problem and usually denotes the stucco has come away from the lath. The stucco in the area of the bulge or the entire wall, should be removed and redone. A very difficult task is to have the new repair patch stucco match the old, particularly the colour. Two alternatives are available, either re-plaster the entire elevation, which can be costly, or paint.

A latex paint is recommended as it breathes and is less susceptible to peeling. Only latex paint formulated for stucco should be used.

#### Conservation Principles:

- Conserve traditional stucco walls. It is a rare and little used finish.
- When repairing, use the traditional ingredients and techniques, particularly the lime and sand mix.
- When repairing stucco walls, analyze the stucco ingredients which may be Portlandcement.
- Retain skilled craftsmen to restore stucco wall or build anew.

#### Wood Siding:

##### Introduction

Wood siding was one of the most common sidings for historic buildings. Wood is vulnerable to decay through moisture and damp and requires a finish of paint or stain.

Every effort should be made therefore, to preserve original wood siding, not only because it is authentic to the building but also because it's quality cannot be found. It is the deterioration of the finish that has frequently caused wood siding to be covered by insulbrick in the early 1900's and, more recently, by vinyl or aluminium siding. The main challenges of wood siding are, therefore, maintenance or choosing the right replacement.

#### Conservation Principles:

- Conserve original wood siding.
- If replacing, match the original profile.
- For new additions, select a wood siding that complements the style of the original historic building.
- Paint in period heritage colours.

#### Different Types of Wood Siding:

Wood is a traditional siding widely used in historic buildings and most appropriate for new additions. Wood siding includes tongue and groove, bevel, board and batten and shingle.

Some of their characteristics are as follows:

**Tongue and Groove** - This is a horizontal pine board with a 6" to 8" face locked together by a tongue and groove joint. The joints may be flush or, more commonly, V-grooved. Nailing is through the tongue, thereby eliminating surface nail heads. Finish is with paint or stain.

**Bevel** - This is a horizontal pine or cedar board with a 4" to 8" face, overlapped at the top. Nailing is surface. Finish is paint or stain.

**Board and Batten** - This consists of vertical 10" to 12" wide rough sawn or planed pine boards with 1/4" spaces between and 1"x2" battens over.

Traditionally, the batten edges were mitred. Paint is the traditional finish.

**Shingle** - Shingle siding comes in various profiles, including straight, scalloped and angled. It is often used selectively and decoratively at roof gables and as veranda handrails, with a paint finish.

#### Maintenance:



Original wood siding should be conserved whenever possible. With periodic maintenance and painting, it will last indefinitely. Some maintenance guidelines are as follows:

**Painting** - Painting is the most important maintenance item with wood siding. Ensure the paint work is in sound condition. For further information, refer to the Paint & Colour Guideline.

**Split Boards** - Pry split boards apart and coat the interior faces with an epoxy resin glue. When tacky, push the split together, sand and spot paint.

**Replacing Boards** - Cut out deteriorated sections only between the nearest studs, with circular saw and chisel. Using the removed section as a template, insert a new piece, nail and caulk end joints.

#### Choosing the Right Siding for an Addition:

The choice of siding for a new addition will be governed by many factors including quality, cost and ease of application. A key consideration is to ensure the siding complements the architectural style of the main building. If the main building is wood, it is best to match the original siding. If it is masonry, the wood siding should be complementary. Wood sidings vary in scale and character and traditionally suit different situations.

- Tongue and groove has the most refined appearance and is suitable for most building additions.
- Bevel edge is also a refined style but best suited for additions to humbler house type such as the Ontario Cottage.
- While board and batten may be found on some delightful early building, it is utilitarian in scale and should be chosen with care. It best suits additions to early stone and log houses that have a similar hand-crafted texture and scale. If it is selected, the batten edges should be mitered to provide a more finished appearance.

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## **8.0 TECHNICAL SPECIFICATIONS**

**E-tender for "Thorough Refurbishment of KoPT Head Office (Main & Annexe) including interior beautification, civil, sanitary and plumbing, electrical, HVAC, fire fighting, ELV work at 15, Strand Road, Kolkata-700 001"**

### **1.0 GENERAL SPECIFICATIONS**

1. These specifications are for work to be done, item to be supplied and materials to be used in the works as shown and defined on the drawings and herein to the satisfaction of Kolkata Port Trust and its designated entities
2. The workmanship is to be the best possible and of a high standard. The contractor shall take all steps immediately to make up deficiency if any noticed by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. Use must be made of special tradesmen in all aspects of the work and allowance must be made in the rates for the same.
3. The materials to be provided by the contractor shall be in accordance with the samples already got approval from KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. by the contractor and in conformity with specification and approved is list of manufacture and brand. The contractor shall produce all invoices, vouchers or receipts for any materials if called upon to do so by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.
4. A sample of all materials is to be submitted to Kolkata Port Trust and its designated entities for their approval before the contractor orders or delivers the material to the site. Samples together with their packing are to be provided free of charge by the contractor and should any materials be rejected they will be removed from the site at the contractor's expense. All samples will be retained by Kolkata Port Trust and its designated entities for comparison with materials which will be delivered at site. Also the contractor will be required to submit specimen finishes colours, Glass, etc., for approval of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. before proceeding with the works.
5. The contractor shall be responsible for providing and maintaining temporary coverage required for the protection of finished work. He is also to clean out all wood shavings, cut ends and other waste from all parts of the works before covering of infillings are constructed.
6. Contractor shall maintain uniform quality and consistency in workmanship throughout the execution of the work.
7. The contractor shall provide: All materials, labour, maintenance, fixing, carrying, cleaning, making good, etc. temporary canvas, plastics and any other requisite protection of the works, all the necessary equipments, labour and removal of the same at the completion of the work. KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES will be the sole judge in deciding as to the suitability of the tools or plants that may be brought on the works by the contractors, for the proper execution of the work.

8. The head masons and the supervisors on the works shall always carry with them a two feet rule, a measuring tape ( 15 mts. ) a spirit level, a plumb bob and a square and shall check that the work is being done according to the drawings and specifications. KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES or its representative will use any OR all measuring instruments / tools belonging to the Contractors in checking the works executed.
9. All measuring tapes shall be of steel and scaffolding and ladders that may be required for taking measurements shall be supplied by the Contractors.
10. The Contractor shall place at the disposal and the advice of himself and his firm, and their staff or Foreman of trades or other skilled person employed by him or them for the conduct of the works comprised in the Contract.
11. The Contractors are to take care in loading and unloading materials for the works, so that the roads and footpaths are not obstructed, damaged or the traffic impeded, and they must conform with the Police Regulations for carrying, loading and unloading all materials, plant, earth, debris, etc. to and from the buildings.
12. KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES shall have full powers and authority to issue such instructions as to the order of proceeding with or carrying out the work as he may deem necessary for the guidance of the Contractor and contractor shall be bound by such instructions of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES or any person authorized by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES to give such instructions.
13. The levels and measurements of the existing site, as shown in the drawings, are believed to be correct, but the Contractor should verify them for himself. No claim or allowance whatsoever will be entertained hereafter on account of any errors or omission in the description of the site turning out different from what was expected or shown in the drawings.
14. All floors, paving, staircase, etc. are to be scrubbed, all glasses to be cleaned on both sides of windows/curtain wall including its members, screens, doors, sky-lights, roof lights, etc., all gulley, gutters, pipe heads, etc. to be cleaned out and the premises left clean, perfect and water tight upon completion. However, a proper care needs to be taken during such cleaning works that the original finishing such as polishing, painting, anodizing, powder coating etc. are not scratched/damaged. In case of any such damage, the contractor shall have to reinstate the same as original as per the instructions KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES., without any cost to KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES
15. The Contractor shall work in co-ordination with all electrical, Air-Conditioning/HVAC, Fire Fighting/Detection, Security System and any other contractors working for other works involved in the project and provide all necessary assistance to them for successful completion of the project.
16. Any loss or damage caused due to fault or negligence on the part of Contractors labours, staff etc. during working in the premises will be made good by contractor at no extra cost or the damage and repair cost will be reimbursed in full to KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES

17. The contractor shall be responsible to provide and maintain temporary coverage required for the protection of finished work. He is also required to clean out all wood shavings; cut ends and other waste from all parts of the works before covering of infillings are constructed.
18. The contractor shall be responsible for providing and maintaining any boxing or other temporary coverage's required for the protection of dresses or finished work if left unprotected. He is also to clean out all shavings, cut ends and other waste from all parts of the work before coverings or infillings are constructed.
19. Templates, boxes and moulds shall be accurately set out and rigidly constructed so as to remain accurate during the time they are in use.
20. All unexposed surfaces of timber e.g. backing fillets, backs of door frames, cupboard framing, grounds, etc., are to be treated with two coats of approved timber preservative before fixing or covering.
21. All the contractors should consider the below mentioned points before quoting for the job.
  - (D) The expenses for paying Municipal Taxes for dumping materials on/off site, etc. to be borne by the contractor.
  - (E) Expenses of bearing ward officer's sanction, etc. To be borne by the contractor.
  - (F) Contractor should be responsible for the security of the materials on site.
  - (G) Contractor should be responsible for lifting of the material to the respective floors and expenses of the same should be borne by him.

## 2.0 General Specifications for Material & Workmanship

1. All materials brought on the site of works and meant to be used for the said project site, shall be as per the approved makes mentioned & shall be deposited with architect before the order for the materials is placed with the suppliers / manufacturers and should be prior approved from KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES before execution.
2. The workmanship is to be the best available and of a high standard, use must be made of a special tradesman in all aspects of the work and allowances must be made in the rates for so doing.
3. Workmanship: All works shall be to true line, level, plumb and square corners, edges and arises in all cases shall be unbroken and finished neat. Only first class workmanship will be accepted. Contractor shall maintain uniform quality and consistency in workmanship throughout the execution of the work.
4. Skilled head masons / tradesman for the respective trades shall be employed by the contractors to check the work in progress and to instruct and extract the right kind of workmanship from the men employed on the works. Instructions given to such Head masons by KOLKATA PORT TRUST

OR ITS AUTHORISED REPRESENTATIVES or his Representative shall be carried out with a view to get the work executed in a neat and workman like manner, according to the specifications.

5. KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES may order for the inspection of any finished work as he chooses and in a manner he decides, and the contractors shall bear all expenses in this connection. If the results of such inspection prove that the material used and/or workmanship is not of the standard required, the work will be rejected and removed forthwith and be replaced by works of the accepted standard of quality and material.
6. The contractor shall produce all invoices vouchers or receipts for any materials if called upon to do so by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.
7. Samples together with their packing are to be provided free of charge by the Contractor and should any materials be rejected, they will be removed from the site at the Contractor's expense. All samples will be retained KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. for comparison with materials, which will be required to submit specimen finishes of colours, fabrics, etc., for the approval of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES before proceeding with the work.

## 2.1 MATERIALS

### GENERAL:

The contractor under this contract commits himself to use best quality material and assume full responsibility for the quality of all material incorporated or brought for incorporation in the work. The work shall be executed in accordance with the best engineering practice and as per instruction of Architect. All materials shall confirm to respective Indians Standards.

Contractor must allow in his rates for all the wastage in all the materials.

#### i) **WATER**

Clean, fresh, potable water conforming to clause 5.4 of IS: 456-2000 shall be used for mixing all concrete, grout and mortar. This shall be free from any deleterious matter in solution or in suspension and be obtained from an approved source. Water sample should be got tested before use at Contractor's expense. The cost of water obtained from an approved source including the cost of transportation and storage of water at site shall be in the scope of contractor.

#### ii) **EARTH:**

For filling and terracing earth shall be free from all rubbish organic or vegetable growth including roots, seeds etc. and be approved by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. All clods shall be broken down. Black cotton clayey soil shall not be used for any filling work under any circumstances.

#### iii) **SAND:**

Sand shall be river or from any other source approved by the consulting Architect and shall be dry, clean, sharp, coarse and free from salt, earth and such other impurities. It shall be washed with clean water. The soluble contents shall not exceed 0.5% by weight if tested by settlement in water. For concrete work, the sand shall be coarser than for masonry work. Sand shall be used after screening as directed by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.

#### iv) **BRICKS:**

The bricks be 1ST class bricks and or uniform size (9" X 4.5" X 3"). Alternatively bricks as per IS: 1077-1976, Clues 5.1 the standard size of which is (19cm X 9cm X 9cm), and which shall be table moulded from approved kilns of quality approved by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES shall be used.

It shall be evenly burnt for getting brick which are sound, hard and with sharp edges and corners, and which shall be given the sound when strike with a metal. It shall be free from grit and other impurities such as lime, iron and deleterious salts. No brick with 24 hours immersion in water shall absorb more than 20% its weight.

**v) NEERU:**

Neeru shall be made out of the best quality of hydraulic lime slacked lime slacked with fresh water and heated. The lime shall be reduced to fine powder by grinding in a mortar mill with 160 turns.

**vi) COARSE AGGREGATE**

This shall be machine crushed from hard (granite) trap stone, grading of aggregate shall be within the limits to produce a dense mix. And shall conform to IS: 383 & IS: 515; mix will work into position without segregation and without excessive quantity of water being required it also shall be strong and durable and shall be free any clay films and other adherent/coating. It shall be washed with clean water if required by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.

This shall be well graded between the limit as specified in the items of the work and the grading tests shall be carried out. Aggregates shall be screened. If required by Architect to obtain proper proportion to his approval. The quality shall confirm to IS: 383-1970.

**vii) CEMENT:**

High strength ordinary Portland cement conferring to IS: 8112 – 1976. Twenty bags of the cement shall be taken to weight one tone. It shall be stored in a dry place or in a higher ground on water tight platform and shall be protected from moisture while in store. Cement which is moisture before use in any way will not be allowed to be used at all.

Cement of approved brand / make should be used. KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES may at his discretion reject the cement brought on site and which he may consider damaged or of doubtful quality for any reason whatsoever.

Record of the cement brought to the site and composed and balance in the work must be maintained properly,

**viii) SCAFFOLDING :**

Scaffolding shall consist of the sal wood bullies and necessary batons and planks. All members before installation shall be checked for their strength and stiffness and tide up properly. Steel scaffolding may be used as directed by Architect. When necessary, during the construction scaffolding and planks may be supported on/in the wall these shall be fixed and tied together. In case of finishing the work such as plastering, painting and distempering, no part of the scaffolding should touch the structure. Time from work shall be replaced from time to time with new timber as necessary and directed.

**ix) FORM WORK :**

All props. Planks, plates braces, tiles, bolts wedges etc. shall be provided and all form work shall be sufficiently strong and sound for the purposes. Form work shall be thoroughly cleaned with wire brush etc. after use oiled (clear/ fresh) or greased each time before use. Wooden form work shall be replaced from time to time with new timber as necessary and steel plate shall be got repaired from time to time. For all exposed work, all the forms of fresh and raw steel shall be used as per pattern given by consulting Architect for the various members of the structure. For wooden formwork, type of the timber shall be provided as specified in the bills of the quantities. All the form of work provided by the contractor shall be approved by Architect before use and the contractor shall be allowed to use approved form work only.

**x) REINFORCING STEEL :**

Steel work shall comply with the IS specification No. 1786-1985 and high strength reinforcement shall comply with IS specification 1786. The surface of reinforcement bars shall free from rust, Oil, Grease, Dirt, Paint or other deleterious matter.

**xi) MARBLE MOSAIC TILES :**

These tiles shall be of uniform size & thickness as mentioned in the BOQ & of approved make as directed. The chips incorporated in colour must be marble chips but before they are so incorporated. They must be washed and made free from all dust. The size of chips shall vary from 6 mm to 12 mm. The top layer of the marble mosaic tiles must be 8 to 10 mm thick. It must be made compact by machine vibrating before pressure is applied to the tile.

The sand cement shall be in proportion of one part cement to the three parts of sand. The mix must be completely affected in a maximum machine. The wetting process during the mix must be through in order to ensure maximum strength. The minimum time of curing is 7 days in pond and maturing period for 40 days is to be observed before tiles shall be permitted to leave the factory. The colour must be permanent and fast to the action of light, alkali and weather. It should be chemically inert and must not have any adverse chemical to cause such action lead and zinc compounds shall not be used. Pigments containing more than 2,5 % water or double matter, carbon pigments and minerals blacks, particularly of the ground coal type shall not be used.

**xii) TIMBER**

Timber shall be seasoned and of the best teak available or as specified in the schedule of quantities and of the best description. Perfectly dry well seasoned uniform in colour, free from sap wood and warps. There should not be any other defects and any appearance of rot. It shall not be placed in position covered in the wall or ground unless it has been approved by Architects. Timber shall be considered as well seasoned in case its moisture free.

**xiii) FLUSH DOORS :**

Flush doors shall be of kiln seasoned timber, of solid core construction with frame, lock rail and well balanced backings and shall be faced with high quality commercial or teak veneering as specified. The flush doors shall be specified make with 37 mm minimum, teak wood lipping glued and machine pressed along with core.

**xiv) HARD-BOARD**

Hardboards shall be of type specified.

**xv) INSULATING BOARD**

Insulating board tile for suspended ceilings and walls shall be as specified and approved and shall be fix according to manufacturer's instruction.

**xvi) ALUMINUM WINDOWS & DOORS**

Aluminium doors and windows shall be made from extruded aluminium sections and shall be specified make.

**xvii) HOLDFASTS FOR DOORS & WINDOWS**

Holdfasts for steel or timber frame shall be as per specified makes.

**xviii) NAILS ETC.**

Nails and staples shall be of hard drawn galvanised wire & shall be of specified makes.

**xix) BOLTS NUTS ETC.**

Bolts, Nuts, and holdfast, shall be of mild steel painted with Bitumen based paints as specified before fixing. The threads of bolts, nuts and washers shall be truly fitting and shall be painted with zinc chromate before fitting the nuts.

**xx) SCREWS :**

Screws shall be of make as approved and specified.

**xxi) PAINTS**

Filler, primer enamels, paints and various and external finishing application to cement plaster shall be of an approved best quality, property brand similar shall be bituminous based. Distemper shall be either water bound or oil bound as stated in the schedule of quantities. These shall be approved brand in sealed drums of the packages.

**xxii) GLASS**

The glass shall be of specified make and shall be free from, sparks or bubbles. In case of wire glass, the approved make glass shall be provided.

**xxiii) Putty** to steel casements shall be special rapid hardening obtained from the suppliers of the casements and be suitable for fixing to steel. The colour of the putty used shall be same as the colour of windows in all the cases. Putty to wood casements shall be made of whiting chalk and linseed oil and shall be of a proper consistency. It should not fall away from the glass and timber and should harden quickly. Cinder shall be added in making the putty on proportion as required and as directed. Putty shall be provided all around between the glass for full length and putting at intervals shall not be allowed to any case.

**xxiv) METAL LATHING**

Expanded metal Hi-rib weld mesh or similar metal lathing shall be an approved manufacture and of the quantity specified in the bills of quantities.

**xxv) MANHOLE COVERS**

Manhole cover should be light or heavy duty pattern with double seal as approved and as specified in the bills of Quantities.



**xxvi) RAIN WATER DOWN TAKE PIPES**

Rain water down takes pipes and all fittings shall be of make as approved with proper spigots and sockets, distance pieces etc and shall be fixed with stout staples or bottle. Jointing shall be done with rich cement mortar and tested for water tightness.

**1. SPECIAL MATERIALS**

If materials of a particular brand are specified in the schedule of quantities these shall be procured accordingly from approved manufactures. These shall include materials like bitumen, bituminous compounds, waterproofing compounds and hardening compounds, special paints acoustic and insulation boards and other finishing materials. The responsibility for the use of these materials lies with the contractor and he should avail himself of the necessary guarantee as may be required by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES and give the same to KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.

**2.2 Samples Approval and Works Inspection**

Schedule giving dates for the submission of samples shall be included in the Schedule described in the Progress Chart. Unless specifically authorized, all samples must be submitted for approval within thirty days of signing the

Contract and not less than forty five days before the date the particulars work involved is scheduled to begin. The Consultant shall check and approve such samples, with reasonable promptness only or conformity with the

design concept of the project and for compliance with the information in the Contract Documents. The work shall be in accordance with the approved samples.

All the works involving more than one process shall be subject to stage wise inspection by the owner/consultants. The contractor shall give due notice to consultant when each stage is ready. In default of such notice the consultant shall be entitled not to approve the completed item. No work shall be covered or put out of view without approval of consultant.

**2.3 Rejected Materials**

The contractor shall at his own cost remove all materials rejected by the Consultant and also the materials received at site without prior sanction of the Consultant.

**2.4 Owner Issue Materials**

The contractor shall satisfy himself at the time of taking delivery that the quality, quantity and freshness of owner issued materials are upto the specified standards. The contractor shall incorporate owner's issue materials only in the permanent works unless otherwise specified by the owner.

**2.5 Material Accounting**

For all the items of the works the computation of material consumption will be based as per standard engineering practice. Consultant's / Architects decision will be final in this case.

### **3.0 LIST OF I.S. CODE FOR THE REFERENCE**

Materials used shall confirm to appropriate standards specified by the Indian standards institution/Bureau of Indian standards and unless other wise specified, these standards will form a part of these specifications in particular.

**It is to clarify that the IS codes mentioned in the technical specifications & in the list given below are for reference only.**

The following or latest standards should be referred to-

#### **AGGREGATES**

IS :	383-1970	Coarse and fine aggregate from natural sources for concrete
IS :	515-1959	natural and manufactured aggregates for use in mass concrete
IS ;	1607-1960	Sand for plaster
IS :	2386	Methods of test for aggregate for concrete.
	Part-I-1963	Particle size and shape.
	Part-II-1963	Estimation of deleterious materials and organic impurities.
	Part-III-1963	Specific gravity, density, voids, absorption and bulking.
	Part-IV-1963	Mechanical properties.
	Part-V-1963	Soundness.
	Part-VI-1963	Measuring mortar making properties of fine aggregates.
	Part-VII-1963	Alkali aggregate reactivity.
	Part-VIII-1963	Péetrographique examinateur.

#### **CEMENT :**

IS :	8112-1976	High strength ordinary Portland cement.
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#### **CONCRETE :**

IS :	516-1959	Methods of tests for strength of concrete.
IS :	1199-1959	Methods of sampling and analysis of concrete.

#### **REINFORCEMENT CONCRETE :**

IS :	456-1978	Code of practice for plain and reinforcement concrete for general building Construction.
IS :	432	Mild steel and medium tensile steel bars and
IS :	1786-1985	High strength Deformed steel bars and wires for concrete reinforcement.

#### **BRICK MASONRY**

IS :	1077-1076	Common burnt clay building bricks.
IS :	2212-1962	Code for practice of brick work.

#### **DOORS & WINDOWS**

IS :	1003	Timber panelled and glazed shutters.
	Part-I-1977	Doors shutters.
	Part-II-1966	Windows and ventilators and shut.
IS:	1948-1961	Aluminium doors, windows and ventilators.
IS:	2191	Wooden flush door shutters (Cellular and hollow core type).
	Part-I-1973	Plywood face panels.

IS: 2202 Part-I-1991 Wooden flush door BWP type (solid core).

### **FLOOR AND FLOOR FINISHING**

IS : 777-1970 Glazed Earthenware tiles.  
 IS : 1443-1972 Code of practice for laying and finishing of cement concrete (Flooring tiles)  
 IS : 3365-1956 Floor polishing machines.

### **WATER SUPPLY PIPES AND DRAINAGE**

IS : 651-1971 Specification for salt glazed stoneware pipes and fittings.  
 IS : 778-1971 Gunmetal gate, globe and check valves for general purpose.  
 IS : 780-1969 Sluice valves for water work purpose.  
 IS : 781-1977 Cast copper alloy screw-down bib taps and stop valves for water service  
 IS : 172-1971 Code of basic requirements for water supply, drainage and sanitation.  
 IS : 1726- Cast iron manhole covers and frames.  
     Part-I-1974 General requirements.  
     Part-IV-1974 Specific requirements for MD circular type.  
     Part-V-1974 Specific requirements for MD rectangular type  
     Part-VI-1974 Specific requirements for LD rectangular type  
     Sec 1 : Single seal  
     Sec 2 : Double seal  
     Part-VII-1974 Specific requirements for LD square type  
     Sec 1 : Single seal  
     Sec 2 : Double seal  
 IS : 1742-1972 Code of practice for doubling drainage.  
 IS : 2065-1972 Code of practice for water supply in buildings.  
     IS : 2556- Vitreous sanitary appliances (Vitreous Chin)  
     Part-I-1974 General requirements.  
     Part-II-1973 Specific requirements of wash down water closets.  
     Part-III-1972 Specific requirements of squatting pans.  
     Part-IV-1974 Specific requirements of wash basins.  
     Part-VIII-XV Wash down water-closets, bibes foot rests, shower-rose, foot traps for  
                     squatting pans, integrated squatting pans. Universal water closets.  
 IS : 2963-1964 Non-ferrous waste fittings for wash basins and sinks.  
 IS : 311-1965 Waste plug and its accessories for sinks and wash basins.  
 IS : 4127-1967 Code of practice for laying of glazed stoneware pipes.  
 IS : 5531 Specification of cast iron special for asbestos cement for water, gas and  
             Sewage

### **STRUCTURAL STEEL:**

IS: 2062-1992 Steel for general structural purpose.

### **MISCELLANEOUS :**

IS : 1020-1963 Conversion tables for ordinary use.

#### **4.0 Technical Specifications for Civil Works**

The technical specifications should confirm to latest CPWD specifications available in the market.

##### **1. Demolition Work**

The demolition work should be started with propping up of the surrounding area and removing the false ceiling and other supports fixed onto the wall. The wall shall be gently removed by using chisel and hammer without disturbing the existing infrastructure and structure. This material shall be packed in gunny/plastic bags and to be cleared from the site within 24 hours.

All RCC works should be demolished by concrete cutting machine or Vibrating Hammers. Internal reinforcement should be cut by Gas welding.

Cutting and chipping of existing floor: The existing floor shall be cut only by mechanical cutters and then chipped gently by the chisel. The operation shall be done after taking prior permission from the client / neighbor.

##### **2. Anti termite Treatment**

The bottom surface and sides (up to a height of 30 cm from the bottom) of the excavations made for column pits, trenches and basements shall be treated with the approved make anti termite compound at 5 litres / sq. metre of surface area. After the column foundations, wall foundations and retaining walls of the basement come up, the backfill in immediate contact with the foundation structure shall be treated with the chemical emulsion at the rate of 15 litres / sq. metre of the vertical surface of the sub-structure for each side. The earth is usually refilled in layers and the treatment shall be carried out in similar stages. The chemical emulsion shall be directed towards the concrete or masonry surfaces of the columns and walls so that the earth in contact with these surfaces is well treated with the chemical. After the earth filling is completed in the plinth area and before the dry rubble packing or sub grade is laid, the entire surface of the filled earth shall be treated with the chemical emulsion at the rate of the 5 litres / sq. metre.

##### **3. Excavation**

The excavation shall be done to the lines / levels defined and to the correct size of foundation concrete. This shall also include temporary piling or sheathing, bracing and shoring used to carry out excavation works without interruptions. Cables, wires, dust lines, water supply and drainages pipe encountered within the area of excavation or in the reasonable distance of excavation should be properly protected & taken care-of. The furnishing, creating and maintaining of substantial barricades around excavation area, "Red" lamps (in the night) & notice boards should be maintained to ensure safety. The contractor shall immediately after beginning of excavation, put proper fencing all around the excavated pit as directed by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES at his own expenses and shall keep the same till all plinth work is completed. Contractor should get the excavation work inspected and approved by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES before any further works in excavation areas allowed to commence.

The contractor must take every precaution to maintain the earth surrounding the site in perfectly safe condition for the excavation, No excavated material or any other heavy load will be allowed to be imposed on the ground adjacent to any excavation. The contractor should carry-out the excavation work to the level space and dimensions as shown or figured on the drawings or as required by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES to receive the concrete work.

The term excavation as herein used shall include excavations, removal and transportation of the excavated materials to the dump areas, refilling the excavated earth in trenches. It shall also include dumping of excavated materials in regular heaps & provide natural drainage. As a rule all softer materials shall be laid along the centre of the heaps & the harder and more weather resisting materials forming the casing on the sides and the top. It is intended that the contractor shall use heavy road rollers for consolidation with water sprinkling as directed, where consolidation is specified

#### **4. Dewatering**

Where water has entered within excavated area due to stream flow, seepage, springs, rain or any other cause, the contractor shall take adequate measures such as bailing, pumping, construction of diversion channels, drainage channels, bunds and other necessary works, to keep the foundation trenches/pits dry and to keep the green concrete/masonry against damage by erosion or sudden rise of water level. The method to be adopted in this regard and other details thereof shall be left to choice of the contractor but subject to the approval of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. Approval of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES shall, however, not relieve the contractor of his responsibility for the adequacy of de-watering and protection arrangements and the safety of the works. Pumping from inside of any foundation enclosure shall be done in such a manner as to preclude the possibility for the movement of water through any fresh placed concrete. Pumping shall be permitted during placing of concrete or any period of at least 24 hours thereafter, provided it is done from a suitable sump separated from the concrete work by a watertight wall or similar means. At the discretion of the contractor and at his cost, cement grouting or other approved methods may be used to prevent or reduce seepage and to protect the excavation area. The contractor shall take all precautions in diverting channels and in discharging the drained water so as not to cause damage to the works or to adjoining property.

#### **5. Back filling**

To the extent available, selected surpluses soil from the excavation shall be used as backfill. Fill material shall be free from clods, salts, sulphates, organic or other foreign materials. All clods of earth shall be broken or removed.

If any selected fill is required to be borrowed, the contractor shall make arrangement for bringing the material from outside. The material sources shall be subject to the prior approval of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. Use of surplus selected soil from excavated material for backfilling can be permitted only up to the original ground level. Above this level, only selected borrowed material shall be used.

## 6. Rubble Soling

Rubble used for Soling should be Dry type stone size varying to 150mm to 230 mm. The rubble should be spread evenly on levelled back filling soil / Hard Murum. Watering should be done after laying down the rubble soling for sub base soil. Proper compaction & ramming to be done on Rubble as per the level mentioned in the drawings. After consolidation all hollows and interstices shall be filled up with quarry spoils, stone chips etc. and blending with stone grit, watering & consolidating by long hammer should be done.

### RUBBLE STONE :

The rubble stone shall be hard, tough, sound & durable with close texture and should be free from cracks. Weathered and disintegrated stones shall be rejected. The stone for soling shall be of height equal to the thickness of soling with a tolerance of 10mm.

## 7. Concrete

The ordinary concrete mix shall generally be specified by volume. For cement, which normally comes in bags and used by weight, volume shall be worked out taking 50kg of cement as 0.035 cubic metre in volume, shaking ramming or hammering shall not be done. Proportioning of sand shall be used as per its dry volume and in case it is damp, allowance for bulking shall be made as per IS : 2386 (Part III). Ingredients required for ordinary concrete containing one kg bag of cement for different proportions of mix shall be as given in Following Table:

Grade of concrete	Total qty of dry aggregates by volume per 50 kg cement ( to be taken as the sum of individual volume of fine & coarse aggregates (max)	Proportion of fine aggregate to coarse aggregate.	Quantity of water per 50 Kg of cement <b>max</b> **
M10	300 Ltrs	Generally 1:2 for fine aggregates to coarse aggregates by volume but subject to upper limit of 1:1.5 and lower limit of 1:2.5	34 Ltrs
M15	220 Ltrs	1 : 3 : 6	32 Ltrs
M20	160 Ltrs	1 : 1.5 : 3	30 Ltrs
M25	100 Ltrs	1 : 1 : 2	27 Ltrs

- \* The proportions of the aggregate shall be adjusted from upper limit to lower limit progressively as the grading of the fine aggregates becomes finer and the maximum size of coarse aggregates becomes larger.
- \*\* The amount of water should be kept minimum required for proper workability. The quantity given in col.4 is not to be exceeded.

**For all works concrete shall be mixed in a mechanical mixer, which along with other accessories shall be kept in first class working condition and so maintained throughout the construction. Mixing shall be continued till materials are uniformly distributed and a uniform colour of the entire mass is obtained and each individual particle of the coarse aggregate shows a complete coating of mortar containing its proportionate amount of cement. In no case shall the mixing be done for less than 2 minutes after putting all ingredients into the mixer. Mixers, which have been out of use for more than 30 minutes, shall be thoroughly cleared before putting in a new batch. Unless otherwise agreed to by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES, the first batch of concrete from the mixer shall contain only two thirds of the normal quantity of coarse aggregate. The mixing plant shall be thoroughly cleaned before changing from one type of cement to another.**

Vibrators to be used at the time of concreting as per the required needle of dia like 25mm, 50 mm etc. Immediately after compaction, concrete shall be protected against harmful effect of weather, including rain, running water, shocks, vibration, traffic, rapid temperature changes and premature drying out. It shall be covered with wet sacking, Hessian or other similar absorbent material approved by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES soon after the initial set, and shall be kept continuously wet for a period of not less than 21 days from the date of placement. Masonry work over the foundation concrete may be started after 48 hours of its laying but curing of concrete shall be continued for a minimum period of 21 days. If necessary, chemical curing may be done without any extra cost. The cost shall be borne by the contractor.

Works strength tests shall be made in accordance with IS 516. Each test shall be conducted on ten specimens, five of which shall be tested at seven days and the remaining five at 28 days. The cubes shall be made at the rate of one set for every 50 cubic meter of concrete or a part thereof for each grade. However, if in each grade concreting done in a day is less than 15 cubic metre, the number of cubes can be reduced to 6 with the specific permission of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.

Similar works tests shall be carried out whenever the quality and grading of materials is changed irrespective of the quantity of concrete poured. The number of specimens may be suitably increased as deemed necessary by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES, when procedure of tests given above reveals a poor quality of concrete and in other special cases.

All work shall be carried out under the supervision of a qualified and competent Engineer who will supervise proportioning, placing and compacting of concrete at all stages.

All necessary labour, materials, equipment, etc. for sampling, preparing test cubes, curing, etc., shall be provided by the Contractor. Testing of materials and concrete may be arranged by

KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES in an approved laboratory at the cost of the contractor.

## **8. Reinforcement**

All reinforcing bars shall be accurately placed in the exact position shown as per the drawings, and shall be securely held in position during placing of concrete by annealed binding wire not less than 1 mm in size and conforming to IS:280, and by using stays, blocks or metal chairs, spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals. Bars will not be allowed to sag between supports nor displaced during concreting or any other operation over the work. All devices used for positioning shall be of non-corrodible material. Wooden and metal supports will not extend to the surface of concrete, except where shown on the drawings and the same shall be removed before the concreting starts. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing will not be allowed. Pieces of broken stone, brick or wooden blocks shall not be used. Layers of bars shall be separated by spacer bars, pre-cast mortar blocks or other approved devices.

Reinforcement after being placed in position shall be maintained in a clear condition until completely imbedded in concrete. Special care shall be exercised to prevent any displacement of reinforcement in concrete already placed.

To protect reinforcement from corrosion, concrete cover shall be provided as indicated in the drawings. All bars protruding from concrete to which other bars are to be spliced and which are likely to be exposed for an indefinite period shall be protected by a thick coat of neat cement grout.

In the case of columns and walls, vertical bars shall be kept in normal position with timber templates having slots accurately cut in for bar position. Such templates shall be removed after the concreting has progressed upto a level just below them.

Bars crossing each other, where required, shall be secured by annealed binding wire of size not less than 1 mm and conforming to IS:280 in such a manner that they do not slip over each other at the time of fixing and concreting.

As far as possible, bars of full length shall be used. In case this is not possible, overlapping of bars shall be done as directed by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. Overlapped bars should not touch each other, but be kept apart by 25 mm or 1.25 times the maximum size of the coarse aggregate in the concrete between them, whichever is greater. Where this is not feasible, overlapping bars shall be bound with annealed steel wire, not less than 1 mm thickness twisted tight. The overlaps shall be staggered for different bars and located at points along the span where shear & bending moment is maximum. Bars of less than 3.0 M length shall not be used as main reinforcement.

## **9. FORMWORK – SHUTTERING**

All centering, formwork and temporary works shall be constructed according to drawings and specifications prepared by the Contractor and approved by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. The design criteria and loading for these works shall be as per the relevant specifications, listed below:

- (a) Before placing concrete the surface of all forms shall be coated with suitable non-staining form releasing agents such as raw linseed oil so as to prevent adhesion of concrete and to facilitate removal of forms.



- (b) The form releasing agent shall cover the forms fully and evenly without excess over drip. Care shall be taken to prevent form releasing agents from getting on the surface of the construction joints and on reinforcement bars. Special care shall be taken to thoroughly cover form strips for narrow grooves, so as to prevent swelling of the forms and the consequent damage to concrete prior to or during removal of forms.
  - (c) Immediately before concrete is placed, care shall be taken to see that all forms are in proper alignment and the supports and fixtures are properly secured and tightened.  
Where forms for continuous surfaces are placed in successive units, the forms shall lap and fit tightly over the completed surface so as to prevent leakage of cement slurry from the fresh concrete and to maintain accurate alignment of surface.
    - 1.a) Forms shall be left in place until their removal is authorized and shall then be removed with care so as to avoid injury to concrete.
    - 1.b) Removal of forms shall never be started until the concrete is thoroughly set and adequately hardened such that it can carry its own weight, besides the live load which is likely to come on the work during construction. The length of time for which the forms shall remain in place shall be decided by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES, with reference to weather conditions, shape and position of the structure or structural member and nature and amount of dead and live loads.
    - 1.c) In normal circumstances and where ordinary Portland cement is used, forms can be allowed to be struck as under:
 

1) Beam sides, walls, unloaded columns	- after 24 hours
2) Slabs and arches (props left under)	- after 4 days
3) Props to slabs and arches	- after 14 days
4) Beam soffit (props left under)	- after 8 days
5) Props to beams	- after 21 days
6) Lean concrete (sides)	- after 2 days
- Note: Time shall be measured from last batch concreted in respect to the structural member under consideration.

In no case shall forms be removed until there is an assurance that removal can be accomplished without damaging the concrete surface. Heavy loads shall not be permitted till the concrete has reached its design strength. The forms shall be removed with great caution and without jerking the structure.

## 10. **BRICK WORK**

Bricks shall be of regular and uniform size, shape and colour, uniformly well burnt throughout but not over burnt. They shall have plane rectangular faces with parallel sides and sharp straight and right angled edges. They shall be free from cracks or other flaws. They shall have a frog of 10 mm depth on one of their flat faces.

They shall give a clear metallic sound when struck. They shall show a fine grained, uniform homogeneous and dense texture on fracture and be free from lumps of lime, laminations, cracks, air holes, soluble salts causing efflorescence or other defects which may in any way impair their strength, durability, appearance or usefulness for the purpose intended. They shall not have any parts under-burnt. They shall not break when thrown on the ground on their flat face in a saturated condition from a height of 60 cm.

**Size of bricks**

- (a) The size of the conventional bricks shall be 250mm x 125mm x 75mm. Only bricks of one standard size, shall be used on one work unless specially permitted by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. The following tolerances are permitted in the standard conventional size adopted on a particular work. Length – plus or minus 3 mm (about 1/8”) Breadth – plus or minus 1.5 mm (about 1/16”) Depth - plus or minus 1.5 mm (about 1/16”)
- (b) When metric bricks are used they shall comply with I.S. : 1077 – 1976

**Absorption**

After immersion in water, absorption by weight shall not exceed 20% of the dry weight of the brick as per IS: 1077-1976

**Mortars**

Cement and sand shall be mixed in specified proportions mentioned in the BOQ. Cement shall be proportioned by only weight, by taking its unit weight as 1440 kg / cubic meter and the same shall be proportioned by volume after making due allowance for bulking. The required quantity of water shall then be added and the mortar mixed to produce workable consistency.

The mixing shall be done intimately in a mechanical mixer unless only in special cases where hand-mixing is permitted by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. If hand mixing is done, the operation shall be carried out on a clean water tight platform and cement and sand shall be first mixed dry in the required proportion to obtain a uniform colour and then the mortar shall be mixed for at least two minutes after addition of water. The mortar so prepared shall be used within 30 minutes of adding water. Only such quantity of mortar shall be prepared as can be used within 30 minutes. The mortar remaining unused or mortar, which has partially hardened or is otherwise damaged, shall not be re-tempered or remixed. It shall be destroyed or thrown away.

**Soaking of Bricks**

Bricks shall be soaked in water for a minimum period of one hour before use so that they become saturated and do not absorb water from the mortar. Soaked bricks shall be removed from the tank sufficiently in advance so that they become skin dry at the time of laying. Such soaked bricks shall be stacked on a clean place. Care should be taken so that they do not get spoiled by dirt, earth, etc.

**Laying of Bricks**

All brick shall be laid in English bond and true to line, plumb, level and joints. The bricks used on the face shall be of uniform size and with true rectangular face. Brick shall be laid with frogs up, on a full bed of mortar. While laying, bricks shall be slightly pressed so that the mortar gets into all the surface joints of bricks to ensure proper adhesion. All bricks shall be properly flushed and packed with mortar so that no hollow spaces are left.

Before laying bricks in foundation, a layer of not less than 12 mm of mortar shall be spread to make the surface on which the brickwork will be laid even. Immediately thereafter, the first course of bricks shall be laid.

The brickwork shall be built in uniform layers, corners and other advanced work shall be raked back. Brickwork shall be done true to plumb. During construction, No part of it shall rise more

than half a meter above the general construction level, to avoid unequal settlement and improper joining. Under ideal conditions, the height of brick works constructed shall not exceed a meter in a day.

Brick works should be finished in staggered manner where ever future extensions are contemplated.

### **Joints**

The thickness of joints shall not exceed 10 mm and this thickness shall be uniform throughout.

### **Joining with existing structure**

When fresh masonry is to be placed against existing surfaces of structures, the latter shall be cleaned of all loose material, roughened and wetted as directed by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES so as to have a good bond with the new work.

### **Curing**

Recently finished work shall be protected from rain by suitable coverings. Masonry work in cement or composite mortar shall be kept constantly moist on all faces for a minimum period of seven days. The top of the masonry work shall be left flooded with water at the close of the day during hot weather. All finished or partly completed work shall be covered or wetted in such manner as will prevent rapid drying of the brick work.

### **Scaffolding**

The scaffolding shall be sound and strong to withstand all loads likely to come upon it and will be double or single as is warranted for the particular work. The holes, which provide resting space for horizontal members, shall not be left in masonry under one meter in width or immediately nearer the skew backs of arches. The holes left in the masonry work for supporting the scaffolding shall be filled and made good with 1:4:8 cement concrete.

## **11. COURSED RUBBLE MASONRY STONES**

All stones to be used shall be of trap, basalt, granite, quartzite or any other approved quality and it shall be sound, hard, free from voids / flaws / cracks etc. Use of stones with stained surfaces shall not be allowed. In case the stains can be washed off, the stone usage shall be allowed only after cleaning. Unsound, weathered and disintegrated stones shall be rejected outright, stones shall be such that they will not

absorb water more than 1% by weight after being kept under water for 24 hours minimum size of stone shall not be less than 15 cm on any face. The quality and physical properties of stone shall satisfy the requirements laid down in relevant I.S. Codes.

Stones are to be wetted before use. All stones, chips, etc. shall be cleaned and freed from dust or mud to ensure a good bond with mortar and shall be wetted before being laid for this purpose. The stones that are immediately to be used shall be kept sprinkled with good clean water. There shall be good collection of stones within easy reach of mason to enable proper selection of

stones for the individual locations. While laying, the stones shall be kept continuously replenished.

**Dressing of stones:** The stones shall be set in the work as received from quarry, after merely knocking off weak corners and edges with a mason's hammer and after clearing scales of foreign matter if any.

**Laying:** The stones shall be laid carefully on their natural flat bed so as to have minimum joints as far as possible. They shall be solidly bedded in mortar with close joints. No joint shall exceed 40 mm nor shall it be less than 12 mm in thickness. Chips of stones shall be wedged into the works, wherever necessary to avoid thick beds or joints of mortar and to give masonry of maximum density.

No dry work or hollow space shall be allowed. Every stone, whether large or small shall be set flush in mortar, shaken and hammered down by a mallet to sink into it and to bring out all excess water and locked air inside eds. The smaller stones used in the filling shall be carefully selected to fit snugly into the interstices between the large ones.

Mortar to be added to fill the intervening spaces shall be well worked by trowel and steel bar. Disturbing the mortar during the period of setting shall be avoided. If it is necessary to move a stone after it has been placed in position, it should be lifted clearly and then placed. Care shall always be taken to see that the joints in already laid masonry are not disturbed while handling or moving stones.

Mortar joints of top and side of a layer shall be pressed and brushed over by a coir brush as soon as masonry is laid, so as not to leave any loose mortar. No traffic should be allowed on freshly laid masonry.

**Bonding and Bond Stones:** For ensuring good bond, masonry shall be finished uneven at the end of the day's work or at top surface of the work done in each shift. No mortar shall be allowed to remain over the masonry at its top, at the close of the day's work. All mortar on the top shall be removed.

The work shall be built square, plumb curved or bettered as may be required by the design. It shall be carried to in a workman like manner with the laid of moulds, templates, centre etc that will be provided by the contractor at no extra cost.

**Quantity of mortar:** Every effort shall be made to see that proper quantity of mortar is used in the masonry. The quantity of mortar will be 30-40 percent of the masonry laid.

**Curing of Masonry:** All masonry shall be kept well watered on the top and sides for a period of minimum 14 days from the date of construction. The top of all masonry is to be kept well watered, watering should be done carefully, so as not to disturb or wash out mortar. Where watering is done by manual labour, night shift, if necessary, shall be arranged for constant watering. Masonry shall on no account be allowed to present a dry surface during curing period. Should the mortar perish, i.e. become dry through neglect of watering such work shall be demolished and rebuilt at no extra cost. If the curing arrangements of the contractor are not satisfactory, KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES may in his discretion engage labour and provide material, equipment for curing and recover expenditure thus involved from the contractor.

**Weak or Defective Masonry:** if any portion of masonry is found to be defective either in materials or in construction, it shall be removed and rebuilt by the contractor without extra cost.

In the alternative at the discretion of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES, such masonry shall be sufficiently grouted at contractor's cost in a manner specified by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES and to his entire satisfaction.

**Height of Course:** The stones shall be laid in horizontal courses not less than 200 mm (8 inches) in height. The stones in each course shall be of equal height and all courses of the same height unless otherwise specified but no courses shall be thicker than any course below it.

**Dressing:** The face stones shall be squared on all joints and beds. The beds shall be hammered or chisel dressed, true and square for at least 75 mm (3 inches) back from the face and the joints for at least 40 mm (1.5 inches). The face of the stones shall be hammer-dressed and bushing shall not project more than 30 mm (1.25").

**Thickness of Joints:** No pinning will be allowed on the face. All side joints shall be vertical and bed horizontal and no joint shall be more than 10 mm in thickness.

**Bond stones and headers:** In walls thicker than 1.2 m (4 ft.) vertical header bond stones shall be inserted every one and half meter apart in each direction. They shall be at least 500 sq.cm. in face area and shall have a tail of at least 0.6m. They shall run through the height of two courses. Their position shall be staggered in the successive course, so that any two courses shall be bonded with such vertical bond stones. Through stones shall be inserted about every one and half meter in every course and shall run right through the wall when not more than 600 mm thick when the work is more than 600 mm a line of 2 or more headers shall be laid from face to back, which shall have a length of at least thrice the height of each course, and face area not less than 500 sq.cm.

Break of joint Stones shall break joint by at least  $\frac{1}{2}$  the height of the course

## POINTING

The joints in masonry to be pointed shall be raked square for a minimum depth of 4 cm within 24 hours of laying the masonry. In special circumstances; this period may be relaxed to 48 hours. The refilling and pointing shall be done within 3 days of raking of the joints so as to ensure good adhesion between the two mortars. If the raking is not done within the period specified above, KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES may engage labour for raking joints and recover the cost thereof from the contractor.

**Flush Pointing:** The joints shall be filled with cement mortar which shall be thoroughly rammed and caulked into the joints. No lines shall be pressed on the joint but the joints shall instead be merely rubbed smooth with the 'Nayala' as soon as the mortar has begun to set. The extra mortar on the edge shall be carefully scraped off to give a neat appearance. Pointing shall be carried out as rapidly as possible and not touched again after the mortar has once begun to set.

**Pressed Pointing:** The joint shall be pressed with special trowel called 'Nayala' as soon as the mortar has begun to set and the hollow spaces refilled with fresh mortar to consolidate the joints shall be rubbed with Nayalas till they are about 5 mm deep into the masonry. After rubbing, the extra mortar of the edges of the joint shall be rubbed with Nayalas till they are about 5 mm deep into the masonry. After rubbing, the extra mortar of the edges of the joint shall be carefully scraped off with the nose of the trowel to give a neat finish.

## **WEEP HOLES**

Weep holes of suitable sizes as directed by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES shall be provided in the walls as and where directed through the full width of masonry. The sides of weep holes shall be formed as uniform as possible, by using flat faces of stones around the holes. The holes shall have the bedding at the specified grade. The opening of each weep hole on the file side shall be covered by graded materials by the seeping water. For payment calculations, no deduction will be made for the holes in calculating the volume of masonry for payment, nor any extra payment be made for providing the hole or providing and laying the graded filter material as stated herein.

## **12. PLASTERING**

All joints in the face work that is to be plastered shall be raked out to depth equal to not less than the width of the joints or as directed by the Engineer. The raking shall be done taking care not to allow by chipping of masonry. In new work the raking out shall be done when the mortar in the joints is still green.

Smooth surfaces of concrete, old plaster, etc. must be suitably roughened to provide necessary bond for the plaster. All dirt, soot, oil paint or any other material that might interface with satisfactory bond shall be removed. In the case of stone masonry, scrubbing on the walls to receive the plaster shall not be more than 12 mm (1 ½") & Mix of Mortar should be 1 : 4. The surface to be plastered shall be cleaned and scrubbed with fresh water and kept wet for 6 hours prior to plastering. It shall be kept damp during the progress of the work. The plastering shall be commenced unless the Engineer passes the preparatory work in writing.

In all plaster work the mortar shall be firmly applied with somewhat more than the required thickness and well pressed into the joints and on the surface and rubbed and levelled with a flat wooden rule to give required thickness. Long straight edges shall be freely used to give perfectly plane and even surface. All corners must be finished to their true angles or rounded as directed by the Engineer. The surface shall be finished to plane or curved surface as shown on the plan or directed by the Engineer, and shall present a neat appearance. The mortar shall adhere to the masonry surface intimately when set and there should be no hollow sound when struck. Cement plastering should be done in squares or strips as directed. Plastering shall be done from top downward.

### **Plastering to Ceiling**

Projecting burns of mortar formed due to the gaps at joints in shuttering shall be removed. The surface shall be scrubbed clean with wire brushes. In addition concrete surface shall be poke marked with a pointed tool at spacing of not more than 50 mm centre to centre, the pokes being made not less than 3 mm deep, to ensure a proper key for the plaster. The mortar shall be washed off and surface cleaned of all oil, grease etc., and well wetted before the plaster is applied.

### **Base Coat**

The first coat of plaster shall be of cement mortar of 1:4 mix and applied evenly. The finished thickness of the first coat shall be 12 mm for brick masonry or concrete surface and 14 mm for rubble stone masonry. The plaster shall be laid by throwing the mortar (by using a strong whipping motion) on the prepared surface with a trowel in a uniform layer, and pressed to form a good bond. The surface shall be roughened.

### **Second Coat**

The second coat shall be the rough coat mixture consisting of aggregate, which may vary in size from 5 to 8 mm and may consist of specially graded mixture mixed with fine sand and cement. The proportion of cement to sand and aggregate shall be 1:1.5:3. It shall be flung upon the first coat with large trowels to form an even protective coat. The second coat must be applied while the first coat is still soft and plastic. The work shall generally conform to clause 16.5 of IS : 166. The thickness of the coat shall be about 12 mm.

### **Scaffolding**

Scaffolding shall be double and shall be erected with steel sections or pipes of adequate strength so as to be safe for construction operations. The contractor shall take all measures to ensure the safety of the work and working people. Any instructions of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES in this respect shall also be complied with. The contractor shall be entirely responsible for any damage to property or injury to persons resulting from ill erected scaffolding, defective ladders and materials or otherwise arising out of his default in this respect. Proper scaffolding shall be provided to allow easy approach to every part of the work. Overhead work shall not be allowed.

## **13. WATERPROOFING**

The treatment shall be laid directly over the R.C.C. Slab, the detailed operations are as follows:

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After the RCC slab has been cleaned, two coats of epoxy based waterproofing paint shall be applied as per the manufacturers' specifications which penetrates in the minutes of crevices and fill up all the porosity in the structure. In case of construction joints between different R.C.C. members, the chemicals shall be injected at joints to make them monolithic. The treatment will be extended upto 300 mm height of parapet walls also.

A layer consisting of concrete 1:2:4 admixed with water proofing chemicals shall be laid to necessary gradient for proper flow of water towards the drain. The treatment will be extended upto 300 mm height of parapet walls also. The average thickness of this concrete shall be 125 mm with a minimum thickness of 75 mm at the drain.

After doing the proper curing for about 3 days, one additional slurry coat consisting of cement slurry mixed with water proofing chemicals should be provided to fill in the joints.

The top is then finished as per the specification of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.

The proportion of the chemicals to be used in respect of ordinary Portland cement shall be 1% by weight i.e. 1 Kg. Of chemicals shall be mixed with 100 Kg. Ordinary cement and the quantity of cement used shall be a minimum of 5 bags per 9.29 sq.m. of the area treated.

## **EXTERNAL TREATMENT TO THE UNDERGROUND WATER TANK STRUCTURE.**

The underground structure shall be treated with the following treatment during the initial state of construction to ensure 100% water tightness.

The concrete grade of the water tank shall be minimum M20 / M25 and all the construction joints shall be provided with 150mm long 15mm dia nozzles @ 1.0m c/c. These shall then be grouted with non shrink grout chemical as per the manufacturer's specification. The external surface of the tank shall be coated with two coats of acrylic polymer based chemical and the surface plastered with cement sand mortar 1: 4 with 3mm thick neat cement float. The internal surface of the tank shall be finished with 25mm thick I.P.S. with neat cement float. Suitable waterproofing compound shall be added.

### **Toilet Block Waterproofing**

Treatment to include filling in the depressions with waterproof brickbat coba and top surface finished rough to receive flooring tiles.

Epoxy treatment shall be carried out on the walls upto a height as specified (minimum upto 1.0 m) above finished floor level. The thickness of the water proofing plaster on walls will be 10 to 18 mm. The treated surface of the walls will be left rougher to receive dado tiles over them.

The toilet block waterproofing shall be carried out only after the required finishing and sanitary works are completed. Rate quoted shall include for making good of walls at required height, for tucking the treatment on vertical surface.

The area of treatment to the walls shall be measured by calculating the perimeter of unfinished walls and multiplying the same by the height of the treatment above finished level.

### **WATER PROOFING GUARANTEE CLAUSE**

The waterproofing treatment to terrace / roof slab, balconies, canopies, chajja, basement, the impregnation treatment, toilet blocks, etc. shall be executed through approved waterproofing agency. A written guarantee on non-judicial stamp paper shall be submitted by the Contractor for a minimum period of **ten years** through the waterproofing agency. Contractors and the waterproofing agency shall be jointly responsible for waterproofing treatment until the expiry of the guarantee period. The chemicals proposed to be used by the contractor, the methodology, and the manufacturers' specifications and the detail of the authorized applicator shall be submitted along with the tender.

## **14. FLOORING**

### **Indian Patent Stone Flooring**

Cement concrete: The cement concrete shall generally conform to specifications for ordinary concrete. The coarse aggregates shall be carefully selected. These should be sufficiently tough and hard stone pieces broken in a manner that can provide particles of approximately cubical shape affording good interlocking. The maximum size of coarse aggregate shall be 12 mm. The fine aggregate shall consist of properly graded particles. The proportion of mix shall be M 15 (1:2:4). The least amount of mixing water that will produce a workable mix and will allow finishing without excessive trowel ling shall be used.

The sub-grade in all cases shall be formed to proper levels and slopes, well compacted cured. The top surface shall be kept slightly rough.



The surface of the sub-grade shall be cleaned off all loose material and moistened immediately before laying the concrete floor. The concrete flooring shall be laid in alternate bays not exceeding 6.25 sq.m. (about 64 sq.ft.) each. The edge of each panel into which the floor is divided should be supported by flat bars of steel or wood duly oiled to prevent sticking. Their depth shall be the same as that proposed for the finished floor as mentioned in the item. The bars should be removed before filling the adjoining panels. At least 48 hours shall elapse before the concreting in the adjacent bays is commenced.

The concrete shall be laid immediately after mixing. While being placed the concrete shall be vigorously sliced and spaded with suitable tools to prevent formation of voids or honey comb pockets. The concrete shall be brought to the specified levels by means of a heavy straight edge resting in the side forms and drawn ahead with a sawing motion in combination with a series of lifts and drops alternating with small lateral shifts. While concreting the adjacent bays care shall be taken to ensure that the edges of previously laid bays are not broken by careless or hard tamping.

Immediately after laying the concrete, the surface shall be inspected for high or low spots and any needed correction made up by adding or removing the concrete. After striking off the surfaces to the required grade concrete shall be compacted with a wooden float. The blows shall be fairly heavy in the beginning but as consolidation takes place, light rapid strokes shall be given to complete the ramming. The floating shall be followed by steel trowel ling after the concrete has hardened sufficiently to prevent excess of fine material from working to the surface. The finished surface shall be brought to a smooth and even surface free from defect and blemishes and tested with straight edges. No dry cement or mixture of dry cement and sand shall be sprinkled directly on the surface of the concrete to absorb moisture or to stiffen the mix. After the concrete has been rammed and has dried sufficiently to allowed rendering to be worked up, surface shall be rendered with a thin coat of 1:1 cement mortar with fine sand and uniformly floated. If so directed by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES, approved mineral colour pigment conforming to appendix-B of IS 657 shall be added to the cement mortar to give the required colour and shade the to the flooring, When the cement mortar rendering is sufficiently stiff, lines shall be marked on it with stings or by any other device to give the appearance of tiles 30 x 30 cm or of any other size laid diagonally or square as directed by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. The junctions of floor and walls shall be rounded off if so directed, without any extra payment.

After the concrete in the bays has set, the joints of the panels shall be filled with cement cream or with suitable bitumen paste compound or as directed by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. Vertical edge of the bays shall be nearly marked on the surface of the concrete with a pointed trowel after filling the joints.

When the rendering is somewhat stiff, neat cement may be sprinkled on sparingly through a paper pot on the surface and rubbed lightly to give smooth polished ordinary cement coloured surface. If coloured flooring is required, the approved coloured cement shall be used. Surface shall be protected from direct sun when it is green.

Curing shall start the next day after finishing and shall continue for 14 days.

#### **Marble Granite Stone Slab/Granite, Vitrified Tile, Ceramic Tile Flooring**

Machine cut marble stone / granite stone slabs shall be of 20, 25, 30 mm thickness as specified in the items description. Colour shall be uniform and the slabs free from all defects. Tiles used at site shall be machine-cut.

In machine-cut tiles, edges shall be protected from any damage in transit. No breakage shall be permitted. All edges shall be sharp, perfectly rectangular. Edges shall be polished for exposed corners faces as per the drawing and specifications.

At its thinnest part, no stone shall be thinner than 20 mm. The flagstones shall be hard, sound, durable and wear resistant. Uniformity of size shall generally be maintained for the flags used in any one room. The stones flags shall be without any soft veins cracks or flows and shall have a uniform colour. They shall have even natural surfaces free from broken flakes on top and shall be true and square to ensure uniform width of joint. Samples of stone slabs to be used shall be got approved by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES and the slabs to be used shall conform to the approved sample.

**Bedding:**

Bedding shall be of cement-sand-mortar mix in a ratio of 1:6 specified otherwise in the BQQ/drawings. The base of cement or lime concrete shall be laid and compacted to a reasonable true plain surface and to the required slopes and level. The amount of water added shall be the minimum necessary to give just sufficient plasticity for laying and satisfactory bedding. Before spreading mortar, the sub-floor or base shall be cleaned off all dirt, scum and of loose material and then well wetted without forming any pools of water on the surface. In case of RCC floors, the top shall be left a little rough. The mortar shall then be evenly and smoothly spread over an area that will be getting covered within half an hour. The thickness of the mortar bedding shall be provided as required as per the site condition but in no case shall be less than 12 mm.

**Laying:**

Laying of marble / granite stone slab flooring shall be as follows:

Before laying, the stone slab shall be thoroughly wetted with clean water. Neat cement grout (pigmented to match the shade of the stone slab) of honey like consistency shall be spread on the mortar bed over as much areas could be covered with the slabs within 15 to 20 minutes. Each stone slab shall be gently tapped with a wooden mallet till it is firmly and properly bedded. If there is a hollow sound on gentle tapping, the slabs shall be removed and reset properly. The joints shall be as thin as possible and limited to 2 mm at the maximum. The stone slab shall be laid so as to give continuous parallel long joints with cross joints at right angles to them. The edges of the adjoining slabs shall be in one plane. The edges shall be neatly rounded off where ever the slabs cover open edges of floor or window sills.

Laying shall start after due consideration is given to following points and approved by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.

1. Datum levels of floors in rooms, adjacent rooms, passages, etc.
2. Slopes, if provided, the flooring should be given by adjusting thickness of mortar.
3. Tiles in openings and doors are equally placed.
4. Passage may be laid first to achieve evenness in doors.
5. Tiles in rooms shall be symmetrical and equal cut tiles shall be around the edges.
6. In case of differently coloured tiles in passages and rooms, a dividing strip shall be provided and colour changed tiles shall be provided under the shutter.
7. In case there are any other architectural or structural features, the same shall be considered and the pattern should be adjusted accordingly.
8. Tiles may be allowed to go about 10 mm under plaster or dado. Surplus cement slurry from the joints shall be cleaned, once the tiles are laid,. The following day the joints shall again be cleaned, washed and wire brushed.

Grouting of joints shall be carried out with coloured (pigmented cement) cement or grey cement that matches the colour of tiles. Grout shall be worked into joint. Excessive grouts shall be cleaned off.

The floor shall be kept wet for a period of 7 days No traffic shall be allowed on the bedding and bedded tiles for at least 2 days.

### **Polishing**

Polishing and grinding shall be done only after 14 days. Machine cutting or grinding shall be carried out. At first, the grinding shall be with rough stone of grade 48 to 60. All chips shall be visible and grinding shall be uniform. It shall be cleaned with water. All pin-holes and opened out joints shall be grouted with matching coloured cement grouts supplied by the tile manufacturer. It shall be cured for a period of 7 days by keeping it moist.

Second coat / grinding shall be done with carborundum stone of grade 120. The same procedure shall be repeated for the first coat till the curing is complete.

The final cutting / grinding shall be with a fine stone of 220-320 grades and shall be done with sample water.

Tin oxide powder shall be spread and polished by machine fitted with Hessian bobs. The floor shall be washed, cleaned and dried with a soft cloth or linen. Corner of tiles should be hand polished by using rubbing stone, where ever they are slightly low and have been left unpolished.

In case of wax polishing, wax polish shall be applied to the surface. It shall be rubbed with machine. Then clean saw-dust shall be speared over the floor and rubbed with polishing machine. This will remove wax, leaving a glossy surface underneath.

Marble stone/other stone slab flooring for treads:

The method of laying, bedding etc. for marble / other stone flooring in treads shall be similar to that for marble stone slab / granite stone slab flooring as specified above. Nosing of the treads shall be rounded as directed. Final polishing on tread nosing may be done by hand.

### **Skirting / dado or cladding of polished stone slab:**

The backing for skirting / dado or cladding shall be cement plastered 12 mm to 20 thick and shall be done in a single coat. Thickness of joints shall not exceed 1.5 mm. Final polishing may be done by rubbing. The top of skirting or dado shall be jointed neatly with the plaster above as directed. The joints between the two slabs shall be filled with neat white cement and matching coloured grout of appropriate consistency.

Laying of Vitrified Tile Flooring:

The V.T. shall be selected and matched. Before laying the tiles shall be soaked in water as per manufacturer's specifications. The tiles shall be smeared with epoxy non skid adhesive before laying them on the surface.

Necessary edge, hole cutting and chamfering and mitre joints shall be done wherever required. The tiles shall be laid with 2.5mm PVC Tile spacer .The joints shall be filled with Roffe or Bell filler of matching colour as specified by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. All damaged tiles shall be replaced with utmost care. The finished floor shall not be used for a minimum of 2 days. The finished material shall be protected against wear and tear and other works using heavy duty PVC sheets and 40mm thick Plaster of Paris. This shall be cleared with acid as soon as the place is ready for occupation. The debris shall be removed as soon as the related interior works are over. The pricing shall also include hacking of surface if necessary, chipping the existing flooring and levelling it with Cement mortar (1:3) to accommodate the tile laying and carting away of debris. (Tiles should be strictly as per samples approved by the Client / Architect).

**Wall Dado :** Wall dado shall be laid as per design & these should be as per the sizes specified in the BOQ / drawing. The tiles shall be selected and matched before laying over a 1:3 cement scratch plaster. Necessary edge, hole cutting and chamfering and mitre joints shall be done wherever required. Any design or pattern shall be done without extra cost. The joints shall be filled with Roff or Bell fillers of matching

colour specified by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. All damaged tiles shall be replaced with utmost care. All corners to be protected with aluminium angles. The pricing shall also include hacking of wall surface if necessary, chipping the existing wall surface and levelling it with Cement scratch plaster (1:3) to accommodate tile laying and carting away of debris. Only best quality granite and marble of the basic rate specified and of approved shade shall be used (Basic rates wherever mentioned are ex-godown and excluding taxes). The granite / marble shall be from the same lot and without colour / shade variations or any other defect.

### **Cleaning**

Once the floor has set, it shall be carefully washed clean and dried. When dry, the floor shall be covered with oil free dry sawdust, which shall be removed only after the construction work is completed.

### **15. PLUMBING AND SANITARY WORKS**

Providing and fixing GI pipes and GI specials of approved ISI make cut to required lengths as per site conditions. The lines shall be concealed and protected using 1 coat of anti corrosive paint. The chasing of walls should be done as per the layout & should be filled with cement mortar. The pipes of various diameter should be used as specified in drawings, BOQ etc. The open lines shall be finished with 1 coat of primer and 2 coats of enamel paint. Both the lines shall be anchored to the wall using proper GI clamps. The lines shall be pressure tested to a maximum of 11 kgs / sq.cm. for any leakage.

All sanitary ware shall generally conform to IS: 2556 Part I to XV unless stated otherwise.

All sanitary ware and CP fittings shall be new and of approved make, type and colour. All samples of materials with catalogues shall be submitted and got prior approved before use. Approved samples along with other approved materials shall be neatly displayed on a board and such a display board of samples shall always be in exhibition in the site office.

In cases where the materials are supplied by the clients, all such materials shall be inspected and received in good condition and thereafter, it will be totally under the safe custody of the tenderer/contractor till they are handed over satisfactorily after installation, testing and commissioning.

Wherever multiple choices of fixtures are mentioned, the final choice will be as per the joint decision taken by the client & KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.

### **Indian W.C**

Indian W.C pan shall be Madurai / Orissa pattern in white vitreous chinaware size as specified in the schedule of work. Each W.C shall be provided with a 100 mm dia vitreous chinaware P or S trap with or without vent horn, as required.

The water closet shall be provided with an exposed or concealed type C.P brass flush valve or flushing cistern as specified in the schedule of work. Flush valves shall have a suitable flow regulating facility. Discharge connection to the W.C shall be by means of approved type of flush bend.

#### **Foot rests**

Indian W.C shall be provided wherever specified, with a pair of vitreous china foot rests at proper distance (where specified) on either side of the W.C.

Foot rests shall be set in cement mortar 1:2 mix. Edges shall be finished neatly with white cement.

#### **Orissa W.C**

Orissa W.C shall be in white glazed vitreous chinaware of size specified. The W.C shall be provided with a 100 mm white vitreous chinaware P or S trap with or without vents as required.

Each W.C shall be provided with an exposed or concealed type brass flush valve or flushing cistern generally as for Indian W.C.

#### **European W.C**

European W.C shall be wash down or symphonic, floor or wall mounted in white glazed vitreous chinaware with integral P or S trap as required. Wall hung W.C shall be supported by C.I or G.I floor mounted chair. The W.C shall be provided with an exposed or concealed type brass flush valve or flushing cistern as specified in the schedule of work.

Each W.C shall be provided with a solid plastic seat. The seat shall be fixed to the W.C with CP brass or S S pillar bar hinges. Rubber buffers shall be provided for the cover.

#### **Urinals**

Urinals shall be as specified in the BOQ / drawings in white glazed vitreous chinaware of size as per the approved product number of approved make / brand.

Urinals shall be provided with:

- i) spreader
- ii) CP dome waste
- iii) CP P-trap with unions.
- iv) CP wall flange and pipe.

All exposed pipes and fittings shall be of C.P brass. The urinals shall be fixed with C.P brass screws.

Urinal flushing shall be through one of the following methods as specified in the schedule of work:

- i) Small urinal flush valve with push button.
- ii) Auto flush valve with DC long life battery or AC supply.

Auto flush shall be concealed in wall and flush pipe shall be of copper or G.I except the exposed parts which shall be C.P brass.

Waste pipe for urinals shall be any one of the following :-

- G.I pipes, heavy quality as per I.S 1239
- Lead pipes
- Copper pipes

- HDPE pipes as per IS 4984

as specified in the schedule of work or shown on drawings.

Urinal partitions shall be white glazed vitreous chinaware complete with CP brass screws, anchor fasteners etc. as required.

### **Lavatory Basin**

Lavatory basins shall be ivory glazed vitreous china or poly marble or any other material and of size, shape and type specified in the schedule of work.

Each basin shall be complete with:

- 1 C.I or galvanized steel supporting brackets & clips as required.
- 2 CP waste and overflow.
- 3 Pop-up waste or rubber plug with CP chain as specified.
- 4 CP P-trap with cleanout, unions, CP pipe to wall and wall flange
- 5 CP control angle valve/s with CP connections.
- 6 Mixing or CP fittings as specified.

### **Sinks**

The sink shall be of size specified in with glazed vitreous chinaware or stainless steel AISC 304 as specified.

Each sink shall be complete with:

- 1.C.I or galvanized steel brackets & clips as required.
- 2.Waste fitting with brass / rubber plug & chain.
- 3.P-trap with clean out, unions, CP pipe to wall & wall flange.
- 4.CP control valve/s with CP connections.
- 5.Mixing or CP fittings with spout as specified.

### **Mirrors**

Mirrors shall be of approved make and sample & should be plate glass electro coated copper 6 mm thick & should be clear, distortion-less (at all angles) non-wavy. The size shall be as specified in the schedule of work.

Mirrors shall be provided with backing of 12 mm thick marine plywood fixed with CP brass semi round headed screws and cup washers or CP brass clamps as specific or instructed by Architect.

### **Semi Circular Channels**

The channels shall be in white glazed vitreous chinaware with or without dead ends. They shall be laid to proper lines and levels and shall be set in a bed of 12mm thick cement sand mortar 1:2. The joints shall be finished with white cement paste and finished neat.

### **Towel rods & racks**

They shall be of approved make & size as specified in schedule. The towel rod shall be provided with a pair of CP brass brackets fixed to the wall with CP brass screws with round head, using cup washers, screwed on to fill-plugs embedded in wall. The brackets shall be of concealed type.

**Soap trays**

The soap trays shall be of white glazed vitreous chinaware or stainless steel and of size specified in schedule.

Soap trays shall be fixed flush with the finished wall surface (tile surface) by cutting recess in wall and set in cement mortar 1:2. The wall surface shall be reinstated to original condition.

**Soap Solution dispensers**

They shall be chromium plated brass with CP brass brackets and CP brass cap. They shall be of approved make. They shall be fixed to the wall with CP brass screws, screwed on to fill-plugs embedded in wall.

**Toilet paper roll holder**

Toilet paper roll holder shall be of white glazed vitreous chinaware or stainless steel of size specified in schedule. It shall be of recessed type with wooden rod with spring at one end for holding the paper roll. The rate shall include cutting recess in the wall, fixing the holder with cement mortar 1:2 and rectifying the wall surface to original conditions.

**Installation of Sanitary ware**

All sanitary ware and CP fittings shall be installed in accordance with the interior requirements. Neat workmanship and maintaining exact position and level of each fixture shall be the sole objective of the installation. Care shall be taken to fix inlet and outlet pipes at correct positions. Faulty positioning shall be made good without any damage to the finished floor or wall tiling and any damage to the finished surfaces shall be made good at the tenderer / contractor's cost.

In order to ensure quality of workmanship and compliance with interior requirements, one or two mock-up installations shall be done and got approved. Fixtures used in the mock-up may be reused with the approval of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.

All fixing accessories like bolts, nuts, brackets etc. may be supplied along with the ware as defined in the mode of measurement and schedule of work. All such accessories shall be CP brass or galvanized or stainless steel as approved by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. All exposed pipes and bends shall be of CP brass.

The Indian W.C shall be fixed in level in a neat manner. The W.C and trap shall be set in brick bat 1:2:4 concrete mix. Joints between W.C and flush pipe shall be made with a putty or white lead and linseed oil and caulked well or with approved rubber joints. The joint between W.C and trap shall be made with 1:1 cement mortar and shall be rendered leak proof.

The Orissa W.C shall be fixed in level in a neat manner. The W.C & trap shall be set in brick bat concrete 1:2:4. Joint between W.C & flush pipe shall be made with putty of white lead in linseed oil and caulked well or with approved rubber joint. Joint between W.C & trap shall be made with 1:1 cement sand mortar and shall be rendered leak proof.

Wall-hung European W.C shall be mounted on C.I chairs which are fixed to the wall and floor using Anchor fasteners. The bolts and nuts used for fixing the chairs shall be stainless steel and the fixing bolts for the W.C and chairs could be CP brass or stainless steel. Floor-mounted W.C shall be fixed with Anchor fasteners using stainless steel bolts and nuts. The gap between the WC and floor or wall shall be neatly sealed with water proof non-hardening sealant of approved colour. The sealant should not extrude beyond the foot print or WC outline.

All W.C's shall be aligned and levelled with the floor and wall tiles so as to present an integrated look. Utmost care and skill shall be exercised to achieve a good installation in keeping with the interior designs.

Urinals shall be fixed to the wall using Anchor fasteners and stainless steel bolts and nuts. The urinals shall be held in line and level according to the interior designs and tile modules. Partitions, wherever required shall be provided, shall also maintain line and level as shown on drawings. Supply spreader and drain piping and P-trap shall be of CP brass and installed in a neat manner. No unseemly bends or wooden support pieces shall be permitted.

Wall-mounted lavatory basins and sinks shall maintain line and level as specified by the interior drawings and also with the tile modules. The supply connections shall be of CP brass from the angle stop valves to the pillar taps or single level fixture and shall display good workmanship. Drain connections shall have a CP P-trap with unions and exposed CP drain pipe and a wall flange. In the case of counter mounted basins and sinks, extreme care shall be taken to provide independent and adequate support for the basin and aligning it with the opening in the counter slab. Supply and drain

connections shall be same as that for the wall mounted basins. The crevices between basin and wall or counter shall be neatly sealed with a non-hardening sealant of approved colour.

All accessories like the mirror, soap trays etc shall be neatly fixed as per interior designs. Good workmanship is the essence of all sanitary installation for achieving the interior design objectives.

### **Cast Iron Pipes & Fittings**

Cast iron pipes shall be of 'LA' class conforming to IS 1536 suitable for lead jointing with spigot and socket joints and if flanged, they shall be of 'A' class conforming to IS 1537. Pipes shall be in maximum lengths available.

Fittings shall conform to IS 1538. Spigot-sockets shall be suitable for lead jointing.

### **Pipe Installation**

Shop drawings for the routing of pipes shall be prepared generally on the basis of layout drawings issued. The shop drawings shall reflect the site conditions, structural beams and columns, obstructions by way of any construction elements or any other service pipes, ducts etc. The drawings should clearly indicate openings required in brick or concrete walls, drain valves at low points, air valves at high points, isolating valves, if any, and invert levels at every 15m intervals. The drawings should also indicate typical details of hangers, supports, brackets etc. After approval of the drawings, pipe routes shall be marked with a distinct colour of paint on the site and got it approved by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.

All openings and chases in brick walls shall be made neatly and refilled to a reasonable finish. However, final finishing will be done by the civil contractor. Openings in concrete walls shall, however, be made only with the approval of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. Pipe penetrations, through wall or floor, shall be sealed with an approved fire resistant sealant.

Good workmanship and neat pipe layout are the pre requisites of these specifications. Horizontal pipes shall be truly horizontal with necessary slopes and hangers or supports as specified and shown on drawings. Vertical pipes shall be truly vertical and shall be laid away from the walls at least by 10mm or as required by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.



All pipe runs shall be parallel to the ceiling or walls for presenting a neat appearance. Pipes buried in wall shall be laid in machine-made cases with galvanized steel anchors.

All pipes before and after testing shall be protected with wooden or brass plugs to prevent ingress of dust, sand or any extraneous matter.

### **Pipe supports; hangers & clamps**

Pipe supports, clamps, suspenders shall be pre-fabricated and galvanized (after fabrication). Application of support systems shall follow the guidelines in the above specifications. Any other types of support, suspension or clamping to meet the site conditions shall be got approved before use.

All fittings shall be screwed type unless specified otherwise. However, flanged joints shall be provided at the following positions:

- i) Pairs of flanges for isolation and removal of equipment.
- ii) Mating flanges for equipment flange connections.
- iii) Mating flanges for valves, strainers, as the case may be.

**EXTERNAL DRAINAGE:** Trenches for drainage shall be carried out to the required level only. No refilling will be allowed for the purpose of making up bed of the trenches. Any excess excavation shall not be paid for, and shall be made good with well rammed and consolidated cement concrete M75 at the cost of the contractor, and for which no extra cost will be paid. The trenches shall be filled in and the earth shall be well rammed and properly consolidated. The surplus earth shall be placed or spread elsewhere, or near the site, or carted away free of charge as may be directed by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. The Contractor shall at his own expense and without extra charge make provision for all shoring, pumping, dredging soil or sub soil and bailing out or draining out water or rain water and the trenches shall be kept free of water.

When trenches are opened for laying the drainage, water pipes, or any other work & if the depth is over 1.2 M (or even less in low bearing soil) then the sides shall be closely and securely supported by suitable shoring.

**MANHOLES** : - Manholes shall be circular and of conical shape with internal 600 MM dia opening at the top and internal 1 M to 1.2 M dia depending on the depth at the bottom. The required depth shall be provided at all junctions and change of directions. (Manholes can be rectangular only when the depth is less than 1.5 M. The size shall be 0.9 M x 0.45 M internal measurement) They shall be built in 230 MM brick wall in cement mortar 1:6 with cement plaster 1:4 smooth finish 20 MM thick from inside and rough finished from outside on a base of 230 MM cement concrete M100 projecting 150 MM beyond the brick work on all sides. Proper cement concrete channel shall be provided at the bottom and the branches from various pipes discharged in the channel with easy slope. The top of all the manholes shall be provided with cast iron circular air and water tight frame. In the case of any damage to the covers due to traffic or any other reason during construction or in the maintenance period, they shall be replaced immediately by the contractor at his own cost and if the damage is repeated, KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES may demand heavier types than what are supplied and the contractor has to comply with the same without asking for extra charges. The frame and covers shall be painted with Black Bitumen Anti-Corrosive paint and space between cover and frame to be filled with bitumen. In deeper manholes, i.e. where depths are more than 1 M necessary cast iron manholes steps shall be provided, cost of which is to be

included in the cost of manholes and nothing extra shall be paid. Portland cement shall be thoroughly mixed dry with sand in the proportion of 1 to 3 with approved water-proofing compound added as per manufacturer's specifications. Water shall be then added gradually to make the mixture homogenous. Cement mortar shall be mixed which can be used within half an hour. The joints between the stones or bricks will be raked out to a depth of 12 MM and the surface shall be thoroughly watered and the mixture of sand and cement applied evenly on all surfaces that needs to be plastered. The surface shall be finished off with a thin layer of cement floating. The plaster work shall be kept thoroughly wet for a period of seven days. Thickness of plaster shall be 20 MM thick.

**Stoneware Pipes and Fittings :** All the stoneware pipes, bends, gully traps and sewer traps, etc., shall be of the best salt glazed variety, of a uniform thickness, free from air holes, blisters, cracks, hard sound and free from other imperfection and external and internal surfaces shall be smooth and perfectly glazed and perfectly straight. They shall be of best approved Indian make & of approved quality. The diameter mentioned shall be their internal diameter and the thickness. A piece of stoneware pipe after 48 hours immersion in water shall absorb not more than 4 % of its own dry weight. If KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES for his own satisfaction takes test to determine the yielding point of any or every pipe by any known method in Engineering Practice, the contractor has to pay for the same without demanding extra. The internal diameter of the socket shall be sufficiently large to allow a joint of 6 MM thickness all-round. Joints in stoneware pipe shall be made perfectly air sealed and neatly finished, the spigot and socket should be thoroughly cleaned specially at the inner side of the pipes. Cracked pipes whether at the socket or on the body, shall be rejected. The socket ends of pipes shall always face upstream of effluent flow. The drains shall run in perfectly straight lines between manholes as shown on plans. No trenches shall be filled in until the foundations have been tested and alignment of the drain and connections into and from the manholes and their positions are examined and certified by the local authority and KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. The pipes shall be laid in perfect straight line to a desired slope.

While laying drain pipes, the centre of each manhole or water gully must be marked by peg or otherwise as may be determined by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.

The pipes are to be laid beginning at the lower end. No pipe is to be laid until the trenches have been excavated to its required depth as directed by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. All pipes are to be laid perfectly true, both in line and in gradient. The pipes in a trench shall be laid dry and all joints of the pipes must be made thoroughly sound and water tight, and any one of them which may be proved to be leaking, shall be immediately made tight by filling it with water to a height as KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES may determine. Any additional precautionary measures or appliances that may be found necessary to ensure tightness of the manholes or water gullies and the joints of pipes shall be adopted by the contractor without any extra charge, the responsibility of making them completely water-tight rests upon the contractor. KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES may inspect the joints after the pipe joints in underground work have thoroughly set, and if he has any doubt, he may require the contractor to cut open and clean away the cement of any joint that he may select and to make good the same at contractor's cost without asking for extra.

Whenever a pipe enters or exits a manhole, brick on edge must be cut to a proper form and laid around the upper half of the pipe so as to form an arch. There shall be a joint of cement mortar 12 MM thick all-round the pipe between the pipe and the bricks. The ends of all pipes shall be properly built in and

neatly finished off with cement mortar. The Gully Traps shall be 150 MM x 100 MM and of best quality. They shall be encased in bricks and cement masonry (1:6) with cement plaster (1:4) forming an inspection chamber with cast iron full size frame and cover 230 MM x 300 MM. The sewer trap of required size shall be installed in the last manhole.

Spigot and socketed 150 MM C.I. pipes shall be heavy pattern (weighing not less than 46 Kgs per meter run) for the portion going below the floor and embedded in the walls. These shall be embedded and laid over 150 MM thick cement concrete and laid to a slope and connected to the drain. On no account lime or lime concrete is to come in direct contact with cast iron pipe or fittings.

The pipes shall be carefully laid to the level and gradient shown on the plans and sections and great care shall be taken to prevent any material entering the pipes. The pipe between manholes shall be laid truly in straight line without vertical or horizontal undulations.

Cement shall be slightly moistened and on no account it should be soft or sloppy and it shall be carefully inserted by hand into the joint. When the cement has been inserted it shall be punched and caulked in to the joints and more cement added until the space of the joint has been filled completely with tightly caulked cement. The joint shall be finished off neatly outside the socket at an angle of 45 degrees. Any surplus cement projecting inside the joints is to be removed and to guard against any projections sack or gunny bag shall be drawn past each joint after completion. The contractor shall be responsible that each section of pipe is properly cleaned out on completion of the work.

**Cast Iron Pipe Work:** All cast iron pipes, fittings shall be of approved make and shall conform to IS codes and should be free from flaws, air bubbles, cracks, sand holes and other defects, truly cylindrical and in uniform thickness. They shall not be brittle, but shall allow of ready cutting, chipping and drilling and shall be 10 MM thick, and of the diameter (diameter mentioned shall be the internal diameter) mentioned in the Schedule of Quantities and shall be of the longest length available & shall be fixed against the wall on special iron nails and bobbins fixed to the wall by means of round headed nails painted with two coats of approved paint. All the joints shall be caulked with tarred gasket of hemp or spun yarn and cement mixed with linseed oil to render perfectly air and water tight joint.

150 MM C. I. socket and spigot pipe shall be of the heavy duty (weighing not less than 46 Kg / M run) for the portion going below the floor or embedded in the wall. This shall be laid to slope and shall be encased in concrete 300 MM x 300 MM and connected to the Municipal or other drain line.

The C. I. Nahani traps of approved make shall be 115 MM in height and 350 MM long and shall be embedded in the concrete floors with c. c. M-100 all-round. They shall be connected by means of 75 MM lead pipes of specified weight and thickness with thimbles, tail pieces and inspection caps fixed to the lead pipes by lead wiped joints or by 75 MM C. I. Nahani plug bend to suit the thickness of wall. The Nahani trap shall be provided with C. P. brass grating.

The lead used caulking joints of cast iron pipes shall be pure soft pig or bar lead free from all impurities and the rates of pipe shall be inclusive of all that is mentioned above. All vertical soil waste vent pipes shall be arranged straight in manner. The joints in the rainwater pipes shall be filled in with gasket of hemp or spun yarn and cement mixed with linseed oil, For underground usage the thickness and weight of cast iron pipe shall not be less than those shown above. All cast iron pipes and fittings shall be treated with two coats of approved compounds to prevent oxidation and two coats of anti-corrosive paint should be applied afterwards.

All cast iron pipes, fittings etc. shall be best E. L. C. & of approved make of the diameter mentioned which shall be their internal diameters. The thickness of the pipes shall be as follows : -

<b>Diameter</b>	<b>Thickness</b>
50 MM	3 MM
65 MM	3 MM
75 MM	5 MM
100 MM	5 MM
150 MM	6 MM

Cast Iron soil pieces shall be 100 MM diameter, 5 MM thick, and coated (internally) with Dr. Angus Smith's solution. The fittings for soil pipes shall also be treated similarly. The 100 MM soil pipes shall be in the longest available lengths and shall be fixed to the walls on tapered hard timber 50 MM x 50 MM x 50 MM gutties plugged to the stone or brick-walls or C.I. taper bobbins so as to keep the pipes 20 MM clear of the bricks walls. They shall be with socket and spigot ends, fixed in perfectly vertical and horizontal lines with all necessary fittings. The joints between C. I. pipes shall be filled in with cement mixed with linseed oil, gasket and caulked nicely.

**Asbestos Cement Pipe Work:** All A.C. pipes, fittings shall be of approved make and conforming to I. S. S. and free from flaws, air bubbles, cracks, sand holes and other defects, truly cylindrical and in uniform thickness. They shall not be brittle, but shall allow of ready cutting, chipping and drilling, and shall be 5 MM thick, and of the diameter (diameter mentioned shall be their internal diameter) mentioned in the Schedule of Quantities and shall be of the longest length available shall be fixed against the wall on special iron nails and bobbins fixed to the wall by means of round headed nails painted with three coats of approved paint. All the joints shall be caulked with tarred gasket of hemp or spun yarn and red lead putty to render perfectly air and water-tight joints.

**Lead Pipes:** (for soil waste and vent pipes) shall be used only for short branch soil waste or vent connections.

Joints of lead pipes shall solder wiped joints. All joints of fittings shall be made perfectly air and water-tight.

Joints between lead and brass shall be wiped joints. Joints between lead pipe and wrought iron pipes fittings shall be made with heavy soldering ferrules, screwed to the iron pipe fittings.

Joints between lead and cast iron pipes shall be made with soldering or flanged thimbles soldered and caulked with lead in the usual manner.

Cast brass clearing eyes shall be provided at all points, intersection and changes of direction and these shall be secured by means of wiped solder joints.

**Rainwater Pipes:** Rainwater pipes shall be of Cast Iron conforming in every respect Indian Standards as may be revised up-to-date. They will be maintained perfectly straight from the tip to bottom of the building. The inlet shall be provided with lead connector with C. I. grating of approved design. Rainwater pipes will terminate at 150 MM above ground level by means of a shoe. All the above fixtures shall be included in the rate of rainwater pipes.

**Water Supply Pipes and Fittings:** All water supply pipes shall be of 'C' class quality and as required by the Bye Laws of Local Corporation or I. S. S.

Water pipes shall be of Galvanized iron specified internal I's etc. in perfect straight lines, both vertical and horizontal. The pipes in the interior of the building shall be fitted with M. S. seamless fittings and covered with asbestos twine & asbestos magnesia powder and shall be embedded in chases filled in with cement concrete. The pipes laid under the floor shall be painted with bitumen and embedded in concrete. The pipes, where exposed on the surface, shall be coated with aluminium paint as specified. The pipes running underground shall be laid after excavating trenches to a minimum depth of 0.6 M and the trenches shall be refilled after the pipes are laid to position.

These shall be measured in Running Meter and the rate shall be inclusive of all fittings, paint and coverings and cost of crust and chase and filling them with concrete, if inside the building and cost of excavating trenches and refilling, if laid underground.

Inspection chamber to be provided in Brick Masonry of 230 mm thick intercepting trapchamber 90 x 45 centimeter including 1:4:8 cement concrete foundation, 1:2:4 cement concrete channels / half round

glazed stoneware pipe channel, salt glazed stoneware intercepting trap with rodding pipe set in 1:4:8 cement concrete block, plastering inside and outside Cast iron lid with frame to be fixed in cement concrete.

## **16. FABRICATION & STRUCTURAL STEEL WORK**

### **Fabrication Drawings and Approval:**

The fabrication drawings shall be prepared on the basis of design drawings supplied by the Structural Engineer. The fabrication drawings showing details of connection are required to be supported by the calculations showing adequacy of the connections. The fabrication drawings and calculations shall be prepared by qualified consulting engineer and fabricators. All changes required to be made by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES shall be incorporated at no extra cost.

### **Workmanship:**

Workmanship shall be equal to the best in current fabrication practice. The methods followed in cutting, straightening, finishing and shaping, bindings of members and making holes for rivets, bolts or pins etc. and any other operations shall be performed in such a way as not to adversely affect the structural members in any way. The machinery and equipment's as well as the method of working, shall be approved by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES. The fabrication work shall be carried out by the qualified operators.

### **Welding**

Welding and weld procedure qualifications should be done in accordance with applicable provisions of the IS standards. Qualified welders should be engaged to do the works.

## **17. PAINTING**

### **Surface Preparation**

Mild Steel surface to be painted shall be prepared in thorough manner with a view to ensuring complete removal of mill scale. Primary coat shall be applied after the surface preparation is complete. All slag from welds shall be removed before painting. Care shall be taken to brush the surface clean prior to painting. Surface shall be maintained dry and free from dirt and oil. Working outdoors in frosty or humid weather shall be avoided. The undercoat and finishing coat shall be of the same manufacturer. Successive coats of paints shall be of different shades and colours and each shall be allowed to dry thoroughly before the next is applied. Particular care shall be taken with the priming and painting of edges corners, welds and rivets.

### **Priming**

The rates quoted by the Contractor shall include the following.

- a) Applying one coat of red oxide zinc chromate primer paint coating to all surfaces of mild steel prior to erection.
- b) Applying one coat of red oxide zinc chromate primer paint and two coats of finishing paint as specified in schedule to all surfaces which will be inaccessible after erection, except surfaces coming in contact with concrete. It should be noted that all steel work such as Trusses; Purlins etc. are considered inaccessible.
- c) After steel has been erected, all burrs and abraded spots, scratched surfaces, field welds, bolt heads and nuts shall receive one coat of primer paint. Before the paint is applied the surface shall be dry and free from dust, scale and grease. No paint shall be applied to bolt or field welds.
- d) All steel material (except surface coming in contact with concrete) shall receive one coat of primer paint after erection, after having been thoroughly cleansed of dust and foreign matter. No paint shall be applied when humidity is such as to cause condensation on the surfaces to be painted. Paint shall be stirred frequently to keep the pigment in suspension.

### **Final Paint:**

The final painting of structural steel shall be as specified by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES or as specified in the schedule.

The contractor shall be responsible for safety and protection of all materials from loss or damage of any nature until the completion of work & for surplus materials until they are returned and accepted by the Client.

### **Connection**

#### **(ii) H.S.F.C. Bolts:**

The Contractor shall obtain the prior written approval of KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES for the method proposed to be adopted for tightening the Height Strength Friction Grip bolts. For preliminary assembly and before use of these bolts, he shall use his own erection bolts.

#### **(iii) Bolting / Riveting:**

In general, bolts and rivets will conform to the relevant Indian Standards. The methods of establishing connections use of equipment, etc. shall be as approved by KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES.

#### **(iv) Welding:**

Welding where specified, shall be performed by the shielded electric arc, gas or other approved methods, using coated electrodes and / or low hydrogen electrode conforming to IS: 814. The welding process and the qualification of the welding operators shall conform to IS: 817 and IS: 823 and shall be got approved before commencement of any work of welding.

All field assembly and welding shall be executed in accordance with the requirements for shop fabrications excepting which manifestly apply to shop conditions only. Where the steel has been delivered painted, the paint shall be removed before field welding for a distance of at least 50 mm on either side of the joints. All welds should be free from defects like holes, lack of penetration, slag intrusion etc. All welds shall be without over lap edges and free from porosity. The weld metal shall be deposited in successive layers, where a thick weld is required. Each layer except the last, shall be preened moderately before the next layer is applied. The contractor shall be responsible for the quality of the work performed by his welders.

If required, KOLKATA PORT TRUST OR ITS AUTHORISED REPRESENTATIVES may test the welds by non-destructive tests. Any defective welds shall be made good by the Contractor at no extra cost and the cost of non-destructive testing for such defective welds shall be borne by the Contractor.

**(v) Specification for pin and pinned connections:**

**Pin Material:**

Rolled steel pins and rollers, including those made from slabs shall comply with requirements of IS: 226 – Specification and structural steel and IS:2062 – Specification for structural steel (fusion welding quality) or IS:961 – Specification for high tensile structural steel.

Forged steel pins shall have a tensile strength of 44 to 50 kg / sq.mm. or 57 to 63 kg/sq.mm. to conform to IS:1875 – Specification for carbon steel billets, blooms and slabs for forging. Steel casting for cast steel pins shall conform to grade 1 to 3 IS: 1030.

**Pin Holes:**

Pin holes shall be bored true to gauge, smooth, straight, at right angle with the axis of the member and parallel with each other unless otherwise required, in built up members the boring shall be done after the members have been welded. The specified dia of pin shall be its minimum dia. Hole dia can be maximum + 0.5 mm more than pin dia.

**Pins:**

The pins shall be parallel throughout and shall have a smooth surface free from flaws. At ends of pins there shall be slot facilitating in driving the pin.

Pins of more than 175 mm. in length of diameter shall be forged and annealed. Coffer pins shall be provided on both sides of the pin.

**18. ROLLING SHUTTERS**

Perforated Rolling Shutter : Curtain Panel : Panels shall be made of 0.50 mm CRCA steel coated with Zinc Aluminium / Galvanized Conforming to IS:277 and IS : 513 to make them totally anti corrosive and colour bonded which shall give the curtain a good sheen finish.

The coils shall be fed on to the roll forming machine to give the panel rolling, the desired corrugation. Each panel will be 720mm wide and to make the height of the door curtain, the panels shall be lock seamed with one another. Then the panels shall be cut to the width of the floor. The door shall be fabricated wither forwarded or reversed, as specified (depending upon whether the door, curtain has to be fixed inside the opening or outside the opening). Door fabrication should also include all fixtures, locking arrangements, electric wiring for motor drive & motor of adequate capacity. The shutter should be both manually geared as well as electrically operated unless other wise specified.

### **19. Reinforced Concrete:**

Minimum grade for reinforced concrete shall be M25. The table below shall regulate the requirement of reinforced cement concrete.

Grade of Concrete	Specified characteristic strength of 150mm cube at 28 days in N/mm <sup>2</sup>	Minimum cement content Kg/Cum	Maximum free water cement ratio
M20	20	310	0.55
M25	25	310	0.50
M30	30	320	0.45

For most of reinforced concrete work nominal maximum size of coarse aggregate shall be 20mm.

For minor reinforced concrete work like precast RC Jali, small Lintels, Kitchen Platform work in Grade M15 may be allowed at the discretion of Engineer.

### **Mix Proportion:**

The determination of the proportion of cement, aggregate and water to attain the required strength shall be as under:

1. For plain concrete and minor reinforced concrete Nominal mix concrete as per proportion given in table under clause 7.5.4.2.1 shall be adhered to.
2. For all other reinforced concrete works the concrete mix shall be designed.

### **Design Mix Concrete (Controlled Concrete):**

Where design mix (controlled concrete) is specified the mix shall be designed to produce the grade of concrete with required workability and characteristic strength not less than appropriate strength as specified in table under clause 7.5.4.2.2. No extra payment /claim will be entertained on account of consumption of extra cement over the minimum specified cement content as per clause 7.5.4.2.2 or for admixture, plasticizer etc. and also for installing batch mix plant at site required and permitted, to achieve the required strength and workability. Extra care is to be taken for mixing water on or by mechanical means and manual mixing of water control will not be allowed.



The mix design procedure prescribed in IS code-10262 shall be adopted.

The target mean strength of concrete mix shall be equal to characteristic strength plus 1.65 times the standard deviation.

The standard deviation for each grade of concrete shall be calculated separately as per clause 9.2.4 of IS 456-2000. It is based on strength of sample.

The total number of test strength of samples required to constitute an acceptable record for calculations of standard deviation shall not be less than 30.

Standard deviation shall be separately calculated for change in design mix, material & equipment used if there is any significant change in either of the above.

Standard deviation in the 1<sup>st</sup>. instance may be assumed for design mix as 4.0 N/mm<sup>2</sup> for M20 & M25 and 5.0 N/mm<sup>2</sup> for M30 grade concrete.

The responsibility for the design of concrete mixes shall be of contractor. The mix design done shall be approved by Engineer at least 4 weeks before commencing any concrete work.

If the average strength of the concrete cubes falls below the required strength, fresh preliminary mixes for that grade shall be made, until the trial mix yields cubes of compressive strength at 28 days greater than the required strength at that age.

Whenever there is a significant change in the quality of any of the ingredients of concrete, the Engineer may at his discretion order the carrying out of the fresh trial mixes. All costs of trial mixes and tests shall be borne by the Contractor.

### **Mixing:**

All concrete whether plain or reinforced, nominal or designed shall be weighed batched and mechanically mixed. The cement and aggregate shall be thoroughly mixed and the specified proportion of water shall be added to mixer only when all the cement and aggregate constituting one batch be in the drum. The cement shall be mixed till the mixture is of uniform colour. (For unimportant RCC works and plain concrete works Engineer may permit volumetric mix for nominal mix concrete) No segregation of materials found after unloading shall be allowed and concrete shall be remixed. Workability should be checked at frequent intervals as per IS:1199

Engineer may in exceptional circumstances allow hand mixing of concrete for minor reinforced concrete and plain concrete works as per the following procedure.

- a) 10% extra cement shall be added to each batch at no extra cost to the Employer
- b) Several material shall be accurately gauged in boxes and thoroughly mixed on a water-tight platform of adequate size, by being turned over at least thrice dry till the colour is uniform and then twice wet. Water shall be gradually and not more than necessary to get concrete of required workability, and that only such concrete shall be mixed which can be used within half an hour. Each stack shall, however, not be larger than consuming one bag of cement. All such stacks shall be placed a distance apart from each other.

**Transporting, Placing & Compaction:**

After mixing concrete shall be transported to the formwork as rapidly as possible by methods which will prevent segregation or loss of any of the ingredients or ingress of foreign matter or water and maintaining the required workability.

**Placing of concrete**

Concrete shall be conveyed and placed in final position in such a manner as to prevent segregate and loss of any of the gradients. Re-handling should be avoided. The maximum height of drop shall not exceed 1.5m and the method of placing concrete shall be approved by the Engineer. The internal adding water to the drag in gradient and completion of placing of concrete shall not exceed 30 minutes and to concrete shall not be disturbed once the setting of cement has commenced. The rate of placement of concrete shall be such that no cold joint is framed and fresh concrete is placed always against concrete is still plastic and workable.

**Repairs & Finishes of Concrete:**

All concrete surfaces either cast in situ or precast shall have even, clean finish, free from honey combs, air bubbles, fins or other blemishes. The form work joint marks for concrete work exposed to view shall be rubbed out with carborundum stone and defects patched up with a paste of 1 part cement & 1 part sand and cured. The finish shall be made to the satisfaction of the Engineer. Concrete surface to be subsequently plastered or where brickwork shall be built against it shall be adequately hacked as soon as the form is stripped off so that proper bond can develop.

**Curing & Protection of Concrete:**

1. Newly placed concrete shall be protected by approved means from frost, sun, dust, storms and hot spells. Concrete placed below the ground shall be protected from falling earth during and after placing. Concrete having placed in ground shall be kept free from contact at least three days and as directed thereafter.
2. All fresh concrete shall be covered with a layer of hessian or similar absorbent material and kept constantly wet for a period of seven days or more from the date of placing of concrete as per direction of the Engineer. Curing may also be done by ponding. Steps shall be taken to protect immature concrete from damage by debris, excessive loading, vibrations, abrasion, deleterious ground water, mixing with earth or foreign materials, floating, etc. that may impair the strength and durability of the concrete.
3. Approved measures shall also be taken to protect immature concrete from damage by debris, excessive loading, vibration, abrasion, floating due to sub-soil water and other influences that may impair the strength and durability of the concrete. This shall apply to all item of cement concrete such as foundation, sub-grade, flooring, damp proofing and all other RCC and PCC items.

**Frequency of Sampling:****(a) Sampling procedure:**

A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance of being tested, that is the sampling should be spread over the entire period of concreting and cover all mixing units.

**(b) Frequency:**

Frequency of sampling shall be in accordance with para 15.2 of IS 456-2000.

**(c) Test Specimen:**

Three test specimen each shall be made from each sample for test for 7 days & 28 days strength. Additional cubes may be required for various purposes such as to determine the strength, the time

of striking of form work or to determine the duration of curing. The specimen shall be tested as described in IS 516-1959. Cost of making cubes and its testing including labour & material shall be borne by the contractor & shall be deemed to be included in the rates of BOQ items quoted.

**(d) Test Strength of Sample:**

The test strength of the sample shall be average of the strength of three specimens. The individual variation should not be more than plus/minus 15% of the average.

Concrete shall be accepted if it complies with requirements of para 16 of IS 456-2000

**Structural Glazing:**

- 1) Aluminium Section - Alloy 6101 T6TEMPER (E91 wp(IS) 1285 of (E91 wp(IS) 1285
- 2) Anchor Bolts - 75 X 12/10 or 100 X 12 plated
- 3) Bolts for frames - 30 X 12 stainless steel and POP rivets for fabrication of frames
- 4) Anodizing - (18 +/- 2 microns) on the inside and outside as per the approved Shade.
- 5) Structural Sealant - DOW corning 995
- 6) Weather Sealant - DOW Corning 789 required only for peripheral sealing of glazing.
- 7) Spacer Tape - 6mm EVA strip to maintain uniform height of the sealant
- 8) Packing - PVC adhesive tape for anti scratch over sections
- 9) Cleats and Spigots - 6351 alloy and metal / SS screws for fixing of panels
- 10) Design criteria - As per architects drawings and approved shop drawings
- 11) Quality Certificate - All required certificates would be provided against concerned supplies, aluminium and Silicon
- 12) Leakage Test - Through Hose test
- 13) Drawing - Contractor shall submit shop drawings for approval, correct the drawings if required by PMC / architect and shall execute the work as per approved shop drawings only.
- 14) Measurements - As Actual
- 15) Spandrel Area - Insulated if required

## **5.0 Technical Specifications for Electrical Works**

### **I CONDUITS, WIRING, SWITCHES AND ACCESSORIES**

#### **1. PVC CONDUITS:**

These shall be hot extruded pipes made from virgin PVC. The pipes shall be unplasticized, rigid, free from filler material and stabilized against decay by ultra violet radiation. The pipe must afford the facility of cold bending at site. The conduit shall have a proper circular section and consistent wall thickness. All parameters shall conform to the relevant IS code. The bends shall be made by the same manufacturer, due care having been taken to ensure even wall thickness throughout. The bends shall be properly and concentrically belled for at least the same length as the pipe diameter and shall afford a close tight fit of the pipe into it. The conduit system shall be so laid out so that it will obviate the use of tees, elbows and sharp bends.

#### **2. M.S. STEEL CONDUITS:**

These shall be mild steel with 16 Gauge wall thickness for all sizes, welded, electric thread type class 'B' having perfectly circular tubing and light fitting joints. The conduit shall be protected from just by one coat of black enameled paint applied inside and outside in it's manufactured from. No steel conduit less than 19mm in diameter shall be used. Bends shall be of 16-gauge wall thickness and as far as possible the conduit system shall be so laid out that it will avoid the use of tees, elbows and sharp bends.

#### **3. CEILING OUTLET BOXES:**

Outlet boxes shall be of sufficient depth and made of Cast Iron and so installed as to maintain continuity throughout. These shall be so protected at the time of laying that no mortar finds its way inside during concrete filling or plastering. For each fluorescent fittings two outlet boxes shall be provided one foot off center for a four feet fitting and 6" off center for 2 feet fitting.

#### **4. DRAW BOXES:**

M.S. Draw boxes/junction boxes of ample dimensions shall be provided at convenient points on walls/ceiling to facilitate pulling of long runs of cables/ wires. They will be completely concealed and covered with hylam covers flush with plasterwork. These boxes will be as few as possible. All the M.S. Boxes used for housing switches, plugs, drawing of wires etc. shall have metal on all sides except in front.

#### **5. SWITCH BOXES:**

M.S. boxes of required sizes shall be provided to house the speed regulators, switches and sockets.

#### **6. ERECTION:**

Conduits shall be laid in perfect fashion as instructed duly saddled and fastened to the wall/ ceiling in a neat and proper manner in accordance with approved drawings. If required to run in the wall or in the floor filling, the same must be carried out neatly and with proper workmanship so as to conceal the entire run of conduits and ceiling outlet boxes. Wherever necessary, chases will be cut by the contractor to sufficient depth to allow full thickness of plaster

over conduits. Width of the chase will be made to accommodate the required number of conduits. The chases will be filled with cement and mortar (1:3) and properly cured by watering. If a chase is cut in an already finished surface the contractor shall fill the chase and finish it to match existing finish within the tendered rates.

When the conduit is to be embedded in a concrete member it shall be adequately tied to the reinforcement to prevent displacement during casting. Conduits in chaises or laid above the slab, shall be held by hooks spaced at a maximum of 1500mm center to center.

When the conduit is laid above the slab the same shall be covered with cement concrete mixture 1:3:6 using 1/4" thick stone aggregate and coarse sand.

**When the conduit has to run on the surface, i.e., above false ceilings, it shall be fastened to the Concrete slab using mechanical fasteners**

Suitable expansion joints fittings shall be provided at all the points where the conduit crosses any expansion joint in the building.

The conduit shall have ample sectional area to facilitate the drawing of cable. The contractor should refer to the table given below for the laying of wires:

Nominal cross sectional Area of conductor		Conduit size (PVC/M.S.) in mm				
Sq. mm	inches	19/20	25/25	32/32	38/40	50/50
1.5	3/. 029	4	8	12	-	-
2.5	3/. 036	3	6	10	-	-
4.0	7/. 029	2	5	8	-	-
6.0	7/. 036	-	4	7	-	-
10.0	7/. 044	-	3	5	6	-
16.0	7/. 064	-	2	3	5	7
25.0	19/. 044	-	-	2	3	6
35.0	19/. 064	-	-	-	2	5

**Note:** The above shows the maximum capacities of conduits for a simultaneous drawing in of cables. The table applies to 1100volts grade PVC insulated copper/ aluminium conductor cables.

All boxes shall have ample space at the back and on the sides for accommodating wires and checkout entries. Those shall be completely concealed having edges flush with wall surface. Cover plate shall be fixed to these by means of brass machine screws. No timber shall be used for any support. The boxes shall be painted before and after erection.

The entire conduit systems including outlets and boxes shall be thoroughly cleaned after completion of erection and before drawing of cables.

## **7. SWITCHES, SOCKETS AND REGULATORS:**

All switches, sockets and regulators shall be flushed with wall at the heights mentioned unless directed otherwise. The mounting shall be done on the prescribed grid plates using the correct accessories and tools specified by the manufacturer.

## **8. CABLES:**

All cables shall be 1100V and shall have been manufactured in accordance with the latest I.S specification.

## **9. POINT WIRING:**

The point wiring shall be carried out in the under mentioned manner each of which conform to the given specifications.

In concealed/ surface system including providing and fixing of conduits, bends, junction boxes, check nuts, PVC bushes etc.

Loop system will be adopted (only in the outlet boxes for neutral wire and in the switch box for live wires) throughout including supplying and drawing of required sizes of wire without damaging the same.

Each circuit will have independent neutral wire and will be complete up to outlet box and switch box. The point will be complete with conduit including accessories and wires, necessary junction boxes, outlet boxes and switch boxes, connectors or ceiling roses, switches, switch plates and flush plates including necessary earthing and connection etc. The installation generally will be carried out in conformity with the Indian Electricity Act and IS specification.

Wiring for light, fan, convenience plug point (5A) etc. will be as above. The size of wire shall not be less than 1.5 sq.mm or as specified against each item.

The light plug points shall be complete with 3pin 5 A plug socket and switch enclosed in an M.S. galvanized box with the controlling switch as required and the third pin shall be earthed as specified with copper earth wire.

The fan point shall have a provision in the switch box for mounting the regulators, unless directed otherwise.

Wiring for power plugs shall be as above. Each circuit shall have one or two plug points as required and each point shall be earthed with a minimum size of 2.5 sq mm copper conductor flexible insulated wires. All such earth wires shall be of green colour. The point shall be considered complete with circuit, 3 pins 15 A plug socket and switch mounted in a galvanized M.S box with flush plates. Wiring for power plugs shall be as described in Schedule of Quantities.

Separate and independent conduits will be used for each of the following systems:

- i) Lighting system.
- ii) Power system.

- iii) Telephone system.
- iv) Computer system.
- v) Fire Detection system
- vi) Music, Security and CCTV

The rate per point shall include all materials and labour required for completing the points as mentioned above. Measurements will be in numbers of each kind of point.

## **II MAINS AND SUBMAINS:**

Mains and sub-mains shall consist of wires, cables and conduits, bends, junction boxes, rubber bushes, check-nuts etc. As specified before. The sizes and capacities of conduits and wires shall be as stated in the schedule of quantities and will commence from the main switches to the various distribution boards. Wires shall be drawn in concealed or surface conduits as required without being damaged. For this purpose draw boxes shall be located at convenient but not in conspicuous places. Every main and sub main will run in an independent conduit. Necessary provisions of wire lengths entering and emerging from the conduit must be made for connections. Colour code for phase and neutral are to be followed i.e. only RED, YELLOW, BLUE, BLACK and GREEN colour wires are to be used for the three phase colors, neutral, and earth conductor respectively. Measurements will be taken of the actual conduit run containing the wires from one switchgear to another. Per meter rate shall include all materials, connections, labour etc. as specified above.

## **III CABLE WORK:**

### **1. STORAGE AND HANDLING:**

Cable drums shall be stored on a well-drained, hard surface, preferably crete, so that the drums do not sink into the ground causing rot and damage to the cable drum.

During storage, periodical rolling of drums once in 3 months through 90 degree shall be done specially in the case of paper insulated cables. Rolling shall be done in the direction of the arrow marked on the drum. It should be ensured that both ends of the cables are properly sealed to prevent ingress/absorption of moisture by the insulation. Protection from rain and sun is preferable. Sufficient ventilation between cable drums should be ensured during storage. The drums shall always be rested on flanges and not on flat sides. While removing cables the drums shall be properly mounted on jacks or on a cable wheel or any other suitable means making sure the spindle, jack, etc. is strong enough to take the weight of the drum. The cables shall not be sharply bent within a small radius.

The minimum safe bending radius for all types of PVC cables shall be taken as 12 times the overall diameter of the cable. Wherever practicable, large radius should be adopted. At joints and terminations, the bending radius of individual cores of mullet-core cables shall not

be less than 15 times its overall diameter. Cables with kinks and straightened kinks or with similar apparent defects like defective armouring etc. shall not be installed.

### **2. INSTALLATION:**

The cables installation including necessary joints shall be carried out in accordance with the specifications given herein. For details not covered in the specification, IS 1255-1967 shall

be followed. Before the cable laying is undertaken, the route of the cable shall be decided by the Engineer-in-charge. While shortest practical route should be preferred, cable runs

shall generally follow fixed developments such as roads, foot paths etc. Cables of different voltages and also power and control cables should be kept in different trenches with adequate

separation. Where available space is restricted, LV/MV cables shall be laid above HV cables. Where cables cross one another, the cable of higher voltage shall be laid at a lower level than the cable of lower voltage.

### 3. LAYING ON SURFACE:

The cables may be laid through in trough or brackets at regular intervals or directly cleared to wall/ ceiling. When laid over bracket supports the cables shall be clamped to prevent undue sag. Cable clamps shall be made from materials such as galvanized mild steel, or PVC or Nylon ties. In case of single core cables the clamps shall be of non-magnetic materials. A suitable non-corrosive packaging shall be used for clamping unarmored cable to prevent damage to the cable sheath.

Wherever more than one cable is laid/ run side by side, marker tags as approved inscribed with cable identification details shall be permanently attached to all the cables in the manholes/pull pits/joint pits/entry points

in buildings/ open ducts etc. These shall also be attached to various cables laid direct in ground at suitable intervals as decided by the Engineer-in-charge before the trenches are filled up.

Only licensed/experienced cable jointer shall carry out jointing work. Sufficient ventilation shall be provided during jointing operation in order to disperse fumes given out by fluxing. Jointing materials and accessories like conductor ferrules, solder flux and protective tapes, filling compound, jointing boxes etc. as right quality and correct sizes conforming to relevant Indian standards, wherever they exist shall be used.

The design of the joint box and the composition of the filling compound shall be such as to provide an effective sealing against entry of moisture in addition to affording proper electrical characteristic to joints. Where special type of splicing connector kits or epoxy resin spliced joints are specified, materials approved for such application shall be used and instruction of the manufacturer/supplier of such materials shall be strictly followed.

Insulation resistance of cables to be jointed shall be measured with 500 V megger up to 1.1 KV grade and with 2500/5000 V megger for cables of higher voltage. Unless the insulation resistance values are satisfactory, jointing shall not be done. Whenever Aluminium conductor is exposed to outside atmosphere a highly tenacious oxide film is formed which makes soldering of



aluminium conductor difficult. This oxide film should be removed using appropriate type of flux. The clamps for the armoured shall be clean and tight.

#### 4. **CABLE JOINTING & TERMINAL**

Jointing shall be as per the manufacturer's recommendation using standard kits. Cable joints shall be made in suitable, approved cable joint boxes, jointing of cable in the joint boxes and filling of compound shall be done as per manufacturer's recommendation.

Cable shall be terminated onto the terminals of switchgear through cable lugs of proper size. Cable lugs shall be fitted onto the cable by crimping or compression jointing.

#### 5. **TRENCHING & CABLE LAYING**

The minimum width of trench shall be 45 cm and depth shall be 75cm for lying of cable. Where more than one cable is to be laid in the same trench in horizontal formation, the width of trench shall be increased such that the inter-axial spacing between the cables, except where otherwise specified, shall be at least 20 cm.

There shall be a clearance of at least 15cm between axis of the end cables and the sides of the trench.

The trenches shall be excavated in reasonably straight lines. Where there is a change in direction, suitable curvature shall be provided.

Where gradients and changes in depth are unavoidable, these shall be gradual.

The bottom of the trenches shall be level and free from stone, brick, bats etc. The trench shall then be provided with a layer of clean, dry sand cushion of not less than 9cm in depth.

Cable laid in trenches in a single tier formation shall have a covering of clean, dry sand of not less than 20cms. Above the base cushion of sand before the protective cover is laid.

In the case of vertical multi-tier formation, after the first cable has been laid, a sand cushion of 30cms shall be provided over the initial bed before second tier is laid. If additional tier are formed, each of the subsequent tier shall have a sand cushion of 30cms as stated above. The top-most cable shall have final sand covering not less than 17cms before the protective cover is laid.

Unless otherwise specified, the cables shall be protected by second class brick of not less than 20cm x 10cm x 10cm (nominal size) as per CPWD building specification, or protection covers placed on top

of the sand, (brick to be laid breath wise) for the full length of the cable to satisfaction of the owner. Where more than one cable is to be laid in the same trench, this protective covering shall cover all the cables and project at least 5cm over the sides of and cables.

The trenches shall be then back filled with excavated earth free from stone or other sharp-edged debris and shall be rammed and watered, if necessary, in successive layer not exceeding 30cm

Unless otherwise specified, a crown of earth not less than 50mm in the center and tapering towards the sides of the trench shall be left to allow for substance. The crown of earth, however, should not exceed 10cms.

Where road bends or lawns have been cut or kerb stones displaced, the same shall be repaired to the satisfaction of the Architect and all surplus earth or rock removed to be placed as specified.

In locations such as crossing, entry to building in paved areas etc. cables shall be laid in pipes or closed ducts.

All cable entry / exit points into the building through pipe sleeves shall be properly sealed with bituminous resin in an approved manner to avoid any seepage of water into the building.

Manholes of adequate size, as decided by the architect, shall be provided to facilitate feeding / drawing in of cables and to provide working space for persons. Suitable manhole covers with frame of proper design shall cover Manholes.

## **6. CABLES OR HANGERS OR RACKS**

The contractor shall provide and install all iron hangers racks, or racks with die-cast cleat, with fixing rag bolts or ginger clamps or other specialist fixing as required.

Where hangers or rack are to be fixed to wall sides ceiling and other concrete structures, the contractor shall be responsible for cutting away, fixing and grouting in rag bolts and making good the damages as required.

The hangers or racks shall be designed to leave at least 25mm clearance between the cables and the face to which it is fixed. Multiple hangers shall have two or more fixing holes. All cables shall be saddled to not more than 150mm intervals. These shall be designed to keep provision of some spare capacity for future development.

## **7. CABLE TRAY**

All cable trays shall be of minimum 2-mm thick MS sheet should have undergone rigorous rust proofing process, which should comprise of alkaline, degreasing, rescaling in diluted sulphuric acid and a recognized phosphating process. The sheet work shall be then given two coats of final painting. Cable shall be either painted (Stove enamelled) or hot dip galvanized as called for in the schedule of quantities.

Cable trays shall be complete with bends, joints, coupler plates and accessories as may be required for jointing the cable tray.

Cable tray shall be either perforated or ladder type as called for in the schedule of quantities.

## **8. PERFORATED CABLE TRAYS**

Standard dimensions of perforated cable trays shall be as follows:

1. Width : 100mm to 1200mm

2. Length : 2500 mm
3. Thickness : 2mm upto 750mm width and 3mm from 900mm to 200mm
4. Coller height : 100mm
5. Cable tray : 2mm upto 750mm & 3mm above 750mm cover  
(if called for the schedule of quantities)

#### 9. LADDEER TYRE CABLE TRAYS

Standard dimensions of ladder type cable trays shall be as follow:

SIZE OF TRAY	SIZE OF MAIN CHANNEL	SIZE OF RUNG/ SPACING BETWEEN RUNGS
900MM TO 1200MM	25 x 100 x 25 x 3cm	20 x 50 x20 x2 @ 200 / C
Up to 750mm	25 x 75 x 25 x 2mm	20 x 50 x20 x2 @ 200 / C

Sizes of angle for cable tray supports shall be minimum 40 x 40 x 5mm up to 600mm & 50 x 50 x 5mm minimum as specified in the drawing / schedule of quantities for sizes above

600mm. Hangers shall be minimum 10mm dia steel round bars as specified in the drawings / schedule of quantities. Contractor shall carry out 2 coats of primer and two coats synthetic enamel on all steel structures. Fixing arrangement shall be as approved by the Consultant. Hardware to be used in cable tray system shall be galvanized or zinc passivated. The testing on galvanized material if required shall be carried out as per IS: 2633, amended to date.

#### 10. CABLE TAGS

Cable tags shall be made out of 2mm thick aluminum sheets. Each tags shall be 2" in dia or 3" x 3" square with one hole of 2.5mm dia 6mm below the periphery, or as approved by consultant. Cable designations are to be punched with letters / numbers punches and the tags are to be tied to cables with piano wires of approved quantities & size. Tags shall be tied inside the panels beyond the glanding as well as above the glands at cable entries. Along trays tags are to be tied at all bends. On straight lengths tags shall be provided at every 5meters.

Cable shall be secured to cable trays with 3mm thick x25mm wide aluminum strip / suitable GI clamp, or as approved by Consultant, at 1000mm intervals and screwed by means of rust proof screws, washes and bolts, of adequate but not excessive lengths. Cable trays for horizontal runs suspended from the ceiling will be supported with mild steel straps or brackets, at 1000mm intervals and the overall tray arrangement shall be of rigid construction. External cabling route marker with GI plate marked with "DANGER 1.1 KV CABLE" With 1 meter long GI angle iron grouting bracket including 1:3:6 ratio cement concrete base block of minimum size 200 x 200 x 350 mm to be provided or as approved by Elect. Supply Company.

## **TECHNICAL SPECIFICATIONS FOR SHEET STEEL**

### **CUBICLE TYPE SWITCH BOARDS.**

#### **1. CONSTRUCTION:**

Switch boards shall be indoor, floor/ wall mounting, free standing, cubicle type fabricated from CRCA sheet. They shall be rated for 415/500 Volts 3 phase 4 wire 50Hz system and have insulation voltage of at least 2500Volts for 60seconds. Panels shall be fabricated using minimum 2mm thick CRCA sheet that has been pre-treated by degreasing, pickling, phosphating and passivation.

Gaskets shall be used between all adjacent units and beneath all covers to render the joints effectively dust proof. The design shall be totally enclosed, completely dust and vermin proof conforming to IP 52 class of construction. All modules shall have a covering at the bottom so that entry to dust, rats and vermin is not possible. The switchboards shall be easily extendible. The arrangement shall be logical, compact and neat. The switchboard shall have a uniform height throughout its length.

A base channel of 50mm x 25mm fabricated out of 3mm thick hot rolled sheet steel painted black shall be provided to prevent corrosion of the sheet steel cubicle and facilitate cleaning of floors.

#### **2. FEEDER ARRANGEMENTS:**

Unless specifically stated, the switchboard shall be of single front construction, i.e. it should have all operations and connection from the front of the panel, and equipment shall be mounted on the front only. The rating of switches, fuses, contactors etc. shall be as specified. If specified rating is not available, next higher rating should be used in consultation with the Architect/ Consultant. Outgoing feeders shall be neatly arranged in different compartments. Normally equipment for individual feeders shall be accommodated in separate modules. The framework shall house the switches, switch fuse units, starters and contactors, MCBs and MCCBs etc. in multi-tier formation. The equipment shall be mounted independent of the back plate and not on the rear surface of the housing. Each module shall be fitted with individual doors and concealed hinges. All doors shall be held securely against sponge rubber gaskets to make the equipment dust tight. All hinged doors shall be provided with insulated half-turn, flush mounted, steel knobs. The compartment doors shall be so interlocked that it shall not be possible to open the door when the switch is in closed (ON) position.

#### **3. BUS BARS:**

Copper bus bars are to be used for current ratings up to 400A and for ratings above 400A, electrolytic grade aluminium bus bars may be used. The rating of the three phase (and neutral) bus bars shall be as specified in the schedule of quantities and drawings and shall not be less than the total incoming switches current rating. They shall be housed in separate bus bar chambers, rated for a temperature rise of 30° C over the ambient temperature specified based on insulated conductor rating (I.S: 8084-1976). Neutral bars may be of one half the size of

phase bars. An earth bus of size approximately 50% of the phase bus bar shall be provided and shall be carried to some point external to the panel.

Bus bars shall be supported on unbreakable non-hygroscopic SMC/ DMC moulded supports with anti-tracking barriers

rigidly held to the framework of the chamber. The bus bars shall be suitably insulated with colour coded heat shrinkable PVC sleeves. Bus bar chamber shall have a separate screwed cover with clear markings to identify the voltage and current rating of the bus bars.

#### 4. **CABLE COMPARTMENT:**

A cable compartment running along the vertical module shall be provided for easy termination of all incoming and outgoing cables entering either from top or bottom. Adequate supports shall be provided for the cables where necessary. The cable compartment shall have its own screwed removable gland plate cover, preferably at top and bottom, for easy access during cabling.

#### 5. **CONTROL WIRING:**

All control wiring shall be carried out through the common vertical compartment. In case wires are required to cross the busbar chamber, such crossings shall be carried out in neat bunches tied together. Power connections of the feeders shall be done by aluminium or copper flats of adequate sizes.

Control wiring shall be done using PVC insulated multi-stranded copper wires of minimum 1.5sq.mm nominal cross sectional area. All control wiring shall be fitted with identification ferrules at each end. Not more than two connections shall be made at any one terminal. The wires shall be arranged and supported in such a manner that there shall be no strain on the terminations. The terminations shall be of adequate current rating and size to suit individual feeder arrangements.

Power terminals shall be pressure clamp type suitable for copper/ aluminium wires. For connection above 63A, 35sq.mm cable lugs shall be used. These cable lugs shall be mounted in such a manner as to facilitate cable connections.

#### 6. **CABLE ENTRY:**

Cubicles shall be designed to facilitate steel strip armoured, PVC sheathed copper or aluminium cable entry from top or bottom as the case may be. Removable sheet steel plates shall be fitted at the top and bottom to drill holes for cable entry at site.

#### 7. **PAINTING:**

All steel work shall be painted in pre-approved shade as required after proper mechanical and chemical cleaning by degreasing, pickling, phosphating and passivation has been done. Painting should preferably be carried out using powder coating technique.

#### 8. **DISTRIBUTION BOARDS:**

Distribution board shall comprise of set of 200A rating copper bus bar, earth terminals, MCB's, DP RCCB's and neutral link mounted in three tiers phase wise as detailed in the schedule of quantities. These shall be housed in a hinged double door powder coated sheet

metal box of ample dimensions made by an approved manufacturer. Suitable locking arrangements shall be made if necessary. All distribution boards shall be fitted with MCB's connected on the live sides. The bus bar shall be such that the circuit could be isolated easily. The capacity of the MCBs will be as detailed in the schedule of quantities. All the distribution boards shall be painted with approved paint. Each circuit shall have an independent neutral wire and shall be numbered and marked as required by the Architects/ Engineer-in-charge. Sample of the complete distribution board shall be approved before installing. The rate per item will include

all the above-mentioned material and labour required. Measurements will be in numbers of complete sets as described in the schedule of quantities

## SPECIFICATIONS FOR MEDIUM VOLTAGE EQUIPMENT

### **A) Air Circuit Breakers (ACB's)**

Air Circuit Breakers shall be horizontal draw out type, fully interlocked and meeting the requirements of IS:2516. Breakers shall be rated for medium voltage of 600V and rated full load current as indicated on drawings. Breakers shall be capable of breaking system short circuits specified and earth faults where required and be provided with facilities for electrical and/ or mechanical interlocking.

Breakers shall be, unless specified otherwise, spring-charged, motor operated, complete with facility for manual spring charging and manual closing arrangement, isolating plug and safety shutters, mechanical ON/OFF indicator, silver plated arcing and main contacts, arc chutes and trip free operation. Breakers shall be capable of being racked into "Service", "Test" and "Isolated" positions and kept locked in any position with mechanical indication of position. Unless otherwise stated ACB's shall be four pole with neutral making contact first and breaking contact last. If neutral contactors are used they must follow the same system.

### **B) Isolators:**

Isolators units shall have quick-make, quick-break contacts with double break operating mechanism suitable for rotary operation and door interlock facility in the case of cubicle mounting. Incoming and outgoing terminals shall be properly sized to receive corresponding size of copper or aluminium conductor cable. All switches shall be rated according to the equipment schedule or drawings and shall withstand the system prospective fault current. All isolators shall be heavy duty type conforming to IS:4047.

### **C) Switch Fuse Units:**

Switch fuse units shall have quick-make, quick break contacts with double break operating mechanism suitable for rotary operation and door interlock facility in the case of cubicle mounting. Incoming and outgoing terminals shall be properly sized to receive corresponding size of copper or aluminium conductor cable. All switches shall be rated according to the equipment schedule or drawings and shall withstand the system prospective fault current. All Switch Fuse Units shall be heavy duty type conforming to IS:4047.

Fuses shall be HRC cartridge type conforming to IS: 9224-1991 with a breaking capacity to system fault level. Fuses shall be link type with visible indication to show fuse status. Unless otherwise stated, SFUs shall be three pole and neutral.

### **D) Moulded Case Circuit Breakers (MCCB's):**

MCCB's shall be of robust construction with quick make and quick break contacts and independent of load and supply side. They should be suitable for vertical or horizontal mounting and the incoming and outgoing terminals shall be properly sized to receive corresponding size of copper or aluminium conductor cable. They should be constructed to allow for mounting of rotary type operating handle and door interlock. There should be a separate and distinct trip position for

the MCCB knob that should be transported to the rotary handle. The breaking capacity should be as specified in the Schedule of Quantities. If specified breaking capacity is not available, next higher available size is to be used.

**E) On-Load Changeover Switches:**

Changeover switches should be suitable for cubicle type panel mounting and shall be four pole type with delayed neutral break and advanced neutral make and separate and distinct OFF position. The

switch positions must be clearly marked on the switch front and corresponding contacts must be clearly indicated at the terminals. The incoming and outgoing terminals shall be properly sized to receive corresponding size of copper or aluminium conductor cable. The switch shall have telescopic handle and door interlock. There shall be an auxiliary contact suitable for lighting up indicating light to show the position of the ON contact.

**F) Instrument Transformers, Meters & Relays:**

Ammeters and Voltmeters shall have moving iron spring controlled dead beat elements in square bezel flush type cases 96mm in size and suitable for switch board mounting with external provision for zero adjustment. Meters shall conform to BS:89 and have grade 'A' accuracy. Scale ranges shall meet with the requirements or as indicated on the drawings or in the schedule of quantities.

Energy meters shall be two element switch board mounting type suitable for unbalanced loads. Meters should incorporate a KVA demand meter with an integration time of 30 minutes. In case of two incoming feeders, a summing C.T. shall be provided with the meter. Meters shall conform to BS:37. All tripping may be through combination of IDMT thermal and magnetic releases as specified.

**G) Legend Plates and Labelling:**

All switchgear feeders, bus bar chambers and cable alleys must be labelled with clear distinct Legend Plates. These can be made from metal painted black with etched lettering or using trafolyte with white lettering on black background. Feeder Legend Plates must have the current rating of the switchgear mentioned on the label. Fixing to the panel must be by rivets or by permanent form of adhesive. Suitable "Danger" plates with respective voltage levels must be marked on all bus-bar chambers. The Legend Plates should have nominal dimensions of 75mm x 15mm. Once size is fixed, the same dimensions are to be adopted for all labelling for that particular panel. Legends must be in English and Hindi.

**VII EARTHING**

Earthing shall conform to the following specifications. For other details not covered in this specification, relevant Indian standards shall be referred to.

**TYPES OF EARTH ELECTRODES:**

- a) Pipe earth electrode.
- b) Plate earth electrode.



**a) PIPE EARTH ELECTRODE:**

G.I pipe shall be of medium class, 40mm dia and 4.5 m in length. Galvanising of the pipe shall conform to relevant Indian standards. G.I pipe electrodes shall be cut tapered the bottom and provided with holes of 12mm dia drilled not less than 7.5 cm from each other up to 2m of length from the bottom. The electrode shall be buried in the ground vertically with its top not less than 20 cm below ground level.

**b) PLATE EARTH ELECTRODE.**

For plate electrode minimum dimensions of the electrodes shall be as under:

- i) GI plate electrode- 60 cm x 60 cm x 6 mm thick.
- ii) Copper plate electrode- 60 cm x 60 cm x 3mm thick.

The electrode shall be buried in the ground with its faces vertical and the top not less than 3 m below ground level.

**METHOD OF INSTALLING WATERING ARRANGEMENT:**

In the case of plate electrode, a watering pipe of 20 mm dia of medium class G.I pipe shall be provided and attached to the electrode. A funnel with mesh shall be provided on the top of this pipe for watering the earth. In case of pipe electrode a 40mm x 20mm reducer shall be used for fixing the funnel. The watering funnel attachment shall be housed in a masonry enclosure of not less than 30cm x30cmx30 cm. A cast iron/M.S frame with cover and locking arrangement shall be suitably embedded in the masonry enclosure.

**LOCATION OF EARTH ELECTRODE:**

Normally an earth electrode shall not be situated less than 1.5m from any building. Care shall be taken that the excavations for earth electrode may not affect the column footings or foundations of the building. In such cases the electrodes shall be situated farther away from the building.

The location of the earth electrode will be where the soil has reasonable chance of remaining moist, as far as possible. Entrances, pavements and roadways, are definitely to be avoided for locating the earth electrode.

**METHOD OF EARTHING LEAD TO EARTH ELECTRODE:**

In the case of plate earth electrode the earthing lead shall be securely bolted to the plate with two bolts, nuts, check nuts and washers. In the case of pipe earth electrode, it shall be connected by means of a through bolt, nuts, washers and cable socket.

All materials used for connecting the earth lead with electrode shall be G.I in case of G.I pipe or G.I plate earth electrode and of tinned brass in case of copper plate electrode.

The earthing lead shall be securely connected at the other end to the main board Loop earthing shall be provided for all mountings of main board and other metal clad switches and Distribution boards with not less than 14 SWG copper or 12 SWG G.I or 4 sq.mm. Aluminium wire.

The earthing lead from electrode onwards shall be suitably protected from mechanical damage by a 15 mm dia G, I pipe in case of wire and by 40mm dia medium G.I pipe in case of strip. Portions of this protection pipe within ground shall be buried at least 30 cm deep (to be increased to 50 cm in case of road crossing and pavement). The portion within the building shall be recessed in walls and floors to adequate depth.

In all cases the relevant provisions of rules 33, 61 and 67 of Indian Electricity rules 1956 as amended shall be complied with. Metallic covers or supports of all medium pressure or H.T apparatus or conductors shall in all cases be connected to not less than two separate and distinct earth's including electrodes. No earth electrode shall have a greater ohm resistance than five ohms as measured by an approved earth testing apparatus. In rocky soil the resistance may be up to eight ohms.

## TECHNICAL SPECIFICATIONS

### FOR INTERIOR BEAUTIFICATION WORKS

#### **CARPENTRY AND JOINERY**

##### **1. GENERAL:**

##### **1.1. General Requirement.**

This section of the specifications shall be read in conjunction with the drawings and other contract documents and other sections of this specification which shall be deemed complimentary with one another. The contractor shall be responsible for providing all plant, tools, materials and all things necessary for the proper storage of materials, execution, completion and maintenance of the works.

##### **1.2. Delivery and Storage.**

All timber delivered to the site shall be carefully stored above ground in such a manner as to provide proper drainage, ventilation and protection from the weather and shall be stored in a proper manner according to each material type.

##### **1.3. Definition of carpentry.**

The definition of carpentry work shall be deemed to include fixing clips, blocking grounds, fittings, sub-frames, rough frames and wood framing members, as per relevant IS Codes.

##### **1.4. Moisture content of timber.**

Timber shall be well seasoned and clean dried with a moisture content of 12% nominal+2% for teak wood. The contractor should get it tested for moisture content of wood at their own cost as per the direction of the Architects/Engineer in charge and produce the certificate to Indian Oil Corporation Ltd for approval.

##### **1.5. Protection, Delivery & Storage.**

All timber shall be treated with preservatives before delivery to site.

All joinery and joinery timber shall be wrapped in polythene before and during transport and delivery to site.

While remaining in polythene wrappers the timber shall be protected from extremes of temperature and direct sunlight. Internal joinery and joinery timber shall be kept in its original polythene wrappers before working fixing and installing on site. Polythene wrapping to external joinery and timber shall be removed on delivery to site or as previously specified.

### **1.6.Timber.**

Timber shall be of the species stipulated in the schedules of rates. It shall be thoroughly seasoned, free of defects which would affect strength and shall be flat, straight, non splitting and dressed on all sides. The timber shall be free from decay, fungal growth, bored heart, pitch pockets or streaks on the exposed edges, splits and cracks. Knots should be avoided. Seasoning of timber shall be approved as per IS: 1141 (specification for code practice for seasoning of timber) and code of practice for prevention of timbers as per IS: 401.

### **1.7.Timber Fixing.**

The carpentry timber shall be fixed with nails, spikes, bolts, screws, hangers, stirrups, anchors, ties or any other accessories which are suitable to develop the full strength of the member.

### **1.8.Fixing.**

Carpentry timber fixed to solid masonry or concrete shall be secured with expansion bolts or other positive method of mechanical fastening. Carpentry timber where fixed into hollow masonry shall be secured with toggle bolts and steel with bolts, nuts & washers as per instruction of Engineer.

### **1.9.Fiber plugs.**

Fixing by means of well seasoned and preservative treated wooden plugs will be permitted only where it is required.

### **1.10.Fastening.**

Power driven fasteners may be used for fastening to steel, concrete and brick masonry as approved by Engineer.

## **2. PROTECTION AND RETARDANTS:**

### **2.1.Organic protection-timber generally.**

The contractor shall make his own investigation to guard against local sources of attack and damage and take all necessary precautions for protection.

All timber shall be protected with an organic solvent water repellent wood preservative to give a highly efficient protection against termite, spider, worm, all insect and insect and fungus and attack and shall where exposed, enhance the appearance of the timber, colour of the product shall be such as to bring out the natural colour of the respective timber.

The preservative shall penetrate deeply into the timber, shall protect against blue stain, rot, fungus & termite, spider, work & all insects attack and shall contain a resin which fixes the preserving agent and protects them against leaching and evaporation. The protection shall also

be water repellent, weather proof and proof against peel, crack or blister of approved quality. Preservative treatment of timber shall be done as per IS: 401.

## **2.2.Fire Retardant.**

Fire retardant treatment of timber shall be applied by vacuum/pressure impregnation or manually and shall comply with the requirement of ISI code of practice and local fire requirements. The fire retardant effect shall be produced by the generation of water vapour and inert gases and the production of hard crystalline charcoal which acts as a heat barrier.

## **3. JOINERY.**

### **3.1.Timber veneers.**

- a) Timber veneers shall be of the timber species shown on drawings. Veneers are to be kept in sequence as it is being cut from wood and supplied as such to the site for accurate matching of figuring.
- b) Adhesives for using fixing veneers shall be in accordance with the manufacturer's recommendations and as approved by engineer-in-charge.
- c) If adhesives other than contract type are required then bonding shall be in presses.
- d) The veneer shall be finished as specified and shall be equal or superior quality to the laid down in IS: 1659-1960 or as approved.
- e) The contractor shall submit a one square meter sample of each finished veneer type for approval. The size of such sample shall be one square meter unless otherwise specified.
- f) Adhesive used for bonding BWP grade of plywood Boards shall be BWP type synthetic resins conforming IS: 848 respectively.

### **3.2.Plywood.**

- a) Plywood shall be a product of a balanced construction made of plies assembled by gluing, the chief characteristics being the crossing of alternate plies improve the strength properties and minimize movement the plan of board.
- b) Plywood shall be of best quality close grained plywood suitable for veneering, painting or bonding plastic laminate. It shall be a resin bonded, water proof board. Exposed edges shall be finished with an edge strip of solid teak wood tongued and grooved & glued or as detailed.
- c) The manufacturer and reference for plywood suitable shall be subject to approval. The thickness shall be in accordance with the drawings.
- d) Plywood shall be of BWP grade or BWP type synthetic resin conforming IS: 848.

### **3.3.Particle board.**

a) Wood based particle board shall be a board made from wood particles bonded with a synthetic resin and/or other organic binder. Thickness shall vary as shown on drawings. Particle board shall comply with IS 12823.

- b) Interior grade particle board shall be used externally or internally with damp surroundings.

- c) Manufacturer and reference for particle board shall be subject to approval.
- d) Adhesive used for bonding shall be conforming IS: 848.

### **3.4. Block board / Lamine board(solid).**

- a) Block boards have a solid core made up of uniform strips of wood each not exceeding 25mm in length, laid separately, or spot glued, or otherwise joined to form a slab which is glued. Between two or more outer veneers. In any one block Board, the core strips shall be of one species of timber only. Face veneers may be decorative or commercial on both faces or decorative on one face only and or commercial on the other. Block Boards shall be grade I (Exterior grade) as per IS: Code 1659.
- b) Manufacturer and reference of block board/shall be subject to approval.
- c) Adhesive used for bonding shall be conforming IS: 848.

### **3.5. Storage of sheet materials.**

Sheet materials shall be transported and stored flat, with sufficient support to prevent bowing and wrapping and to prevent damage to edges and corners. Sheet materials shall be protected from weather and kept off the ground and in dry, well ventilated condition.

### **3.6. Sample:**

The contractor shall submit sample of all materials including large samples of veneer assemblies for approval. All materials pre-fabricated, delivered and assembled shall be in accordance with the approved sample as per instruction of Engineer.

### **3.7. Shop drawings-Cabinet joinery:**

The contractor shall submit for approval shop drawings for all cabinet joinery. Shop drawing shall relate to site measurement and show in detail the construction of the various parts of the work, the method of jointing, the thickness and type of material, the finishes to be applied to the various exposed surfaces, details of anchoring, joints, welds, fastening and all other relevant information.

## **4. JOINERY—GENERAL:**

### **4.1. General.**

Joinery shall be carried out strictly in accordance with the drawings where joints are not specifically indicated recognized forms of joints shall be used.

Where no dimensions are specified or shown on drawings, the contractor shall space fixing battens, fillets, ground studs and the like, in accordance with the recommendation of the manufacturer.

## **5. TIMBER VENEERED AND LAMINATED PLASTIC PANEL:**

### **5.1. General.**

Reference should be made to section of this specification which relate to timber and plastic laminate veneer.

a)The panels shall be factory made and shall be selected timber veneer or plastic laminate veneer glued to water proof plywood (as per IS Code) the edge of which shall be finished with hardwood lipping. The size and finishes of the panels shall be in accordance with the drawing and schedules instruction of Engineer.

## **5.2.Fire Rating.**

Panels shall be rendered fire retardant and to confirm to local fire regulations of concerned Authorities.

## **5.3.Protection and Storage.**

a)Panels shall delivered to site in perfect condition and in their original protective coverings.

b)Panels shall be stored flat and stacked evenly in such a manner as to allow air to circulate around them freely and shall be protected from damp, direct sunlight and all other damage.

## **5.4.Installation .**

a)Panels shall not be installed until all plastering work is dry.

b)Panels shall be installed according to the drawing & schedules and to the manufacturer's recommendations.

c)Panels are to be securely fixed to wall with screws on painted mild steel Z clips at 600 mm centers horizontally and 1200 mm centers vertically and shall be installed true and plumb on hardwood packing pieces as necessary.

d)Panel edges cut on site shall be scaled and made good with a veneer edging strip to match the factory finish.

e)On, completion of installation the panels shall be left to perfect condition and properly protected against damage, damp excessive heat, dirt and direct sunlight.

## **5.5.Samples.**

The contractor shall submit a sample of each type of veneer/laminate panel for approval before general fabrication is put in hand.

6.Great care must be exercised in cutting the RCC slabs/beams to located suitable reinforcement for welding the MS flats to be provided for suspension of false ceiling system. The damage to the RCC member shall be made good with cement mortar 1:3(1cement:3coarse sand). The projecting portion of the MS flat below the RCC member and any other steel member in the false ceiling system shall be painted with one coat of red oxide paint.

## **2.ALUMINIUM GLAZED PARTITION / DOORS / WINDOWS:**

### **2.1.General specification, materials & erection.**

Anodised tubular aluminium sections for doors, windows partition frames shall be of INDAL/JINDAL or approved equivalent make and shall be of size and design as per relevant drawings.

All moving and fixing frames shall be manufactured from Aluminium alloy conforming to IS 1199 9 WP.

The alternate vertical frames shall be taken up beyond false ceiling upto main RCC ceiling/beam and shall be taken up beyond false ceiling upto main RCC ceiling/beam and shall be properly screwed with main RCC ceiling/beam by way of raw/plugs/flats/deats etc completed.

The door shutter section shall be 5.5 mm thick plain glass fixed with necessary gasket and snap fit aluminium beading strip. The glazing for shutters shall be 5.5 mm thick laminated safety glass or as specified.

The door shall be provided with one security 6 lever lock. The shutters shall be provided with anodized aluminium butterfly door handles inside and outside.

The average thickness of anodized coating shall not be less than 15 microns (IS:1968) or as specified. The glazed partition frames shall be provided with approved anchors @ 90 cm c/c maximum for fixing. The bottom rail shall be fixed by way of bolts/screws to the false flooring.

## **2.2.Payment.**

Payment including cost of labour, materials, taxes, carriages etc. shall be made on square meter basis of finished work. Fixed glazed partition shall be measured deducting the shutter within it and upto false ceiling only. Nothing extra shall be paid for taking vertical frame members upto main ceiling/RCC slab or beam. Door shutter shall be paid extra on square meter basis. Only clear opening or area for open able shutter left within the glazed partition shall be measured for payment.

## **STANDARD TECHNICAL SPECIFICATIONS FOR PAINTING JOB**

### **1.PAINTING.**

#### **1.1. Materials**

Paint, oils varnishes etc of approved brand and manufacturer shall be used synthetic enamel paint as received from the manufacturer without any admixture shall be used. (Conforming to IS: 2932)

Approved paints, oil or varnishes shall be brought to the site of work by the contractor in their original containers in sealed condition. The empty tins shall not be removed from the site of work till the relevant item of work has been completed and obtained from the Engineer-in-charge.

#### **1.2. Commencing Work**



**1.3. Painting shall not be started until the Engineer-in-charge has inspected the items of work to be painted, satisfied himself about their proper quality can give his approval to commence the painting work.**

**1.4. Preparation Of Surface**

**The surface shall be thoroughly cleaned and dusted. All rust, dirt scales, smoke and grease shall be thoroughly removed before painting is started. The prepared surface shall have received the approval of the Engineer-in-charge after inspection.**

**1.5. Application**

**Before pouring into smaller containers for use, the paint shall be continuously stirred in the small containers so that its consistency is kept uniform.**

**The painting shall be laid on evenly and smoothly by means of crossing and laying off, the later in the direction of the grain of wood. The crossing and lying off consists of covering the area over with paint, brushing the surface hard for the first time over and then brushing alternately in opposite direction, two or three times and then finally brushing alternately in opposite direction, two or three times and then finally brushing lightly in a direction at right angles to the same. In this process no brush marks shall be left after laying off is finished. The full process of crossing and laying off will constitute one coat.**

**Where so stipulated, the painting shall be done with spray, spray machine used may be high pressure type of or a low pressure type, depending on the nature and location of work to be carried out. Skilled and experienced workmen shall be employed for this class of work. Paint used shall be brought to the requisite consistency by adding a suitable thinner as recommended by the paint manufacturers.**

**Spraying shall be done only when dry condition prevails.**

**Each coat shall be allowed to dry out thoroughly and rubbed smooth before the next coat is applied.**

**Each coat expect the last coat, shall be lightly rubbed down with sand paper or fine pumice stone and cleaned off dust before the next coat is laid.**

**No left over paint shall be put back into the stock tins.**

**No hair marks from the brush or elegging of paint particle in the concern of panels, angles of molding etc shall be left on the work.**

**In painting steel work, special care shall be taken while painting over bolts, nuts, rivets, overlaps etc.**

The additional specification for primer and other coats of paints shall be as according to the detailed specifications under the respective headings.

#### **1.6. Brush And Containers**

1.7 After work, the brushes shall be completely cleaned from paint and linseed oil by rising with turpentine. The containers, when not is use, shall be kept closed.

#### **1.8. Measurement**

The units of measurement for painting except where otherwise stated shall be given in “Sq meter” painting of rain water, soil, waste, vent pipes, etc shall also be measured in “Sq meter”.

#### **1.9 Precautions**

All furniture, fixtures, glazing, floors etc shall be protected by covering and stains, smear, splashing if any shall be removed and damage done shall made good by the contractor at his cost.

#### **1.10 Rate**

Rate shall include cost of all labour and materials, taxes, carrying, cleaning of surface after painting involved in all the operation described above and in the particular specifications given under the several items. It shall also include cost of scaffolding.

### **2 PAINTING PRIMING COAT ON WOOD, IRON SURFACE**

#### **2.1 Materials**

The priming coat for woodwork or iron work shall be as specified in the description of the item. It shall be ready made primer of approved brand and manufacture. IT shall be brought to site in their original packings in sealed condition.

#### **2.2 Preparation Of Surface**

##### **2.2.1. Wood work**

The woodwork to be painted shall be dry and free from moisture.

The surface shall be thoroughly deaned. All unevenness shall be rubbed down smooth with sand paper and shall be well dusted. Knots, if any, shall cover with preparation of red lead made by grinding red lead in water and mixing with strong glue size and used hot.

The surface treated for knotted shall be dry before painting is applied. After the priming coat is applied, the holes and identifications on the surface shall be stopped with glazier's putty or wood putty. Stopping shall be done before the priming coat is applied.

#### **2.2.2 Iron and steel work**

All rust and seals shall be removed by scrapping or by brushing with steel wire brushes. Hard skin or oxide formed on the surface of wrought iron during rolling which becomes loose by rusting, shall be removed.

All dust and dirt shall be thoroughly wiped away from the surface. If the surface is wet, it shall be dried before priming coat is undertaken.

#### **2.2.3 Application**

The shall be applied with brushes, worked well into the surface and spread even and smooth. The painting shall be done by crossing and laying off described.

### **3 PAINTING WITH SUPERIOR QUALITY SYTHETIC ENAMEL PAINT**

#### **3.1 MATERIAL**

##### **a)Wood Work**

The superior synthetic enamel paint of the following brand and manufacture shall only be used.

a)"Luxol High gloss Synthetic Enamel" of Berger Paints.

b)"Apcolite" of Asian Paints (India) Limited.

#### **3.2 PREPARATION OF SURFACE**

##### **a)Wood Work**

The surface shall be cleaned and all unevenness removed as in para 2.2.1. Knots if visible, shall be covered with a preparation of red lead as in para 3.2..1. Holes and indentation on the surface shall be filled in and surface prepared as in 2.2.1.

##### **b)Iron and Steel work**

The priming coats shall have dried up completely before painting is started. Dust and scaling shall be carefully removed by scrapping or by brushing with steel wire thoroughly wiped.

#### **3.3. APPLICATION**

The number of coats shall be as stipulated in the item. One coat of the specified paint shall be applied and allow to dry overnight. It shall be rubbed next day with the finest grade of wet adhesive paper to ensure a lose particles dusted off.

Next coats shall be applied after the first coat is thoroughly dry. Additional coats shall be applied if found necessary to ensure properly uniform glossy surface, free from streaks, blistered etc in all the cases paint manufacturer's instruction shall be followed meticulously.

#### **4 PAINTING WITH WALL PAINT**

**4.1 The wall paint shall be of following brand and manufacturer:**

a) "LUXOL" Silk Acrylic Emulsion paints of Berger paints or approved equivalent. The paint shall be of approved shade.

#### **4.2 "Preparation of Surfaces"**

The surface shall be thoroughly cleaned of dust, old white or colour wash or other wall finish by washing with water and scrubbing such removal of white wash, colour washing etc will be paid for separately. The surface shall then be sand papered to give a smooth and even surface.

Scratches, holes etc shall be made good by applying putty, made of plaster of paris mixed with water on the surface and then sand papering the same after it is dry.

The wall surface which will be painted with wall paint shall be made smooth by applying a putty made of plaster of paris mixed with water on the entire surface including filling up the undulations and then sand papering the same after it is dry such application of plaster of paris will not be paid separately.

#### **4.3 Material.**

Cement primer of approved brand and manufacture shall be used.

#### **4.4 Application**

On properly prepared and primer surface, wall paint shall be applied in the usual manner with brush or roller.

The number of coat shall be as stipulated in the item.

When painting inside a wall ventilated room, the second coat can be applied one hour after the first.

The thinning of paint is to be done with water. The quantity of thinner to be added for first and second coat shall be as per manufacture's instructions.

The surface on finishing shall present a flat velvety smooth finish and uniform appearance. If necessary more coats will be applied till the surface present, uniform appearance. In all cases the manufacturer's instructions shall be followed meticulously.

**4.5 Other details these shall be as per specification for painting (general) as for they are applicable.**

## **5 French Spirit Polishing.**

**5.1 Pure shellac varying from pale orange to lemon yellow colour, free from resin or dirt shall be dissolved in methylated spirit. Suitable pigment shall be added to get the required shade.**

**5.2 The surface shall be cleaned. All unevenness shall be rubbed down smooth with sand paper well dusted. Knots of visible shall be covered with a preparation of red lead and glue size laid on while hot. Holes and indentations on the surface shall be stopped with glazier's putty. The surface shall then be given coat of wood filler made by mixing whiting in methylated spirit at the rate of 1:5 kg of whiting per liter of spirit. The surface shall again be rubbed down perfectly smooth with glass paper and wiped clean.**

**5.3 The number of coats of polish to be applied shall be as described in the item a pad of woolen cloth covered by a fine cloth shall be used to apply the polish. The pad shall be moistened with the polish and rubbed hard on the wood, in a series of overlapping circles applying the mixture sparingly but uniformly over the entire area to give an level surface. A trace of linseed oil on the face of the pad facilitates this operation. The surface shall be allowed to dry and the remaining coats applied in the same way. To finish off, the pad shall be covered with a fresh piece of clean fine cloth, slightly and quickly with methylated spirit and rubbed lightly and quickly with circular motions. The finished surface shall have a uniform texture of high gloss.**

**5.4 Other details shall be as per the specification for painting (general) as far as they are practicable.**

## **6.0 VITRIFIED FLOOR TILES**

**6.1 Work included The tenderer shall furnish materials, labour. Plant, equipment and tools to complete the work as specified and or as shown in the drawing.**

### **6.2 Materials**

- a) Vitrified tiles shall be flat and unglazed on the top surface. They shall be generally 600 X 600 mm in size with a thickness as approved by the Engineer. They shall conform to IS: 15622 of approved make and colour. The tenderer shall submit to the Engineer for his approval samples of tiles which he proposes to use in the work and all tiles used shall be similar to the approved samples. Water absorption's less than 0.08% of above quality of tiles.**
- b) Ordinary or White Portland Cement:**
  - 1) Cement: Ordinary Portland Cement shall conform to IS: 8112**
  - 2) White Portland Cement: White Portland Cement shall conform to IS: 8042**
  - 3) Sand: The sand used shall be of approved river or pit sand, conforming to IS: 383-1970**
  - 4) Water: Water used shall be clean and potable quality as per clause 4.3 of IS: 456-2000**

### **6.3 Workmanship**

**Tiles shall be laid on 20 mm thick cement mortar 1 : 4 ( 1 Cement : 4 Coarse sand) including grouting the points with white cement and matching pigments as approved by Engineer. The fixing shall be done from bottom upwards. Each tile shall be fixed as close as possible to the one**

**adjoining and any thickness of the tiles shall be evened out in the cushioning mortar so that all the tiles faces are set in conformity with one another. After finishing above job surface shall be cleaned and cured.**

## **APPROVED MAKE LIST**

**Thorough Refurbishment of KoPT Head Office (Main & Annexe) including interior beautification, civil, sanitary and plumbing, electrical, HVAC, fire fighting, ELV work at 15, Strand Road, Kolkata-700001.**

### **A : CIVIL & INTERIOR WORKS**

<b>Sl. No.</b>	<b>Material</b>	<b>I.S. Code</b>	<b>Brands</b>
1	Cement	43 grade IS 8112-1989 53 grade IS 12269-1987	L&T, Rajashree, ACC, Grasim, Aditya, Gujarat Ambuja, Ultratech, Lafarge, J&K, Topcem, Dalmiya, Star
2	White Cement	IS-8042 of 1989	Birla, J.K,Grasim
3	Mild & Tor Steel	IS-1786, 432 Part-I, 1982.	TISCO, SAIL, Rashtriya Ispat,
4	Water proofing compound	IS-2645	BAL adhesives, Pidilite & Aqua Alliance, Dr. Fixit., Impermo, Fosroc, Choksey, Sika, Rouf
5	Tile adhesive cement and joint filling compound	IS-269-1989	BAL adhesives, Pidilite & Aqua Alliance, Fosroc, Choksey, Sika, Rouf
6	Glazed tiles /Vitrified tiles/ Ceramic Tiles	IS-15622	H&R Johnson, RAK, Kajaria, Nitco, Murbo, Orient, Somany
7	Paver Block	BS-6717, IS-15658	Conwood, Super tiles, Nitco, VyaraTiles, Kiran, Basant Bettons, Eurocon, Buildmat
9	Water proofing agency		Aqua Alliance, Nina Concrete systems, Krypton, MYK Schloemberg, Pidilite, Fosroc, Choksey
10	MS Hollow section		11 Corus, Arcelor Mittal, Shandong Lusteel, TISCO
11	MS Structural steel	12 IS-226-75	TISCO, SAIL, Rashtriya Ispat
12	Exterior grade Anti-fungus		Asian plant, ICI, Nerolac, Berger

	Paint / Zinc paint / Lustre Paint / Texture paint.		
13	Cement paint		Snowcem, Nitco, Duracem
14	Paint – plastic emulsion		Asian paint, ICI, Nerolac, Berger, J&N, Shalimar, Dulux
15	Fire retardant paint		Fire tard, Shalimar, Viper
16	Antifungal paint		Asian Piant, Berger paint, ICI
17	Synthetic enamel	IS-10221	Asian Paint, Jensen & Nicholson, Berger, Nerolac, Shalimar, Dulux
18	Anticorrosive paint		Asian paint, Berger, Jensen & Nicholson, Berger
19	Oil bound distemper		Tractor, Berger
20	Plaster of Paris		ACI, Bhutan, Jindal
21	Water proof cement		Berger, Asian paints
22	Mortice Locks / Locks		Godrej, Vision, CIEF, Dorma
23	Laminate		Greenlam, Durian, Formica, Century, Sunmica (AICA), New Mica, Merino
24	Plywood	IS-3003,1989	Greenply, Anchor, Kenwood, Century, Regal, Swadesh, Archirdply, Austin plywood, Avenger
25	Stainless steel handle	IS-12817	NEKI, D-LINE, KinLong
26	Floor spring / Door closer / Iron fittings	IS-6315	Garnish, Everite, Neki, Hyper, Mowjee
27	Hand rail system		Godrej, NEKI, D-line, Dorma
28	Men & Women Cristallo Restroom partitions		Greenply, Mark, Merino
29	Rolling shutter		Swastic, Gandhi Automation
30	Glass		Modiguard, Saint Gobain, Bharat Glass
31	Welding Electrodes	IS-814-1991	Advani Oerlikon, D & H Schleron, ESAB
32	Aluminum Section	IS-1868, 733, 1285	Jindal, Hindalco, Aluminate, INDAL, ANUPAM
33	Al door fittings, tower bolts, handles, hooks & eyes.		ARK, MEPRO, URGENT
34	Polycarbonate sheet	IS-737	Lexan
35	Pre-coated roof sheet		Dyna Roof, Tata
36	False ceiling		Armstrong, Gypsum board, E- board– Classic, Gypstar (India Gypsum)
37	Concrete tiles		GEMS/ Sunrock hi CTS
38	Timber for Door /Window & Shutters	1003 Part-I 1991, 1993	Approved Seasoned Wood
39	Flush Door	2202, Part-II-1983	Sitapur, Century, Duro, Merino, Green, Archirdply



40	Gypsum Plastic Board	2095-1976	Gypsum, India Gypsum
41	Marble (Blocks Slabs and Tiles)	1130-1969	Makaran (White)
42	Particle Board		Anchor, Bhutan, Novateak, Kit lam
43	Sand Stone (Slab & Tiles)		Govt. Approved Quarry
44	Granite Slab		Jet Black, Ruby red
45	Hardwood parquet Floors and Wood Block	5138-1969	Approved Seasoned Work.
46	Water-Acidity , Alkalinity & Solids	IS-3025-1984, IS- 2202, Part-II-1983	Sitapur, Century, Duro
47	Aluminium Composite Panel	IS-1868, 733 &I, S-1285	Amstrong, Eva Bond, Alupan
48	Electric Traction Lifts	14655	Cone, Otis, Johnson,Escon, Scindlar
49	Fire Door	BS-476 Part-20,22 &IS-3614 Part-II-1992	SAIL, IISCO, TATA
50	Steel for Doors, Windows Frames, Grills, Steel Gates,	I.S.1977	SAIL, IISO, TATA
51	Stainless Steel Pipes	ASC-312	Jindal, IISCO, SAIL, TATA
52	Roof Treatment materials		Choksey Chemicals

53	Rebaring		Fischer Fixing (FISV 360), HILTI
54	Sand	IS-1542-1977 & IS-2116-1980	Govt. Approved Quarry
55	Stone Aggregate	IS 383 & IS 515	Govt. Approved Quarry

## **ELECTRIFICATION WORKS**

<b>SNo</b>	<b>Materials</b>	<b>Preferred Make</b>
1.	EDO / MDO 3P/4P ACBs	SIEMENS / SCHINDLER / L&T
2.	MCCBs / MCBs / ELCBs (3P / 4p / DP/ SP)	SIEMENS / SCHINDLER L&T Hagar
3.	Analog / Digital Meters	CONZERV
4.	CTs	IMP
5.	Indicating Lamps	TEKNIC
6.	Connectors	Connectwell
7.	650V Grade FR wires	Finolex / Polycab
8.	1.1 KV Power and Control CU / Al Conductor Cables	Polycab
9.	GI Ladder Tray	Approved local make
10.	Earth Pit Material	Approved local make

## **PLUMBING AND SANITARY WORKS**

<b>SN</b>	<b>Component</b>	<b>Preferred Make</b>
1	Vitreous China Sanitaryware	QUEO/HINDWARE/JAQUAR
2.	Stainless steel sinks	QUEO/HINDWARE/JAQUAR
3.	CP Fittings	QUEO/HINDWARE/JAQUAR
4.	CP Accessories, waste fittings	QUEO/HINDWARE/JAQUAR
5.	Soil waste & RW pipes & fittings	
	a) Sand Cast	RIF
	b) PVC Pipe	SUPREME / PRINCE
6.	GI Pipes/MS Pipes	TATA / Jindal Hissar
7.	GI Fittings	RM Engineering works / KS Engineering Works / Jindal / Tata
8.	Ball valves (Bronze)	Zoloto / RC
9.	Gunmetal valve & cocks	Leader / Zoloto / Sant
10	CI S/S Pipes	Kesoram / Electro steel
11.	CI Double flanged Sluice valve/non-return valve	Kirloskar / IVC
12.	Butterfly valve	AUDCO / C & R / IVC
13.	Clear water pumps	Crompton / Kirloskar
14.	Motor	Crompton Greaves / Kirloskar / Siemens
15.	Sump Pumps	Darling / Salmson / Grundfos
16	RCC pipe	India Hume Pipe
17.	Manhole cover	RIF
18.	PVC moulded tank	Syntex
19.	Tower rail	QUEO/HINDWARE/JAQUAR
20.	Liquid soap dispenser	QUEO/HINDWARE/JAQUAR

LIST OF APPROVED MAKES FOR EQUIPMENT & MATERIALS

**DIESEL GENERATING SET INSTALLATION**

S. No.	Details of Materials / Equipment	Manufacturer's Name
1.	Diesel Generating Engine	Cummins India MTU Friedrichshafen Caterpillar Mitsubishi
2.	Acoustic Enclosure	Jakson S & W TIL Mitsubishi
3.	Alternator	Stamford Leroy Somer Caterpillar Mitsubishi
4.	DG Synchronizing Panel	Electro Allied Products Sterling Generators
5.	Air Circuit Breaker ( 3/4 Pole )	ABB( E-Max) Larsen & Toubro (U-Power) Schneider Electric (Master Pact NW) Siemens (3WL)
6.	Moulded Case Circuit Breaker (MCCB)	ABB (T – Max) Larsen & Toubro (Dsine) Schneider Electric (Compact NSX/ NS ) Siemens ( 3VL)
7.	Miniature Circuit Breakers (MCB)	ABB Hager (L&T) MDS Legrand Schneider Electric–(Multi 9) Siemens
8.	Power/Aux. Contactor	Schneider Electric Larsen & Toubro ABB Siemens

S. No.	Details of Materials / Equipment	Manufacturer's Name
9.	Protection Relay	
	a. Numeric Type	ABB Areva Larsen & Toubro Siemens
	b. Electromagnetic Type	ABB Areva Larsen & Toubro
10.	Indicating Lamps LED type and Push Button	Larsen & Toubro (ESBEE) Schneider Electric Siemens Vaishno
11.	Overload relays with built in Single Phase preventer	Schneider Electric Larsen & Toubro ABB Siemens
12.	Electronic Digital Meters (A/V/PF/Hz/KW/ KWH) with LED Display	Conzerv (Schneider Electric) Automatic Electric EI Measure Secure
13.	Static Power Meter & Logger (SPML) With RS 485 port	Conzerv (Schneider Electric) Larsen & Toubro EI Measure
14.	PLC	Allen Bradley Siemens Modicon (Schneider Electric)
15.	PVC insulated XLPE aluminium/copper conductor armoured MV Cables upto 1100 V grade	Finolex Gloster KEI Polycab Ravin Cables Grandlay
16.	LT Jointing Kit / Termination	Raychem REPL Safe Kit

S. No.	Details of Materials / Equipment	Manufacturer's Name
17.	Cable Glands Double Compression with earthing links	Baliga Lighting Comet Cosmos
18.	Vibration Isolators	Cori Dunlop Kanwal Industries Corporation Flexionics
19.	Noise Control Silencer / Muffler (Residential Type Silencer)	Intertec Sound Control India
20.	Fiberglass	Owens Corning UP Twiga
21.	Thermometer	Emerald H Guru Taylor
22.	Alarm Annunciator	Advani Oralikon Larsen & Toubro Minilec
23.	Motors (Energy Efficient Class – I)	Kirloskar Bharat Bijlee Siemens ABB
24.	Plug Valve	Audco SKS
25.	GM / Forged brass Ball Valve	RB Italy Zoloto
26.	Check Valve Wafer Type / Dual Plate	Advance Valve Jayhiwa Kirloskar
27.	Flexible Pipe Connections	Flexionics Resistoflex
28.	Pypcoat (AW4) for fuel tank & Burried oil piping	IWL
29.	Oil Flow Meter	Crown Kent Schlumberger
30.	Level Indicator (Oil)	Forbes Marshall

31.	Anchor Fastner	Fisher Hilti Shakti
32.	GI Pipe Fittings	Unik Zoloto M
33.	Welding Rod	ADOR Advani

**LIST OF APPROVED MAKE**  
**ELECTRICAL WORK (HT)**

SL. NO.	DETAILS OF MATERIAL	NAME OF MANUFACTURERS
1.	Indoor/ Outdoor Oil Filled Transformer :	Areva Intra Vidyut Kirloskar RPG – Raychem Voltamp Schnider ABB
2.	Cast resin dry (EPOXY) type transformer :	Intra Vidyut Kirloskar RPG – Raychem SGB, Germany (DTPL, India) Voltamp Schnider ABB
3.	Vacuum impregnated resin dry type transformer	Voltamp
4.	VCB	ABB (up to 11 KV) AREVA Siemens Schneider Electric (Evolis) (Up to 11 kV)
5.	Compact substation: 6.6KV/11 KV	ABB AREVA Schneider Electric Siemens Voltamp (with dry type Transformer only)
6.	Compact HT Switchgear / RMU:	ABB AREVA C&S L&T (TAMCO)

		Siemens Schneider Electric
7.	Numeric Type Protection Relay	ABB AREVA L & T Schneider Electric Siemens
8.	Potential Transformer	AE Kappa Matrix Pragati
9.	Current Transformer (Cast Resin Epoxy Coated)	AE Kappa Matrix Pragati
10.	Static Power Meter & Logger (Trivector Meters)	AE El Measure Larsen & Toubro Rishabh Secure Schneider Electric(Conzerv) Socomec
11.	Electronic Digital Meter (A/ V/ PF/ HZ/ KWH) with LED Display.	AE El Measure Larsen & Toubro Rishabh Secure Schneider Electric(Conzerv) Socomec
12.	HRC Fuse and Fuse Fitting	GE L & T Siemens
13.	Battery Charger & Batteries	HBL Life AMCO Exide Amar Raja Global (Rocket) Hitachi Max Power Shinkobe

14.	Insulating Mats	Commercial Enterprises DL Miller & Co. Ltd. Premier Polyfilm Ltd. RMG Polyvinyl India Ltd.

**LIST OF APPROVED MAKE  
(HVAC work)**

S.No.	Details of Materials / Equipment	Manufacturer's Name	
		Imported	Indigenous
1	Magnetic Bearing oli free centrifugal turbo core Chiller	Carrier	
		Trane	
		Climaveneta (Mitsubisi Eletric)	
		York (Johnson Control)	
2	Heat pumps	Bluebox	
		Climaveneta	
		Trane	
		York (JCI)	
3	Variable Refrigerant Flow System	Daikin	
		Hitachi	
		Mitsubishi	
		Toshiba	
4	Primary Pump (Split casing/Monobloc) & Condenser Water Pump.	Armstrong	
		TACO	
		Bell & Gosset	
5	Secondary CHW/HW pump with Variable Speed Pumping System including following :		



	Adjustable Frequency Drive	Armstrong	
	Automatic AFD Bypass	TACO	
	Pump Controller / Tertiary loop controller	Bell & Gosset	
	Differential Pressure Sensor /Transmitter		
6	Pressurized Expansion Tank and Air Separator		Armstrong
			Grundfoss
			ITT
7	Air Handling Unit	Carrier	
		Edgetech	
		ETA	
		VTS-TF Class I	
	Air Handling Unit accessories such as Corners, Profiles, Hinges, Handles etc		HiraArosio
			VTS-TF Class I
	Cooling Coil for AHU	To be manufactured by individual supplier as indicated above	Carrier
			Hi-Tech
			International Coil company
			Nutech
8	Precision AC unit	Blue Box	
		Climaveneta (Mitsubisi Eletric)	
		GEA	
		Stulz	
9	Active under Floor System for Data Centre	Titus	
		Uniflair( Schneider Electric)	
		Trox	
10	Split Unit		Blue Star
	(5 Star as per BEE) / Package Unit		Carrier
			ETA
11	Split Unit (with Refrigerant R-410A/R-407c)	Toshiba	
		Trane	

		York	
12	Fan Coil Unit	Midea	Carrier
		Sinko	Edgetech
		York	VTs
13	Chilled Water Cassette Unit	Carrier	Carrier
		Climaveneta	DAIKIN
		Midea	VTs
		Mitsubishi	
14	Variable Air Volume Box (Unit)	Honeywell	Systemaire
		Titus	Honeywell
		Trox	
15	Cooling Tower	Baltimore	
		GEA Polacel	Bell
		Marley	Marley
			GEA Polacel
16	Centrifugal Fan	KRUGER	Nadi
		NICOTRA	Nicotra
		Flaktwoods	Humidin
		ELTA	
17	Mixed flow fan	Flakt	
		Kruger	
18	Plug fans	NICOTRA/KRUGER	
19	Axial Flow Fan	KRUGER	Kruger
		NICOTRA	Nadi
		Flaktwoods	
		ELTA	Nicotra
20	Inline / Propeller Fan / Roof extractor Fan	Chaysol	Air flow
		Nuaire	Alstom
		Ostberg	Nadi
		ELTA	Lau
		Systemair	
21	JET Ventilation fan for basement carparking	Aerovent	
		Flaktwoods	
		Systemair	
		ELTA	

22	Thermal Heat Recovery Wheel	Flakt Woods	
		Ostberg(Enventus)	
		DRI	
23	Inline UV sterilizer	Arklite	
		Ruks Engineering Ltd.	
		Sterile	
		UV-Lux	
24	Dessicant wheels	Ostberg (Enventus)	
		DRI	
25	PIPES & FITTINGS		
26	M.S. Pipe upto 200 MM Dia.		AST
			Jindal
			Tata Steel
27	MS PIPES above 200 mm dia factory rolled		Jindal
			SAIL
			Welspun
28	Butterfly valve (32 mm and upwards)	KITZ	
		Audco	
		CRI	
		C & R	
29	Butterfly Valve with Actuator	Honeywell	
		Kitz	
		Sauter	
		Siemens	
30	Balancing valve (Manual)		Advance Valve
			Navtech
31	Balancing Valve cum flow control (Pressure independent dynamic) valve with modulating actuator for AHUs and FCUs	Siemens	
		Flowcon	
		Honeywell	
		Overtrop (AZV)	
		TA Auto Flow	
32	PICV & Ball valve (upto 32 mm)	Siemens	
		Honeywell	

		KITZ	
		RB	
		Zoloto	
		Rapid Control	
33	Check valve	Kitz	
		Honeywell	
		Advance Valve	
34	Pot / Y Strainer		Emerald
			Sant
35	Pressure Gauge		Fiebig
			H Guru
36	Thermometer		H Guru
			Emerald
			Grundfoss
	Combined pressure/temperature gauge with digital display with BAS compatibility		Grundfoss
37	Ball valve (Fan Coil Unit)	Overtrop	Emerald
			Rapid Control
			Zoloto
38	Ball valve with Y-Strainer	Tiemme	Emerald
	(Fan Coil Unit)	Overtrop	Rapid Control
39	Auto Air Vent Valve	RB	Rapid Control
			Anergy
40	GI Sheet		ESSAR
			Jindal
			Lloyd
			SAIL
			TATA
41	Terminal HEPA filter plenums		Airtech
			AAF synder general
			Fabtech
			Sankalp Enterprise
42	Factory Made Duct		Nuaire Engineers
			Rolastar

			Seven star
			Zeco
43	Factory Made Spiral Duct		Atco
			Karthila Industries
			Seven Star
			Spiral Tubes Pvt. Ltd.
			Western Air Duct
44	Flexible duct		Atco
			Caryaire
			Seven star
			UP Twiga
45	Pre-insulated duct		ALP
			Nutech
			Pai Pal
46	Pipe / duct supports		Diamond
			Hitech
			Seven star
47	Passivation system for hydraulic systems (CHW/CDW/Hot water)		Biocide
			Chemtex
			Airflow
48	Grille/diffuser/dampers		Air Master
			Caryaire
			Dynacraft
			Ravistar
49	Smoke / Fire Damper (Actuator shall be UL listed)	Greenheck	
		Ruskin	
		Airmaster	
		Caryaire	
		George Rao	
		Ravistar(Systemair)	
50	Sound Attenuator	ELTA	
		Caryaire	
		George Rao	
		Ravistar (Systemair)	
51	Anchor Fastener	Fischer	
		Hilti	

52	Insulation		
	Closed Cell Elastomeric nitrile rubber/EPDM along with adhesive	TWIGA	
		Eurobatex – Union Foam	
		A flex	
		K flex	
	Microban Closed Cell Elastomeric nitrile rubber along with adhesive	K flex	
		A flex	
	Cross link polyethylene foam with adhesive	Trocellen	
	Fibreglass (Al. Foil Faced)		Lloyd insulation
		UP Twiga	
53	Acoustic insulation		
	a. Fibre glass		Lloyd insulation
			UP Twiga
	b. Nitrile rubber with	K flex	
	Antimicrobial property	A flex	
54	Expanded Polystyrene (TF Quality)		Beardsell
			Coolite
			DEBS Products
55	Extruded Polystyrene for Overdeck Insulation	Isoboard	
		Owens Corning	
		Polybond	
		Thermosheild	
56	Premoulded PUF section for pipe support		Lloyd
			Malanpur
57	Protective Coating over Closed Cell Elastomeric – Fibreglass Woven Cloth		K flex
			Fosters
			Paramount
58	UV Protective coating		K flex
			Paramount
			Polybond
59	Fire Sealant	Birla 3 M	
		OBO Bitterman	
60	Fire Wrap/Board/Paint	Birla 3 M	
		Flamebar	

		Hilti	
		Promat	
	Controls		
61	Three way Modulating / Two way valve / PIBCV for AHU	Honeywell	
		Sauter	
		Siemens	
62	Three way / Two way modulating control Valve for FCU	Danfoss (Model: VRG)	
		Honeywell (Model: VC7936)	
		Johnson Control (VG 5400 MC)	
		Schneider (VB-7215-0-4-07/8)	
		Siemens (Model: VVP/VXP 469)	
63	Proportionate Room Thermostat with Digital Temperature Indication for FCU	Honeywell (Model: T 6865)	
		Johnson Control	
		Schneider (TA-168-2)	
		Siemens (Model: RDF 340)	
64	Humidistat	Honeywell	
		Invensys	
		Johnson Control	
		Siemens	
65	Safety thermostat for heater		Anergy Controls
66	Dial Thermometer Capillary Type.	Penn	
		Tadington	
67	Flow Switch		Rapid Control
68	Airstat		Rapid Control
	Miscellaneous		
69	Vibration Isolator, Flexible Pipe Connection, Flexible duct connector, Heavy duty pipe support clamp		Cori
			Dunlop
			Easyflex
			Flexionics
			Kanwal Industrial Corporation
			Resistoflex

70	Grooved Pipe Connector	Grinnel Tyco	
		Sharjoint	
		Victaulic	
71	<b>ELECTRICAL ACCESSORIES</b>		
A.	<b>MEDIUM VOLTAGE EQUIPMENT</b>		
		<b><u>North side</u></b>	<b><u>Westside</u></b>
		<b><u>Projects</u></b>	<b><u>Projects</u></b>
1	Power Distribution Panel and Motor Control Centre & Air Insulated Bus ducts	Adlec Control System	Accusonic (Pune)
		Advance Panels & Switchgear	Antia Electricals
		KMG Atoz	Arrow Engineers
		SPC Electrotech	Manshu (Pune)
		Sudhir Engineering	Popular Switchgear
		Tricolite	Scoot Engineering
			Smash Electricals
			Sterling & Wilson
		<b><u>Southside Projects</u></b>	Zenith Engineering
		<b><u>Bangalore</u></b>	
		Dynam	
		Load Controls	<b><u>Chennai</u></b>
		Lotus Powergear	Electro Alagen
		Elins	Formaplastic Controls
		Power Control Equipments	Ohm Energy
		Pragati Controls	Shanti Electricals
		<b><u>Kolkata</u></b>	
		Electro Allied Products	
2	Sandwiched Construction Busduct	Control & Switchgear	
		EAE (IIGM)	
		GE Power Control	
		Henikwon	
		Intraco BKS (Marketed by Larsen & Toubro)	
		Power Plug Malaysia (Marketed By Tricolite)	
		Schneider Electric	
3	Motor	ABB	
		Bharat Bijlee	
		HAVELL	
		Kirloskar	



		Marathon	
		Siemens	
4	Starter	ABB	
		Allen Bradley	
		Kirloskar	
		L & T	
		Schneider	
		Siemens	
5	Variable Frequency Drive (VFD)	ABB	
		Alan Bradley	
		Fuji Electric	
		L&T	
		Siemens	
		Schneider Electric	
		VACON	
6	Air Circuit Breaker ( 3/4 Pole )	ABB( E-Max)	
		GE Power Controls (M-Pro)	
		Larsen & Toubro (U-Power)	
		Schneider Electric (Master Pact NW)	
		Siemens (3WL)	
7	Moulded Case Circuit Breaker (MCCB)	ABB (T – Max)	
		GE Power Controls (Recod plus)	
		Larsen & Toubro (Dsine)	
		Schneider Electric (Compact NSX/ NS )	
		Siemens ( 3VL)	
8	Motor Protection Circuit Breaker(MPCB)	ABB	
		GE Power Control	
		Hager ( Marketed by Larsen & Toubro)	
		Schneider Electric	
		Siemens	
9	Automatic Transfer Switch (ATS)	ASCO	
		Cummins	
		GE Power Control	
10	Miniature Circuit Breakers (MCB)	ABB	

		Hager (L&T)	
		MDS Legrand	
		Mitsubishi Electrical (DIN rail mounted)	
		Schneider Electric–(Multi 9)	
		Siemens	
11	Residual Current Circuit Breaker (RCCB)	ABB	
		Hager (L&T)	
		MDS Legrand	
		Mitsubishi Electrical (DIN rail mounted)	
		Schneider Electric–(Multi 9)	
		Siemens	
12	Power/Aux. Contactor	ABB	
		Larsen & Toubro	
		Mitsubishi Electrical	
		Schneider Electric	
		Siemens	
13	Change Over Switch	C & S	
		Havells	
		Elcon	
		HPL – Socomec	
		Larsen & Toubro	
14	Control Transformer/Potential Transformers	Automatic Electric	
		Gilbert & Maxwell	
		Matrix	
		Reco	
15	Current Transformer (Epoxy Cast Resin)	Automatic Electric	
		Gilbert & Maxwell	
		Matrix	
		Reco	
16	Protection Relay		
	a. Numeric Type	ABB	
		Areva	
		Larsen & Toubro	
		Siemens	

	b. Electromagnetic Type	ABB	
		Areva	
		Larsen & Toubro	
17	Indicating Lamps LED type and Push Button	Altos	
		GE Power Controls	
		Larsen&Toubro (ESBEE)	
		Schneider Electric (MG)	
18	Overload relays with built in Single Phase preventer	ABB	
		Larsen & Toubro	
		Mitsubishi Electrical	
		Schneider Electric(Telemechanique)	
		Siemens	
19	a. Electronic Digital Meters (A/V/PF/Hz/KW/KWH) with LED Display	ABB	
		Conzerv	
		L & T	
	b. Dual Energy Meter with centralized metering & billing system	ActarisConserve	
		El Measure	
		Secure	
	c. Prepaid Meters & accessories	Actaris	
		Conzerve	
		Secure	
	d. Electromagnetic Meters	Automatic Electric	
		Rishabh (L&T)	
20	Static Power Meter & Logger (SPML) with RS 485 port	Conzerv	
		El measure	
		Larsen & Toubro	
21	Power Capacitor	ABB	
		Matrix	
		Meher (Larsen & Toubro)	
		Siemens (Epcos)	
22	Autoamtic Power Factor Correction Relay (Numeric Type)	Areva	
		BELUK (Germany)	
		Conzerv	
		Siemens	

23	Thyristerised APFC Control Panel	ABB	
		Meher(Larsen & Toubro)	
		Siemens	
24	PVC insulated XLPE aluminium/copper conductor armoured MV Cables upto 1100 V grade	Finolex	
		Polycab	
		RPG	
25	LT Jointing Kit / Termination	Raychem	
		REPL	
		Safe Kit	
26	Cable Glands Double Compression with earthing links	Baliga Lighting	
		Comet	
		Cosmos	
27	Bimettalic Cable Lug	Comet	
		Cosmos	
		Dowell's (Biller India)	
		Hax Brass (Copper Alloy India)	
28	PVC insulated copper conductor stranded flexible wires (FRLS) -	Anchor	
		Finolex	
		Havells	
		KEI	
		R Rkabel	
29	Mettalic Conduit (ISI approved)	AKG	
		BEC	
		NIC	
		Vimco	
30	PVC Conduit (ISI approved)	AKG	
		BEC	
		Polypack	
		Precision	
31	Industrial Socket		
	Splash Proof	Clipsal	
		MDS Legrand	
		Neptune Balls	
32	Industrial Socket Metal Clad	BCH	
		MDS	
33	Selector Switch, Toggle switch	Kaycee	

		Salzer (Larsen & Toubro)	
34	Timer	ABB	
		Larsen & Toubro	
		MDS Legrand	
		Schneider Electric	
		Siemens	
35	LT Servo Automatic Voltage Stabilizer & Isolation Transformers	Abhishek Electrical	
		Aplab	
		Automatic Electric	
		Recon	
36	Inverter	Luminous	
		Megatech	
		Neel Industrial Corporation	
37	Cable Trays (Factory Fabricated) / Raceways	Asian Ancillary Corporation	
		Elcon	
		Profab Engineer	
		Rico Steel	
		Slotco	
38	Fire Sealant & Fire Retardant Paint	BTHM Engineering	
		Birla 3 M	
		HILTI	
		Promat	
39	230/12 V Step Down Transformer with Built in Isolation Transformer	Talema	
		Volstat	

**SCHEDULE T**  
**Annexure-C (Contd)**  
**KOLKATA PORT TRUST**

**CONCURRENT COMMITMENT(S) OF THE BIDDER (i.e Works In The Hand Of The Bidder At The Time Of Submission Of Tender Offer)**

**(To be submitted with Part-I of Offer)**  
**Bidders must fill in the under noted columns.**

Sl. No.	Full particulars of works to be executed concurrently by the bidder. (i) Name of work. (ii) Client. (iii) W.O. No. & Date.	Sanctioned Tender Value. (in Rs.)	Completion time as stated in tender.	Name and address to whom reference can be made.
1	(i)			
	(ii)			
	(iii)			
2	(i)			
	(ii)			
	(iii)			
3	(i)			
	(ii)			
	(iii)			
4	(i)			
	(ii)			
	(iii)			

**(To be submitted with Part-I of Offer) Annexure-C(Contd)**  
**SCHEDULE 'O' SHEET – 1**

The Bidders are also requested to furnish the following particulars:-

A) In case of Limited Company -

- 1) Name of Company :
- 2) Address of its present registered office. :
- 3) Date of its incorporation :
- 4) Full name and address of each of its Directors – any special particulars as to Directors if desire to be stated. :
- 5) Name, address and other necessary particulars of Managing Agents, if any appointed by the Company. :
- 6) Copies of Memorandum, Articles of Association (with the latest amendments, if any). :
- 7) Copies of audited balance sheets of the Company for the last **three years**. :

B) In case of a firm -

- 1) Name and address of the firm. :
- 2) When business started :
- 3) If registered a certified copy of certificate of registration. :
- 4) A certified copy of the Deed of Partnership :
- 5) Full name and address of each of the partners and the interest of each partner in the partnership – any special particulars as to partners if desired to be stated. :
- 6) Whether the firm pays income tax over Rs.10, 000/- per year :

(To be submitted with Part-I of Offer)

**SCHEDULE 'O' SHEET – 2.**

C) In case of an Individual:

- 1) Full name and address of the Bidder any special :  
particulars of the Bidder if desired to be stated.
- 2) Name of the father of the Bidder. :
- 3) Whether the Bidder carries on business in his :  
own name or any other name.
- 4) When business was started and by whom. :
- 5) Whether any other person is interested in the :  
business directly or indirectly, if so, name and  
address etc. of such persons and the nature of  
such interest.
- 6) Whether the Bidder pays Income Tax over Rs.10, :  
000/- per year.

Dated:

---

(Full signature of Bidder)



**(Proforma of Performance certificate/credential of works)**  
 [To be issued on issuing authority's letterhead duly signed with office seal]

1.	Name of the Certifying Authority:	
2.	Name of the work :	
3.	Name of the Contractor :	
4.	Schedule date of commencement and completion of the work as per Work Order :	
5.	Date of actual commencement of work & date of actual completion :	
6.	i) If there is time overrun, whether delay is due to the contractor (Yes/No.):  ii) If yes, what is the extent of delay attributable to the contractor :	
7.	Sanctioned Tender value & Actual value executed :	
8.	Quality of work (Excellent/satisfactory/poor) :	
9.	Remarks (If any) :	

**ANNEXURE – D****DOCUMENTS TO BE UPLOADED****Scanned copy of the following documents to be uploaded:-**

- i) GST registration certificate.
- ii) Valid Trade Licence (Valid for current period & also for type of work).
- ii) The Firm has to submit copy of Valid Electrical Contractor License or the Firm has to submit the copy of **electrical supervisory License of the person who will carry out the electrical job.**
- iii) Valid Professional Tax Clearance Certificate / Up to date tax payment challan. If this is not applicable, the bidder must submit a declaration in this regard.
- iv) Proof of possessing valid Employees' Provident Fund (EPF) Account. EPF Registration Certificate.
- v) Proof of being registered with Employees' State Insurance Corporation (ESIC), ESI Registration Certificate
- vi) Details of the firm as per Schedule-O (in Part-I) of the tender document duly filled up.
- vii) Credentials in the form of copies of Letters of Award of Works along with corresponding Completion Certificates from owners to justify that the intending bidder satisfies the earlier mentioned pre-qualification criteria.
- viii) Balance sheet and Profit and Loss account / Trading account for the last 3 (three) financial years (i.e. 2016–2017, 2017-2018 and 2018-2019). The same should be audited as per relevant norms wherever required.
- ix) NEFT/RTGS online payment receipt/ Bank Draft/Banker's Cheque/ Pay order etc./ valid NSIC/MSME certificate regarding EMD & Cost of Tender documents.
- x) PAN Card
- xi) A list of technically qualified and skilled persons would be engaged to supervise and execute the work **(to be mentioned in the letter head of the Firm).**
- xii) Self declaration of the bidder that the Bidding Firm has Not been debarred / de-listed by any Govt / Quasi Govt. / Public Sector undertaking in India **(to be mentioned in the letter head of the Firm).**
- xiii) Self declaration regarding the proprietor/partner(s)/authorized signatory of the bidding firm (in the case of proprietorship firm /partnership firm /limited company, as the case may be) is/are not associated with any other firm bidding for the same work **(to be mentioned in the letter head of the Firm).**
- xiv) A list of works which are in hand at the time of submitting the offer as per the enclosed proforma titled 'Concurrent Commitments of The Bidder' vide 'Annexure-C' (Schedule –T) in Part-I of the tender document.
- xv) Undertaking of the tenderer to be submitted as per enclosed Pro-forma (Annexure –D-1) in lieu of submission of signed copies of the full Tender document ,G.C.C,addenda & corrigendum **in the letter head of the Firm.**
- xvi) Last page of "Bill of Quantities" & the "Form of Tender" duly filled up (without price quoted) shall be duly signed and stamped by the Bidder.

**N. B.-1** The bidder will have to produce the original documents or any additional documents, if asked for, to satisfy the Authorities.

**N.B.-2** Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements and their **EMD will be forfeited for such action.**

**ANNEXURE –D-1**

**NIT NO. KOPT/KDS/CIV /T/2402/64 dt. 16.08.2019**

**[DOCUMENT TO BE DOWNLOADED, FILLED IN UNDER BIDDER’S LETTERHEAD,  
SIGNED, SCANNED AND UPLOADED]  
Undertaking to be submitted in lieu of uploading/submitting signed copy of full tender document**

Ref. No.....

Dated:

The Chief Engineer,  
Kolkata Port Trust,  
Civil Engineering Department,  
15, Strand Road,  
Kolkata – 700 001

Dear Sir,

1. We, .....(Name of Tenderer) have 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.

We are submitting this undertaking in lieu of submission of signed copy of the full tender documents GCC, Corrigendum and Addenda.

Yours faithfully,

Signature of Tenderer.....

Name: .....

Designation: .....

Date : .....

Seal of the tenderer.....

**कोलकाता पत्तन न्यास**  
**Kolkata Port Trust**  
**सिविल इंजीनियरिंग विभाग**  
**CIVIL ENGINEERING DEPARTMENT**  
 १५, स्ट्रैंडरोड, कोलकाता - ७००००१  
 15, Strand Road, Kolkata – 700001

NIT No.:KOPT/KDS/CIV /2402/64 dt. 16.08.2019

**NOTE: Last Date of Download of tender documents :26.09.2019 (up to 14-00 hours)**

**Tender is due for submission by 3:00 P.M. On 26.09.2019**

**Tender is to be opened on 27.09.2019 (After 15.00 Hours)**

## PRICE BID

\*\*\*\*\*  
**Thorough Refurbishment of KoPT Head Office (Main & Annexe) including interior  
 beautification, civil, sanitary and plumbing, electrical, HVAC, fire fighting,  
 ELV work at 15,Strand Road, Kolkata-700001.**

\*\*\*\*\*

## Annexure-E (Contd.)

**E-TENDER FOR "Thorough Refurbishment of KoPT Head Office (Main & Annexe) including interior beautification, civil, sanitary and plumbing, electrical, HVAC, fire fighting, ELV work at 15, Strand Road, Kolkata-700 001".**

**NIT NO : KOPT/KDS/CIV /T/2402/64 dt. 16.08.2019**

**PRICE BID**

**TENDER PARTICULARS**

<b>ESTIMATED COST</b>	<b>:</b>	<b>Rs.40,32,11,690.05 (Rupees Forty Crore Thirty Two Lakh Eleven Thousand Six Hundred ninety &amp; Paise Five only)</b>
<b>EARNEST MONEY</b>	<b>:</b>	<b>The intending bidders should submit Earnest Money of Rs.50,32,200.00 (Rupees Fifty Lakh Thirty Two Thousand Two Hundred Only) to KoPT as per NIT. .</b>
<b>Cost of Tender document (Non-refundable)</b>		<b>Rs.5900/-(Rupees Five Thousand &amp; Nine Hundred only) including @18% GST)</b>
<b>TIME OF COMPLETION</b>	<b>:</b>	<b>11 (Eleven) Months</b>
<b>PERIOD OF DOWNLOAD OF E-TENDER (Both Days Inclusive)</b>		<b>27.08.2019 to 26.09.2019 (UPTO 14:00 HRS.)</b>
<b>DATE AND TIME FOR PRE-BID MEETING &amp; SITE VISIT</b>	<b>:</b>	<b>11-30 AM on 12.09.19 in the chamber of the Chief Engineer at Head Office at 15, Strand Road,Kolkata-1</b>
<b>LAST DATE OF SUBMISSION OF E-TENDER AND OPENING OF THE TENDER</b>	<b>:</b>	<b>Submission on 26.09.2019Up to 15:00 hrs. Opening on 27.09.2019 After 15:00 hrs.</b>

**कोलकातापत्तनन्यास**  
**Kolkata Port Trust**  
**सिविलइंजीनियरिंगविभाग**  
**CIVIL ENGINEERING DEPARTMENT**  
**PREAMBLE TO THE BILL OF QUANTITIES**

**E-TENDER FOR "Thorough Refurbishment of KoPT Head Office (Main & Annexe) including interior beautification, civil, sanitary and plumbing, electrical, HVAC, fire fighting, ELV work at 15, Strand Road, Kolkata-700 001".**

**NIT NO : KOPT/KDS/CIV /T/2402/64 dt. 16.08.2019**

- 1.1 The Bill of Quantities must be read with the General Conditions of Contract, the Special Conditions of Contract and the Particular Specifications of Work and the Bidder is deemed to have examined the above documents and to have thoroughly familiarise himself with the total scope of work and its mode of execution.
- 1.2 The quantities given in the Bill of Quantities are approximate only and are given to provide a common basis for tendering. Payment will be made according to the quantities of each item of work actually carried out at the accepted rates as per Order Letter. The measurements of each item of work shall be measured jointly by the Engineer or his Representative.
- 1.3 General direction and description of work or materials given elsewhere in the contract documents are not necessarily repeated in the description of items in the Bill of Quantities.
- 1.4 The prices and rates entered by the Contractor in the Bill of Quantities shall be deemed to cover the complete and finished work, inter-alia, all costs and expenses which may be required for successful completion of the works together with all risks, liabilities, contingencies, insurance, octroi, royalties, taxes and obligations imposed or implied by the Contractor.
- 1.5 Where separate items such mobilisation, demobilisation, temporary works etc., have not been provided in the Bill of Quantities for works required under the Contract, then the cost of such works shall be deemed to have been included in the prices and rates of other items.
- 1.6 Without affecting the generality of the foregoing provisions, the prices and rates entered in the Bill of Quantities by the Contractor shall include inter-alia, all costs and expenses involved in or arising out the followings:-
- 1.7 The provision, storage, transport, handling, use distribution and maintenance of all materials, plans, equipment machineries and tools including all costs, charges dues demurrages or other outlays involved in the transportation.
- 1.8 The provision and maintenance of all his staff and labours and their payments, accommodation, transport, taxes and other requirements.
- 1.9 Setting out including the location and preservation of survey markers, measurement and supervision.
- 2.0 The provision, storage, transport, use handling, distribution and maintenance of consumable stores, fuel, water and electricity.
- 2.1 All First Aid, Welfare and safety requirements.
- 2.2 Damage caused to the works, plants, materials and consumables stores caused by weather.
- 2.3 Licence, fees and other charges for compliance of Government Acts and Rules that are inforce and applicable.
- 2.4 The Contractor should be held responsible for the safe custody of materials, machineries etc. at site procured by him or issued to him by the Trustees.
- 2.5 This being a **percentage rate tender**, the Bidder shall quote his rates as percentage above / below / at par with the estimated amount put to tender **on line** based on his own analysis .  
The Tender Price thus established would be taken for comparative evaluation of E-Tenderer.
- 2.6 The Contractor shall at all times keep the site and working areas free from all surplus materials, rubbish , other excavated/offensive matter etc. all of which shall be disposed off in a manner to be approved by the Engineer's Representative.

- 2.7 On completion of the works the contractor shall reinstate and make good at his own expense any property or land which might have been disturbed and/or damaged by his works. He should also clean the site as required during execution and fully clear the site after completion of all the works.

The contractor shall forward any usable materials found during the course of construction at the work site or its vicinity to KoPT stores/yards, dispose off the debris beyond the port area all at his own expenses by his own transport and labour and clean out all part of the work and leave everything clean and tidy to the entire satisfaction of the Engineer, failing which suitable deduction will be made from final bill as per discretion of the Engineer/Engineer's representative.

[illegible]

**कोलकातापत्तनन्यास**  
**Kolkata Port Trust**  
**सिविलइंजीनियरिंगविभाग**  
**CIVIL ENGINEERING DEPARTMENT**  
**BILL OF QUANTITIES**

**E-TENDER FOR "Thorough Refurbishment of KoPT Head Office (Main & Annexe) including interior beautification, civil, sanitary and plumbing, electrical, HVAC, fire fighting, ELV work at 15, Strand Road, Kolkata-700 001".**

**NIT NO : KOPT/KDS/CIV /T/2402/64 DT. 16.08.2019**

**BILL OF QUANTITIES**

<b>PART A: CIVIL, INTERIOR, SANITARY, PLUMBING AND FIRE WORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA - 700001</b>					
<b>Section 1: Interior Beautification (Main Building)</b>					
<b>Sl. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Amount (Rs. P)</b>
	<b>ANTI TERMITE TREATMENT</b>				
	<b>POST CONSTRUCTIONAL MEASURES</b>				
<b>1</b>	<b>ANTI TERMITE TREATMENT OUTSIDE FOUNDATIONS BY CUTTING SHALLOW CHANNEL</b>				
	Anti-termite treatment to the outside of foundations with chemical emulsion by admixing chloropyrofos emulsifiable concentrates (1% concentration) with water by weight including cutting shallow channel by excavating soil along and close to the wall face ensuring uniform dispersal of the chemical emulsion to a depth of 300mm. from the ground level by rodding with 12mm. dia. M.S. rod at 150mm.interval in the channel. 1.75 litres of chemical emulsion per metre length shall be used and a balance quantity of 0.5 litres of the chemical emulsion per running metre shall then be used to treat the back fill earth by directing the spray of the	MTR	140	72.00	10,080.00



	emulsion towards the wall surface. The entire work is to be carried out as per specification laid down in para 4.3.1.1 of code IS-6313 (Part-III) 1981.				
<b>2</b>	<b>ANTI TERMITE TREATMENT OUTSIDE FOUNDATIONS BY DRILLING HOLES</b>				
	Anti-termite treatment to the outside of foundation with chemical emulsion by admixing chloropyrofos emulsifiable concentrate (1% concentration) with water by weight, drilling 12mm. dia holes in concrete or masonry apron at an interval of 300mm. to a depth, of 300mm or more as close to the plinth wall as possible and the chemical emulsion pumped into those holes to soak the soil below at a rate of 2.25 litres per linear metre complete as per specification laid down in para 4.3.1.1 of Code I.S.-6313 (Part-III)-1981.	MTR	140	83.00	11,620.00
<b>3</b>	<b>ANTI TERMITE TREATMENT TO SOIL UNDER FLOOR</b>				
	Anti-termite treatment to the soil under floor with chemical emulsion by admixing chloropyrofos emulsifiable concentrate (1% concentration) with water by weight including drilling vertically 12mm. dia holes at the junction of floor and wall at 300mm. interval to reach the soil below using hand operated pressure pump to squirt chemical emulsion into the pump to squirt chemical emulsion into the holes at the rate of one litre per hole. The holes shall be sealed after operation to match with the existing floor. The entire work is to be carried out as per specification laid down in para 4.3.1.4 of code I.S.-6313 (Part-III)-1981.	SQM	1400	93.00	1,30,200.00
<b>4</b>	<b>ANTI TERMITE TREATMENT TO JUNCTION OF WOOD WORK AND MASONRY WALLS</b>				

	Anti-termite treatment to the junction of wood work and masonry walls with chemical emulsion by admixing chloropyrofos emulsifiable concentrates (1% concentration) with water by weight including spraying at the points of contact with the adjoining masonry by drilling 6m. dia holes at a downward angle of about 45 degree at the junction of woodwork and masonry and squirting chemical emulsion into these holes at the rate of half litre per hole. The entire work is to be carried out as per specification of Code I.S.-6313 (Part-III)-1981. The shutters are to be sprayed with emulsion. on both sides. All wooden fixtures like almirahs, racks etc. are also to be thoroughly sprayed with chemical emulsion.(Payment will be made on the basis of outside measurements of doors and windows)	SQM	1320	61.00	80,520.00
<b>5</b>	<b>SPOT APPLICATION OF INSECTICIDES USING AQUA BASE</b>				
	Spot application for insecticides using Aqua base spray for pest (for bugs, cockroaches, silverfish, spider, termites, mosquitoes) to walls and ceiling etc. with chemical emulsion by admixing chloropyrofos emulsifiable concentrates (1% concentration) with water by weight including spraying the emulsified chemical @ 0.5 litres per sq.m. by a hand operated pressure pump on wall surfaces, ceiling, electrical fixture, electrical lines including drilling holes in places where source of termite is detected squirting chemical solution into the holes and sealing the holes with cement grout. (Rate is per sq.m. of the floor area while actual work will be all walls ceiling, rack, partition and furniture).	SQM	5000	49.00	2,45,000.00
<b>6</b>	<b>DISMANTLING MASONRY WORKS AND REMOVING RUBBISH</b>				

	Dismantling all types of masonry excepting cement concrete plain or reinforced, stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m.				
	In ground floor	CUM	23	447.00	10,281.00
	In first floor	CUM	16	497.00	7,952.00
	In second floor	CUM	66	547.00	36,102.00
	In roof	CUM	50	597.00	29,850.00
	Extra rate for careful dismantling and recovering at least 150 no of useable bricks per cum.	CUM	55	57.00	3,135.00
<b>7</b>	<b>DISMANTLING P.C.C WORKS AND REMOVING RUBBISH</b>				
	Dismantling all types of plain cement concrete works, stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m.				
	In ground floor including roof				
	upto 150 mm. thick	CUM	18	939.00	16,902.00
	above 150 mm. thick	CUM	6	1417.00	8,502.00
	In first floor				
	upto 150 mm. thick	CUM	18	989.00	17,802.00
	above 150 mm. thick	CUM	6	1467.00	8,802.00
	In second floor				
	upto 150 mm. thick	CUM	18	1039.00	18,702.00
	above 150 mm. thick	CUM	6	1517.00	9,102.00
<b>8</b>	<b>DISMANTLING R.C.C. WORKS AND REMOVING RUBBISH</b>				
	Dismantling R.C. floor, roof, beams etc. including cutting rods and removing rubbish as directed within a lead of 75 m. including stacking of steel bars.				
	In ground floor including roof	CUM	6	1956.00	11,736.00
	In first floor	CUM	6	2006.00	12,036.00
	In second floor	CUM	6	2056.00	12,336.00
<b>9</b>	<b>DISMANTLING TERRACED ROOFING AND REMOVING RUBBISH</b>				

	Dismantling terraced roof in ground floor roof (including floor finish, if any.) taking out carefully tiles with beams, joists, tees or burgahs covering floor below, sorting and stacking sevicable materials at site and removing rubbish as directe within a lead of 75 m.				
	In Ground Floor including roof	SQM	25	230.00	5,750.00
	InFirst Floor	SQM	25	236.00	5,900.00
	In second floor	SQM	25	242.00	6,050.00
<b>10</b>	<b>DISMANTLING TERRACED FLOOR AND REMOVING RUBBISH</b>				
	Dismantling carefully terraced floor only (including floor finish if any) or lime terracing in ground floor roof and removing rubbish as directed within a lead of 75 m.				
	In Ground Floor including roof	Cu.M.	20	739.00	14,780.00
	InFirst Floor	Cu.M.	25	789.00	19,725.00
	In second floor	Cu.M.	35	839.00	29,365.00
<b>11</b>	<b>DISMANTLING ARTIFICIAL STONE FLOORING AND REMOVING RUBBISH</b>				
	Dismantling artificial stone flooring upto 50 mm. thick by carefully chiselling without damaging the base and removing rubbish as directed within a lead of 75 m.				
	In ground floor including roof	SQM	2800	50.00	1,40,000.00
	In First Floor	SQM	1400	56.00	78,400.00
	In second floor	SQM	1400	62.00	86,800.00
<b>12</b>	<b>STRIPPING OFF WORN OUT PLASTER AND REMOVING RUBBISH</b>				
	Stripping off worn out plaster and raking out joints of walls, celings etc. upto any height and in any floor including removing rubbish within a lead of 75m as directed.	SQM	20000	19.00	3,80,000.00
<b>13</b>	<b>CUTTING CHASE AND MENDING DAMAGES</b>				
	Cutting chase upto 125 x 150 mm. and				

	subsequent mending of damages.				
	in brick wall	Mtr	70	93.00	6,510.00
	in concrete wall	Mtr	70	112.00	7,840.00
<b>14</b>	<b>CUTTING HOLES AND MENDING DAMAGES</b>				
	Cutting holes and subsequent mending good damages.				
	<b>Diameter upto 150 mm.</b>				
	In brick work [Lime]	Mtr	72	111.00	7,992.00
	In concrete work (plain or R.C.)	Mtr	10	137.00	1,370.00
	<b>Diameter exceeding 150 mm. but not exceeding 300 mm.</b>				
	In brick work [Lime]	Mtr	45	162.00	7,290.00
	In concrete work (plain or R.C.) [Lime]	Mtr	10	288.00	2,880.00
	<b>Diameter exceeding 300 mm. but not exceeding 450 mm.</b>				
	In brick work [Lime]	Mtr	40	249.00	9,960.00
	In concrete work (plain or R.C.) [Lime]	Mtr	10	390.00	3,900.00
<b>15</b>	<b>REMOVAL OF RUBBISH FORM WORKING SITE</b>				
	Removal of rubbish,earth etc. from the working site and disposal of the same beyond the compound, in conformity with the Municipal / Corporation Rules for such disposal, loading into truck and cleaning the site in all respect as per direction of Engineer in charge	CUM	510	166.00	84,660.00
<b>16</b>	<b>LABOUR FOR BREAKING BRICKS INTO KHOA</b>				
	Labour for breaking 1/2 Bricks or Full Bricks (Old / New) into metal / Khoa / chips as per specific size and stacking the same at site or stackyard with due allowance of sinkage / shrinkage as per direction of the Engineer in charge.				
	Chips Size 20 mm to 10 mm	CUM	50	519.00	25,950.00
<b>17</b>	<b>DISMANTLING WOODEN WORKS AND STACKING MATERIALS</b>				

	Dismantling carefully wooden walling, flooring of ceiling and stacking dismantled materials as directed.	SQM	10500	14.00	1,47,000.00
<b>18</b>	<b>CLEANING OF MORTAR FROM BRICKS</b>				
	Labour for scrapping and picking up old dilapidated mortar / plaster (Cement / Surki / Lime mortar) from the surface of old Brick faces including cleaning the frog without damaging the Brick and stacking the Bricks at Site / Stacking yard as per direction of Engineer-in-charge including removing all debris rubbish from site complete.	1000 nos	12	950.00	11,400.00
<b>19</b>	<b>250MM THK BRICK WORK WITH LIME AND SURKI MORTAR</b>				
	Brick work with 1st class bricks in lime and surki mortar (1:2) (1 lime putty/paste: 2 surki) lime to be slaked at site and the mortar to be prepared with such lime putty and first class surki made from kiln burnt bricks having its fineness modulus between 2 and 2.5 and which passes through B.S. sieve No 8 with correspondes to I.S sieve No 200 with considerable grinding and pugging it complete.				
	a) In foundation and plinth	CUM	2	5609.00	11,218.00
	b) In Super structure, ground floor.	CUM	2	5832.00	11,664.00
	b) In Super structure, first floor.	CUM	2	5832.00	11,664.00
	b) In Super structure, Second floor.	CUM	2	5832.00	11,664.00
	Notes:- (a) For lime surki brick work in foundation below G.L. hydraulic lime as per specification should be used. In other lime-surki brick work (above G.L.) fat lime as per specification will be used. (b) In all items of works viz. brick work, plastering, lime terracing etc. involving use of lime, the proportion of lime in all such items indicating its measurement by volume is of putty/paste form, which may be obtained from unslaked lime in the following rate, i.e. 633 kg of unslaked lime form 1.00 Cu.m by volume of lime putty/paste.				

	NOTE : 633 kg of unslaked lime @ 1 cu.m. of lime putty/paste.				
<b>20</b>	<b>125MM THK BRICK WORK WITH LIME AND SURKHI MORTAR</b>				
	125 mm. thick brick work with 1st class bricks in lime and surkhi mortar (1:1.5:0.5) in lime, surkhi and marble dust				
	In all floor.	SQ.M	250	823.00	2,05,750.00
<b>21</b>	<b>75MM THK BRICK WORK WITH LIME AND SURKHI MORTAR</b>				
	75 mm. thick brick work with 1st class bricks set in lime and surkhi mortar (1:3) in all floors including H.B. netting in every alternate layers.	SQ.M	350	593.00	2,07,550.00
<b>22</b>	<b>LABOUR FOR BRICKWORK OF STRING COURSE</b>				
	Extra Labour for brick for string course and set square brick work, brackets and similar other projection brick works to be paid in respective item.	CUM	25	251.00	6,275.00
<b>23</b>	<b>BONDING OLD BRICK WORK WITH NEW BRICK WORK</b>				
	Bonding new brick work with old at every 4th course including cutting chase and mending damages in lime and surkhi mortar and marble dust (1:1.5:0.5) and curing. [Mode of measurement: The actual bonded area shall be considered for payment]	SQM	350	271.00	94,850.00
<b>24</b>	<b>MAKING SCAFFOLDING</b>				
	Making one set of scaffolding only for replacing glass panels, painting, uprooting plant and another repairing works of building and S&P works for external works only with 10 cm. dia bamboo as main posts at the rate of 1 metre centre to centre and 7.5 cm. dia bamboo ties @ 0.75 metre apart fitting and fixing with necessary coir, nails etc. as per direction of the Engineer-in-charge.				

	(This item should be executed only after prior approval of the Engineer-incharge). Firstly, one number to be paid and then labour rate for shifting up to further nineteenth (19) times @ 10% each time to be considered. If necessary further after twenty times of total use, another one number new and labour rate for shifting to be considered accordingly.				
	a) 3.90 metre height	EACH	50	279.00	13,950.00
	b) Extra for additional 3.6 height or part thereof	EACH	30	245.00	7,350.00
<b>25</b>	<b>PLAIN CEMENT CONCRETE WITH GRADED STONE CHIPS OF 20 MM NOMINAL SIZE</b>				
	Ordinary Cement concrete (mix 1:2:4) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement, if any, in ground floor as per relevant IS codes.				
	a) Pakur Variety	CUM	15	5450.00	81,750.00
<b>26</b>	<b>CONTROLLED CEMENT CONCRETE WITH GRADED STONE CHIPS OF 20 MM NOMINAL SIZE</b>				
	Controlled Cement concrete with well graded stone chips (20 mm nominal size) excluding shuttering and reinforcement with complete design of concrete as per IS : 456 and relevant special publications, submission of job mix formula after preliminary mix design after testing of concrete cubes as per direction of Engineer-in charge. Consumption of cement will not be less than 300 Kg of cement with Super plasticiser per cubic meter of controlled concrete but actual consumption will be determined on the basis of preliminary test and job mix formula. In ground floor and foundation.[using concrete mixture] M 25 Grade				
	(i) Pakur Variety	CUM	15	6499.00	97,485.00



<b>27</b>	<b>PRECAST CONCRETE JALLY WORKS</b>				
	Precast pierced concrete jally work as per design and manufacturer's specification including moulding etc. with stone chips and necessary reinforcement shuttering complete including fitting, fixing in position in all floors.				
	(a) 50 mm. thick panels	SQM	35	359.00	12,565.00
<b>28</b>	<b>SUPPLYING FIXING AND FITTING FAN HOOK</b>				
	Supplying, fitting and fixing Fan Hook for ceiling with 1 metre long 16mm. dia rod complete including mending damages. Payment for damage and repair to be made separately.	EACH	300	100.00	30,000.00
<b>29</b>	<b>CONTROLLED CEMENT CONCRETE WITH GRADED STONE CHIPS OF 6 MM NOMINAL SIZE</b>				
	Ordinary Cement concrete (mix 1:2:4) with graded stone chips (6mm nominal size) excluding shuttering and reinforcement,if any, in gound floor as per relevant IS codes.				
	Pakur variety	CUM	230	5275.00	12,13,250.00
<b>30</b>	<b>SHUTTERING, CENTERING AND STAGING</b>				
	Hire and labour charges for shuttering with centering and necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor)				
	(When the height of a particular floor is more than 4 m the equivalent floor height shall be taken as 4 m and extra for works beyond the initial 4 m ht. shall be allowed under 12 (e) for every 4 m or part thereof)				

	(a) 25 mm to 30 mm thick wooden shuttering as per decision & direction of Engineer-In-Charge.	SQM	100	335.00	33,500.00
	(e) Extra for staging beyond 4 m in any floor (Mode of measurement: area in plan x mean height of staging upto soffit of shuttering above initial 4 m)	SQM	90	61.00	5,490.00
	Notes:- For shuttering in shell roof, grid roof with vertical faces folded plate, arched roof the rate in 36 (a), 36 (b) & 37 (c) of subhead B above to be increased by 100 % . For grid roof with splayed faces, rate is to be increased by 150%.				
<b>31</b>	<b>REINFORCEMENT FOR R.C.C WORKS</b>				
	Reinforcement for reinforced concrete work in all sorts of structures including distribution bars, stirrups, binders etc initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape, placing in proper position and binding with 16 gauge black annealed wire at every intersection, complete as per drawing and direction.				
	(a) For works in foundation and upto roof of ground floor/upto 4 m				
	(i) Tor steel/Mild Steel				
	I. SAIL/ TATA/RINL	MT	2	71416.00	1,42,832.00
	(b)Add extra over the rate of ground floor/initial 4 m for each basement floor and each additional floor below/ above ground floor				
	(i) Upto 4 th floor roof in each addl. Floor	QNTL	10	48.00	480.00
<b>32</b>	<b>LABOUR FOR PLACING REINFORCEMENT ON FORM WORK FOR R.C.C WORKS</b>				
	Labour for Placing on forms (i.e. shuttering) I.R.C. or similar welded mesh fabric of approved sizes.(Payment to be made on net area used including cutting straightening, bending, binding with 16 gauge black annealed wire, removing	SQM	250	26.00	6,500.00

	rust etc, complete as per direction)				
<b>33</b>	<b>CLEANING CONCRRETE SURFACES</b>				
	Cleaning the concrete surface by removing dirt and debris, marking defective locations and removing loose concrete by careful stripping untill hard surface is exposed, cutting the concrete to regular shape, wire brushing the exposed surface and removing debris from site complete as per direction of the Engineer - in - Charge	SQM	400	90.00	36,000.00
<b>34</b>	<b>CLEANING EXPOOSED REINFORCEMENT SURFACES</b>				
	Cleaning the exposed reinforcement preferably upto full diameter by wire brush, applying two coats of polymer based rust removing compound left for 24 hours, removing the coating and then applying two (2) coats of polymer modified anti corrosive protective coating formulated to inhibit the corrosion of reinforcement as per manufacturer's specification][Mode of measurement:The affected surface area of reinforcement shall be considered for payment]	SQM	120	782.00	93,840.00
<b>35</b>	<b>EPOXY BASED AGENT FOR JOINING OLD AND NEW CONCRETE WORKS</b>				
	Applying epoxy based reactive joining agent for joining the old concrete with fresh concrete to be applied within manufacturer's specified time as per manufacturers specification. (0.4 Kg / m <sup>2</sup> of concrete surface).	SQM	50	309.00	15,450.00
	Note: Applicable only when the full diameter of reinforcement steel is exposed.				
<b>36</b>	<b>BONDING AGENT</b>				

	(a) Applying 2 coats of bonding agent with synthetic multi functional rubber emulsion having adhesive and water proofing properties by mixing with water in proportion (1 bonding agent : 4 water : 6 cement) as per Manufacturer's specification	SQM	16360	88.00	14,39,680.00
<b>37</b>	<b>REMOVING CORRODED WORN OUT PORTION OF REINFORCEMENT</b>				
	Removing corroded worn out portion of reinforcement (when the area of bar is damaged by more than 25%) by cutting and replacing the same by a new plain round bar of requisite diameter by binding with required lap / welding with old bar, including cost of reinforcement, complete in all respect including removing unserviceable materials from site as per direction of the Engineer - in - charge. Note : Payment on weight (Kg.) of new reinforcement.	kg	500	87.00	43,500.00
<b>38</b>	<b>POLYTHENE SHEET OVER D.P.C</b>				
	Supplying and laying Polythene Sheet (150gm / sq.m.) over damp proof course or below flooring or roof terracing or in foundation or in foundation trenches.	SQM	130	24.00	3,120.00
<b>39</b>	<b>DAMP PROOF COURSE</b>				
	40 mm. thick damp proof course with cement concrete (1:1.5:3) (with graded stone chips 20 mm nominal size) with water proofing compound of approved brand @ 0.2% weight of cement including cost of materials over two coats of non toxic acrylic polymer modified cementitious waterproofing slurry coat complete [cost of water proofing compound and non toxic paint to be paid seperately) for underground water retaining structures.[water proofing as per item no 9 and non toxic paint as per item no. 8 (b) of subhead C of Section 'C' ]	SQM	130	297.00	38,610.00

<b>40</b>	<b>KOTA STONE FLOORING</b>				
	18 mm. to 22 mm. thick, kota stone slab set in 20 mm thick (avg) cement mortar (1:4) in floor, stair & lobby including pointing in cement slurry with admixture of pigment matching the stone shade, including grinding & polishing as per direction of Engineer - in - charge to match with the existing work. [Slurry for bedding @ 4.4 kg/Sq.m and pointing @2.0 kg/Sq.m]	SQM	60	1024.00	61,440.00
<b>41</b>	<b>GRINDING TO FLOORING</b>				
	Grinding to marble / mosaic floor including remaining stone, if necessary, after cutting with manual labour / machine, where necessary	SQM	1260	20.00	25,200.00
<b>42</b>	<b>ITALIAN MARBLE FLOORING</b>				
	Providing and fixing machine cut, mirror polished, Italian Marble stone (Imported quality, such as Perlato, Bottichino, Crema, Antique Beige, Dark Emperadore, Red Verona, Black Marquino etc.) flooring laid in required pattern in linear portion of the building all complete as per architectural drawings with Italian Marble stone slab laid over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with white cement slurry @ 4.4 kg/sqm including pointing with white cement slurry mixed with pigment to match the marble shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. [This work should not be executed without specific permission of Superintending Engineer]				
	a) Light Beige Colour (such as Perlato, Bottichino, Crema)				
	ii) 20 mm thick Italian Marble stone slab				
	In ground floor	SQM	400	4947.00	19,78,800.00
	In first floor	SQM	600	4959.00	29,75,400.00
	In second floor	SQM	200	4971.00	9,94,200.00

	c) Dark Colour (such as Dark Emperadore, Red Verona, Black				
	ii) 20 mm thick Italian Marble stone slab				
	In ground floor	SQM	120	6007.00	7,20,840.00
	In first floor	SQM	180	6019.00	10,83,420.00
	In second floor	SQM	80	6031.00	4,82,480.00
	e) White with veins				
	ii) 20 mm thick Italian Marble stone slab				
	In ground floor	SQM	80	6007.00	4,80,560.00
	In first floor	SQM	120	6019.00	7,22,280.00
	In second floor	SQM	90	6031.00	5,42,790.00
<b>43</b>	<b>MARBLE WORKS IN SKIRTING</b>				
	Supplying fitting and fixing Italian Marble slab/Tile in skirting (upto 300 mm ht) over 15mm (avg) thick base of Cement mortar (1:2) laid with white cement slurry @ 4.4 kg/ Sq.m at back side of marble and jointed with white cement slurry @ 2.2 kg/ Sq.m with necessary pigments including grinding and Granite Polishing. [White cement and Pigment to be supplied by the Agency] [This work should not be executed without specific permission of Superintending Engineer]				
	c) Dark Colour (such as Dark Emperadore, Red Verona, Black				
	ii) 20 mm thick Italian Marble stone slab				
	In ground floor	SQM	150	6145.00	9,21,750.00
	In first floor	SQM	20	6157.00	1,23,140.00
<b>44</b>	<b>GRANITE WORKS IN DADO</b>				

	Supplying, fitting & fixing granite slabs 15mm to 18 mm. thick with uniform texture & without decorative veins in columns, wall, facia etc. with 15 mm thick [avg] cement mortar (1:2) including making suitable arrangements to hold the stones properly by brass / copper hooks including pointing in cement mortar (1:2) (1 white cement : 2 marble dust) with admixture of pigment matching the stone shades all complete as per direction of the Engineer-in-charge including cost of all materials, labours, scaffolding, staging ,curing and roughening of concrete surface complete. Area of each Granite slab > 0.6 upto 1.0 square metre. [Using cement slurry at back side of granite @ 4.4 kg/sq.m & white cement slurry for joint filling @ 1.8 kg/sq.m]	SQM	410	2173.00	8,90,930.00
<b>45</b>	<b>GRANITE WORKS IN FLOORING</b>				
	Supplying,fitting & fixing granite slab 15mm to 18mm thick in floor, lobby, stair, landing and treads etc. over 20mm (avg) thick base of cement mortar (1:2) laid with white cement slurry @ 4.40Kg per Square meter before placing of granite and jointed with white cement slurry @ 2.0 Kg per square meter with necessary pigments and complete as per direction of Engineer-in-charge including cost of all materials, labours, curing and roughening of concrete surface complete.In ground floor				
	(b) Area of each Granite slab 0.6 to 1.0 Square meter.				
	In ground floor	SQM	50	2774.00	1,38,700.00
	In first floor	SQM	60	2786.00	1,67,160.00
	In first floor	SQM	80	2798.00	2,23,840.00
<b>46</b>	<b>LONDON MOSAIC</b>				

	Providing & Laying Mosaic Tiles of "LONDON MOSAIC" make of (different sizes) 20 mm thick of approved brand & manufacture in all colours & shade on floors to be laid over 25 mm thick bed of cement mortar (1:3) to be finished with neat cement & then laid with cement based high polymer modified quick adhesive of 6 mm thickness including grouting joints. Size of tiles 300mm X 300 mm	SQM	750	52334.00	3,92,50,500.00
<b>47</b>	<b>LABOUR FOR SETTING TILES IN FLOOR</b>				
	Labour for setting tiles in floor / pavement in cement mortar (1 : 4) joints finished with white cement.	SQM	4200	100.00	4,20,000.00
<b>48</b>	<b>REPAIRING CRACKS IN FLOOR WITH CEMENT MORTAR</b>				
	Repairing cracks in floor with cement mortar (1:2) with necessary pigment to match with existing works, including prior cutting and cleaning the cracks as directed.	%M	4200	691.00	29,022.00
<b>49</b>	<b>FILLING RAT HOLES</b>				
	Filling rat-holes with broken glass and cement concrete (1:3:6) with jhama chips including shaping holes and mending damages.	Each	300	55.00	16,500.00
<b>50</b>	<b>WASHING AND CLEANING FLOOR</b>				
	Washing and cleaning with oxalic acid powder using 33 gms./sq.m.				
	(a) Marble floor/ marble dado	%SQM	4200	696.00	29,232.00
	(b) Floor/ dado other than marble	%SQM	4200	552.00	23,184.00
<b>51</b>	<b>POLISHING OLD MARBLE/TERRAZO WORK</b>				
	Polishing only of old marble or terrazo work with oxalic acid powder using 33 gms/ sq.m. by manual labour / machine where necessary.	SQM	300	38.00	11,400.00



<b>52</b>	<b>WASHING FLOOR WITH SOAP WATER</b>				
	Washing and cleaning with soap water and rubbing with oil cloth in all types of floor and dado.	SQM	4200	6.00	25,200.00
<b>53</b>	<b>REPAIR &amp; REHABILITATION WORKS FOR WATERPROOFING</b>				
	Taking out old damaged tarfelt from the roof, parapet etc. preparing the roof surfaces by removing all spoils, blisters, moss etc. from the working site and disposal of the same beyond the compound and cleaning the site in all respect as per direction of Engineer-in-Charge.				
	All floor	SQM	1400	12.00	16,800.00
<b>54</b>	<b>ROOFING</b>				
	Supplying & laying 3mm thick pre-fabricated plastomericwater proofing membrane conforming to EN 12311-1 &ASTMD 5147, manufactured with atactic poly propylene(APP) modified premium grade asphalt , specially reinforcedwith non-woven polyester core with polyester reinforcement@160 gms per sqm & both faces covered with thermo-fusiblepolyethylene film /Mineral on top face over a coat of primer @ 0.40 lit/sqm of manufacturer's specification onsmooth, clean dry surface prepared wherever required.Lapjoint shall be provided of 75 mm in longitudinal & 100 mm in transverse direction and fused using LPG/ Propane torch employing extra care ensuring full bondage, complete removal of entrapped air and sealing edges into grooves in appropriate manner as per direction of Engineer -in-charge all complete including materials,labour and applicable taxes. (Payment shall be made on the basis of finishedsurface area.).Membrane Property: Softening Point > 150 deg C, ColdFlexibility < -6 deg C, Tensile Strength, N/cm : 600(longitudinal), 450	SQM	1400	407.00	5,69,800.00

	(transverse), Tearing Strength, N:300 (longitudinal), 200 (transverse)				
<b>55</b>	<b>PREPARATION OF DRAINAGE SPOUT ON ROOF</b>				
	Preparation of drainage spout on roof for bituminouswaterproofing treatment after required grading and shapingof the under bed with Cement Concrete (1:2:4) or CementMortar (1:4) as directed, Chamfering and moulding theparapet wall to form a bell mouth entry, if required andproviding full course treatment with bituminous felt tofacilitate quick and smooth drainage of watwr into the down pipes complete including cost of all materials and labouraccording to satisfaction of the Engineer - in - Charge.(This item shall be done for repairing works only and shallnot be used when original/renewal of tarfelting work isproposed to be undertaken)	EACH	100	110.00	11,000.00

<b>56</b>	<b>REPAIR &amp; REHABILITATION FOR ROOFING</b>				
	Renewing rounding only (100 mm. radius) at the junction of roof and parapet etc. with beaten lime concrete (2:2:7) with slaked lime (2 lime putty / paste : 2 surki : 7 brick khoa )	Meter	200	72.00	14,400.00
<b>57</b>	<b>REPAIRS TO ROOF CRACKS WITH CEMENT MORTAR</b>				
	Repairs to roof cracks with cement and sand mortar (1:4) including cutting grooves and cleaning cracks and grouting the cracks with neat cement before repairs. (Cement 0.63 Kg/Mtr. )	Meter	400	14.00	5,600.00
<b>58</b>	<b>REPAIR TO ROOF CRACKS WITH BITUMEN</b>				
	Repair to roof cracks with Bitumen (VG-40) including cutting grooves and cleaning cracks, heating bitumen as directed and finished with sand blinding. (Bitumen 1.687 Kg/ Sq.m, Medium Sand 0.6 Cu.m/100 Sq.m) (Bitumen to be supplied by contractor)	SQM	1400	223.00	3,12,200.00
<b>59</b>	<b>REPAIR TO ROOF CRACKS BY CUTTING V GROOVES</b>				
	Repairs to cracks in terraced roof by cutting V-grooves 75 mm. to 100 mm. deep and 150 mm. to 200 mm. wide and filling the same with beaten lime concrete (2:2:7) with lime putty / paste and finishing complete (2 lime putty / paste : 2 surki : 7 brick khoa )	Meter	200	164.00	32,800.00
<b>60</b>	<b>EXAMINING WOODEN BEAM</b>				
	(i) Examining wooden beam by sounding or boring	Each	500	56.00	28,000.00
<b>61</b>	<b>EXAMINING WOODEN BURGAHS</b>				
	(ii) Examining wooden burghas by sounding	Each	500	2.00	1,000.00
<b>62</b>	<b>OPENING BEARING OF BEAM AND MENDING DAMAGES</b>				

	Opening out and examining portion of bearing of beam including mending good damages as necessary.	Each Bearing	100	155.00	15,500.00
<b>63</b>	<b>REPLACING WOODEN BEAM OR R.S JOIST</b>				
	Replacing wooden beam or R.S. joist by R.S. joist or by another wooden beam joist and fixed complete, including hire and labour charges for necessary sal bullah props, necessary packing between beams and burgahs but excluding the cost of joist or wooden beam and concrete/ Brick works etc needed for mending damages.				
	[Mode of payment for wooden beam (raplacing the old one) will be made against Item No. 4 of carpanter's work]				
	(i) Height not exceeding 5m				
	(a) Clear span not exceeding 3.7m.	Each	40	2525.00	1,01,000.00
	(b) Clear span exceeding 3.7m but not exceeding 5m.	Each	30	2935.00	88,050.00
<b>64</b>	<b>LABOUR FOR CHANGING BURGAHS</b>				
	Labour for changing burgahs excluding mending damages.	Each	100	27.00	2,700.00
	[Payment for the wooden burgahs (replacing the old ones) will be made against Item C (2) of carpenter's work ]				
<b>65</b>	<b>ENCASING R.S. JOIST /BEAM</b>				
	Encasing R.S. joist / beam with 16 to 18 B.W.G. wire netting (13 to 19 mm. mesh) and cement concrete (1:1.5:3) with stone chips including finishing with 15 mm. thick cement plaster (1:4) and 2 coats white washing complete.( Cement 18.9 Kg/ Sq.m)	SQM	500	556.00	2,78,000.00
	(Payment to be made on area of exposed surface)				
<b>66</b>	<b>CUTTING SHALLOW CHANNEL DRAIN OF ROOF</b>				
	Cutting shallow channel drain of roof for easy passage of rain water cement	Metre	100	19.00	1,900.00

	plastered (1:4) complete. (Payment for Cement plaster to be paid separately)				
	<b>(F) Structural Steel Works, Grills, Gates etc.</b>				
	A. Original Works				
<b>67</b>	<b>M.S. STRUCTURAL WORKS WITH R.S.J SECTIONS</b>				
	M.S. structural works in columns, beams etc. with simple rolled structural members (e.g. joists, angle, channel sections conforming to IS: 226, IS: 808 & SP (6)- 1964 connected to one another with bracket, gussets, cleats as per design, direction of Engineer-incharge complete including cutting to requisite shape and length, fabrication with necessary bolting, metal arc welding conforming to IS: 816- 1969 & IS: 1995 using electrodes of approved make and brand conforming to IS:814- 2004, haulage, hoisting and erectionall complete. The rate includes the cost of rolled steel section, consumables such as electrodes, gas and hire charge of all tools and plants and labour required for the work including all incidental chages such as electricity charges, labour insurance charges etc.				
	Payment to be made on the basis of calculated weight of structural members only in finished work as per IS specified weight. Payment for gusset, bracket, cleat, rivets, bolts and nuts may be make by adding the actual weight of such items with the weight of finished structural members or 7% of weight for finished structural members weighing not less than 22.5 Kg. / m. or 15 % of weight for finished structal members weighing less than 22.5 Kg. / m. may be increased allow for bracket, cleat, rivet, bolts and nuts etc. and no seperate payment being made for these items, as per direction of Engineer In Charge. The rates are considered for a height of erection 8m. /				

	2nd floor level from the ground. Add 1.5% extra over the rate for each additional floor or 4m. beyond initial 8m. or part thereof.				
	I) For structural members of specified sections weighing less than 22.5 Kg./m	MT	14	72603.00	10,16,442.00
	II) For Structural Works in Roof Trusses etc. using joists, channels and angles of specified section weighing less than 22.5 kg/ m	MT	0.1	73761.00	7,376.00
	III) For built up sections / structural members of specified sections weighing not less than 22.5 Kg./m	MT	3	75266.00	2,25,798.00
<b>68</b>	<b>M.S STRUCTURAL WORKS WITH HOLLOW SECTIONS</b>				
	M.S. structural works with hollow sections (square or rectangular shape) conforming to IS: 806-1968 & IS:1161-1998) connected to one another with bracket, gusset, cleat as per design, drawing & direction of Engineer-in-Charge complete including cutting to requisite shape & size, fabrication including metal arc welding conforming to IS: 816-1969 & IS: 9595 using electrodes of approved make and brand conforming to IS:814- 2004, haulage, hoisting and erection all complete. The rate includes the cost of all M.S. Hollow section, all consumables such as electrodes, gas and hire charges of all tools and plants and labour required for execution and all incidental charges (such				

	as electricity, labour insurance) etc. complete.				
	Payment to be made on the basis of calculated weight of structural members of MS Hollow Section as specified in relevant IS code in finished work. Payment for gusset, bracket, cleat may be made by adding the actual weight of such items with weight of finished structural members. The rates are considered for a height of erection 8 m. / 2nd floor level from the ground. Add 1.5 % extra over the rate for each additional floor or 4m. beyond the initial 8 m. or part thereof.				
	ii) For other Structural works like galleries etc.	MT	3	74990.00	2,24,970.00
<b>69</b>	<b>CUTTING R.S.J SECTIONS</b>				
	Cutting to requisite length or shape departmental R.S. joists, channels, angles, tees, plates etc.	<b>SQCM</b>	1000	8.00	8,000.00
	(Payment to be made on area of cut surface)				
<b>70</b>	<b>DRILLING HOLES IN R.S.J SECTIONS</b>				
	Drilling holes of requisite diameter in R.S. joists channels, tees. Plates etc.				
	(a) (i) Dia. Upto 12mm and depth upto 10 mm.	EACH	250	10.00	2,500.00
	(ii) Extra for drilling beyond depth of 10mm	EACH	250	10.00	2,500.00
	(b) (i) Dia.above 12mm and depth upto 10 mm.	EACH	250	15.00	3,750.00

	(ii) Extra for drilling beyond depth of 10mm	EACH	250	15.00	3,750.00
<b>71</b>	<b>LABOUR FOR HOISTING AND PLACING R.S.J SECTIONS</b>				
	Labour for hoisting and placing in proper position (up to 1st floor level) departmental R.S. joists, channels, angles. Tees, plates etc. including fitting and fixing same with bolts and nuts, if necessary (but excluding cost of such bolts and nuts)				
	In ground floor	QNTL	50	412.00	20,600.00
	In first floor	QNTL	40	486.00	19,440.00
	In second floor	QNTL	40	560.00	22,400.00
	In roof	QNTL	60	634.00	38,040.00
<b>72</b>	<b>HOLDING DOWN BOLT</b>				
	Holding down bolt with nut including 100 x 100 x 6 mm plate washer at bottom fitted complete and packing the hole with cement concrete or cement grout as directed.				
	(i) 16 mm dia bolt				
	(a) 300 mm long	EACH	5	120.00	600.00
	(b) 450 mm long	EACH	5	165.00	825.00
	(ii) 20 mm dia bolt.				
	(a) 300 mm long	EACH	10	204.00	2,040.00
	(b) 450 mm long	EACH	10	236.00	2,360.00
	(c) 600 mm long	EACH	10	279.00	2,790.00
	(iii) 25 mm dia.				
	(a) 450 mm long.	EACH	5	325.00	1,625.00
	(b) 500 mm long.	EACH	5	372.00	1,860.00
	(c) 750 mm long	EACH	5	508.00	2,540.00
	(iv) 32 mm dia:				
	(a) 450 mm long	EACH	10	462.00	4,620.00
	(b) 500 mm long	EACH	10	508.00	5,080.00
	(c) 750 mm long	EACH	10	630.00	6,300.00
<b>73</b>	<b>SUPPLYING BOLTS WITH NUTS, WASHER</b>				
	Supplying, fitting, fixing bolts with nuts, washer:				
	(i) 10 to 16 mm dia:				



	(a) Length up to 75 mm	kg	30	157.00	4,710.00
	(b) Length above 75 mm and upto 150 mm.	kg	25	146.00	3,650.00
	(c) Length above 150mm.	kg	20	141.00	2,820.00
	(ii) 20 to 25 mm dia bolt:				
	(a) Length up to 75 mm dia:	kg	15	165.00	2,475.00
	(b) Length above 75 mm and upto 150 mm.	kg	10	158.00	1,580.00
	(c) Length above 150mm.	kg	10	154.00	1,540.00
<b>74</b>	<b>M.S. WORKS IN BRACKETS</b>				
	M.S. works in brackets made from flats, angles, tees etc. to sizes specially bent, twisted, forged; making holes drilled and fitted to rafter of trusses with necessary bolts, nuts, washer or screws etc. (length of straight not less than 230 mm)	QNTL.	5	9984.00	49,920.00
<b>75</b>	<b>CAST IRON GRILLS</b>				
	(a) M.S. Ornamental grill of approved design joints fitted and fixed with necessary screws and lugs in ground floor.				
	(Add extra @ 1% for each addl. floor upto 4th floor and @ 1.25% for each addl. floor above 4th floor)				
	(i) Grill weighing above 10 Kg./sq.mtr and up to 16 Kg./sq. mtr.	QNTL	1	7238.00	7,238.00
	(ii) Grill weighing above 16 Kg./sq.mtr and above	QNTL	1	9696.00	9,696.00
	(MODE OF MEASUREMENT):-				
	The weight of grill per sq.m. will be determined by taking the physical weight of fabricated grill and dividing the same by covered area of the same.				
	N.B. No shop priming will be allowed to facilitate inspection of workmanship. Weight of grill is to be taken after final grinding and finishing the weld.				
	(b) Extra for work in grill gate.				
	(I) For hanging and locking arrangements including supply of materials and labour complete.				
	(15% extra over the corresponding item of grill )				

	(ii) For supplying fitting and fixing bottom rollers including all labour complete.				
	(5% extra over the corresponding item of grill )				
<b>76</b>	<b>COLLAPSIBLE GATE</b>				
	Collapsible gate with 40mm x 40mm x 6mm Tee as top and bottom guide rail, 20mm x 10mm x 2mm vertical channels 100mm apart in fully stretched position 20mm x 5mm M.S. flats as collapsible bracings properly rivetted and washered including 38mm steel rollers including locking arrangements, fitted and fixed in position with lugs set in cement concrete and including cutting necessary holes, chasing etc. in walls, floors etc. and making good damages complete.				
	(Add extra @ 1% for each addl. floor upto 4th floor and @ 1.25% for each addl. floor above 4th floor)				
	In ground floor.	SQM	50	4330.00	2,16,500.00
	In first floor.	SQM	50	4373.30	2,18,665.00
	In second floor.	SQM	50	4416.60	2,20,830.00
	Extra over the corresponding item of collapsible gate for top hung	SQM	50	148.00	7,400.00
	(Payment will be made on the area of the gate covered by two guard rails and two extreme channels)				
<b>77</b>	<b>ROLLING SHUTTER PROFILE</b>				
	(a) Supplying, fitting and fixing steel rolling shutter profile type with 18 B.G . of approved type steel latch section 75mm wide, fitted with coil wire spring to necessitate the fitting of required Nos. of C.I. Pulleys on heavy type solid drawn seamless steel tube complete with locking arrangements both inside and outside specially builtup side guide channels including providing a hood for the steel rolling shutter in the room, painting two coats of approved aluminium paint over a coat of red lead primer complete.	SQM	20	3270.00	65,400.00

<b>78</b>	<b>STAINLESS STEEL RAILING</b>				
	Supplying, fitting and fixing Stainless Steel railing consist of 38mm dia and 900mm height vertical balustrade at every two alternative steps, 50mm dia top rail, 3 (three) nos 19mm dia horizontal Strainless steel pipe and base/cover plate with Strainless Steel GRADE 304 containing 7.5% nickle (Interior Grade) Brushed/Mat finish, complete as per direction of the Engineer-in-charge. Weight of Strainless Steel railing per metre 6.5 Kg (approx)	MTR	20	9077.00	1,81,540.00
<b>79</b>	<b>FIRE RESISTANT DOOR FRAME AND SHUTTER</b>				
	Supplying, fitting & fixing fire resistant door frame conforming to IS:3614, tested and certified as per laboratory approved by Engineerin- charge, of section 143 x 57 mm having built in rebate made out of 16 SWG G.I.sheet (zinc coating not less than 120 gm/sqm) duly filled with vermiculite based concrete mix, suitable for mounting 120 minutes fire rated door shutters. The frame is fitted with intumescent fire seal strip of size 10x4 mm (minimum) around the frame and fixing with back plate bracket and anchor fastener of approved size and make. Rubber door silencers should be provided on striking jamb.				

	<p>Supplying, fitting &amp; fixing fire resistant Door leaf of 46 mm thick fully flush double skin glazed fire resistant door shutters with or without vision lite, of 120 minutes fire rating conforming to IS:3614 (Part-II), tested and certified as per laboratory approved by Engineer-in-charge, with suitable mounting on door frame, consisting of vertical styles, lock rail, top rail 100 mm wide, bottom rail 200 mm wide, made out of 18 SWG G.I. sheet (zinc coating not less than 120 gm/ m<sup>2</sup>) duly filled heat-resistant phenolic resin bonded insulation material (honeycomb craft) and fixing with necessary stainless steel ball bearing hinges of approved make. For pair of doors astragals has to be provided on the meeting stile for both active and inactive leaf. Vision lite wherever applicable should be provided as per manufacturer recommendation with a bedding and screw from inside. The glass should be 6mm clear borosilicate fire rated glass of relevant rating. All door and frames shall be finished with polyurethane aliphatic grade paint of approved colour including applying a coat of approved brand fire resistant primer. The door leaf and frame shall have passed minimum 250 hours of salt spray test. Rate should include supply and installation complete as per direction of Engineer-in-charge.</p>				
	ii) 2 hour Fire rated door double leaf of size (1470 mm x 2170 mm)	EACH	14	29957.00	4,19,398.00
	Add 1% extra for each additional floor over the rate for Ground Floor				
<b>80</b>	<b>LABOUR FOR DISMANTLING R.S.J SECTIONS</b>				
	Labour for lowering and stacking after dismantling in parts R.S. joists, channels, angles, tees, plates etc.complete as directed.				

	From 1st floor level	Qntl	50	197.00	9,850.00
	From 2nd floor level	Qntl	60	255.00	15,300.00
	From roof	Qntl	80	313.00	25,040.00
<b>81</b>	<b>WELDING IN M.S. STRUCTURAL WORKS</b>				
	Welding in M.S. structural work with gas or electric:				
	Tack weld	Point	1000	9.00	9,000.00
	Continuous weld.	cm run	2000	9.00	18,000.00
<b>82</b>	<b>IRON GRATED DOOR</b>				
	Taking out heavy iron grated door or window (jail pattern or existing) with locking arrangement after cutting out from walls and refixing the same including mending all damages.[Mending charges to be paid separately]	SQM	20	227.00	4,540.00
<b>83</b>	<b>REPAIRING COLLAPSIBLE GATE</b>				
	Reparing collapsible gate by cutting out all rivets as necessary reassembling all members including welding pieces of channels, straightening bent bars and rivetting with new rivets and fitting in position and painting two coats.	SQM	55	379.00	20,845.00
<b>84</b>	<b>EASING COLLAPSIBLE GATE</b>				
	Easing and oiling, cleaning collapsible gate and repairing to locking arrangements.	SQM	50	17.00	850.00
<b>85</b>	<b>EASING ROLLING SHUTTERS</b>				
	Easing and oiling, cleaning rolling shutters excluding repair to inside locks	SQM	55	12.00	660.00
<b>86</b>	<b>EASING AND OILING W.I. GATE</b>				
	Easing and oiling W.I. Gate or G.I. Gate.	SQM	30	7.00	210.00

<b>87</b>	<b>LABOUR FOR TAKING OUT ROLLING SHUTTER</b>				
	Labour for taking out rolling shutter (only shutter portion) dismantling by parts for repair or (replacement of damaged parts only), rehang and refitting the same in position after necessary repairs (excluding the cost of supply of new parts).	SQM	50	283.00	14,150.00
<b>88</b>	<b>RENEWING SEAM PIPE FOR ROLLING SHUTTER</b>				
	Renewing seam pipe for rolling shutter as per existing size and shape fitting, fixing complete.	Mtr	40	210.00	8,400.00
<b>89</b>	<b>SIDE SPLIT PIN FOR SEAM PIPE</b>				
	Renewing side split pin for seam pipe for rolling shutter.	Each	30	26.00	780.00
<b>90</b>	<b>EASING ROLLING SHUTTER</b>				
	Oiling and greasing of rolling shutter and repair to in side lock.	SQM	70	73.00	5,110.00
<b>91</b>	<b>RENEWING PROFILE OF ROLLING SHUTTER</b>				
	Renewing profile of rolling shutter including fitting fixing complete as per existing size and shape.	M.	200	54.00	10,800.00
<b>92</b>	<b>RENEWING SPRING OF ROLLING SHUTTER</b>				
	Renewing spring of rolling shutter as per existing size and shape including fitting fixing complete.	Each	10	609.00	6,090.00
	Taking out M.S. or W.I. Grills from wooden frame including cutting lugs from masonry wall and refitting the same and mending good damages after repairs. (Excluding the cost of necessary repair of damages) or doing any other necessary works.	Each	30	99.00	2,970.00
<b>93</b>	<b>WOOD WORK IN DOOR AND WINDOW FRAME</b>				

	Wood work in door and window frame fitted and fixed in position complete including a protective coat of painting at the contact surface of the frame excluding cost of concrete, Iron Butt Hinges and M.S clamps. (The quantum should be corrected upto three decimals).				
	(a) 1st class Burma Grade teak.	CUM	16.3	328447.00	53,53,686.00
<b>94</b>	<b>CURVED WOOD WORK IN DOOR AND WINDOW FRAMES</b>				
	Extra rate for Curved wood works in doors and window frame fitted and fixed complete over corresponding Items of Item No. 1. (In measuring such average length and average breadth to be taken into consideration, Thickness remaining constant). (The quantum should be corrected upto three decimals)	CUM	8	57542.00	4,60,336.00
<b>95</b>	<b>WOODEN SHUTTER OF DOOR AND WINDOW</b>				
	Panel shutters of door and window, as per design (each panel consisting of single plank without joint), including fitting and fixing the same in position but excluding the cost of hinge and other fittings. In ground floor. (In case of non-supply of single plank, penal rate of reduction of 20% will be made)				
	(i) 50mm thick shutters with 25mm thick panel of size 30 to 45 cm				
	.	SQM	280	14460.00	40,48,800.00
<b>96</b>	<b>FIXED LOUVER SHUTTERS OF DOORS AND WINDOWS</b>				
	Fixed louver shutters of doors and windows as per design, including fitting & fixing same in position but excluding the cost of hinges and other fittings in ground floor.				
	(i) 50mm thick shutters with 19mm thick valve.				
	(a) 1st class Burma Grade teak.	SQM	200	18411.00	36,82,200.00

<b>97</b>	<b>GLAZED SHUTTER OF DOOR AND WINDOW</b>				
	Glazed shutters of doors, as per design with sheet glass of 5.0mm thick beded in putty and fitted with teak bead and nails (the styles 150mm wide, top & bottom rail 200mm wide if not otherwise mentioned) including fitting and fixing shutters in position but excluding the cost of glass, putty, teak bead, nails, hinges etc. and other fittings, in ground floor.				
	50mm Thick shutters				
	(a) 1st class Burma Grade teak.	SQM	100	12186.00	12,18,600.00
<b>98</b>	<b>UPVC DOOR</b>				
	Providing and fixing factory made uPVC white colour casement/ Casement cum fixed glazed door comprising of uPVC multichambered frame, sash and mullion (where ever required) extruded profiles duly reinforced with $1.60 \pm 0.2$ mm thick galvanized mild steel section made from roll forming process of required length (shape & size according to uPVC profile), uPVC extruded glazing beads of appropriate dimension, EPDM gasket, zinc alloy (white powder coated) 3D hinges and one handle on each side of panels along with zinc plated mild steel multi point locking having transmission gear, cylinder with keeps and one side key, G.I fasteners 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screws, etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, mullion (if required) shall be also fusion welded including drilling of holes for fixing hardware's and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of required size and of approved quality, all complete as per approved drawing & direction of Engineer-in-Charge. (Single /double glass panes and silicon sealant shall be				





	three decimals)				
	(a) 1st class Burma Grade teak.	CUM	0.5	308588.00	1,54,294.00
<b>100</b>	<b>DRESSED WOOD WORK IN POST, PLATE, BATTENS</b>				
	(B) Dressed wood work in post , plate , battens . etc. fitted & fixed complete (excluding the cost of bolts only, but including the cost of nails, screws etc.) (The quantum should be corrected upto three decimals)				
	(a) 1st class Burma Grade teak.	CUM	0.1	369015.00	36,902.00
<b>101</b>	<b>WOOD WORK IN BEAM AND BURGAHS</b>				
	Wood work in beams and burgahs fitted and fixed in position complete. (Cost for repairing of Damage to be paid separately)				
	(a) 1st class Burma Grade teak.	CUM	0.5	308588.00	1,54,294.00
<b>102</b>	<b>WOOD WORK IN RAILS OF RAILING</b>				
	Wood work in upper rails of railing, hand rail of staircase, balcony etc. includig necessary bend, moulding fitted and fixed complete (for purpose of payment section will be measured in the square).				
	(a) 1st class Burma Grade teak.	CUM	0.5	325562.00	1,62,781.00
<b>103</b>	<b>SCANTLING FOR CEILING/PARTITIONS</b>				
	Scantling upto 50mm wide and 12mm thick (chamfering or rounding) for ceiling/partion battens including fitting, fixing in position with washers, coach screws etc. complete.:	MTR.	100	486.00	48,600.00
	1st Class Burma Teak Wood				
<b>104</b>	<b>ROUGH DRESSED TIMBER PLANKS</b>				

	Rough dressed timber planks fitted and fixed with nut bolts excluding framework complete :				
	Sal Malaysian				
	35 MM THICK PLANKS				
	In ground floor	SQ.M.	45	1760.00	79,200.00
	In First Floor	SQ.M.	45	1772.00	79,740.00
	In Second floor	SQ.M.	20	1784.00	35,680.00
<b>105</b>	<b>WOODEN EAVES BOARD</b>				
	Wooden eaves board as per design, fitted and fixed complete:				
	Ordinary Teak				
	25 MM THICK (Ornamental eaves Board)				
	In ground floor	SQ.M.	45	3056.00	1,37,520.00
	In First Floor	SQ.M.	35	3068.00	1,07,380.00
	In Second floor	SQ.M.	40	3080.00	1,23,200.00
<b>106</b>	<b>REPAIRS TO AUTOMATIC DOOR CLOSER</b>				
	Repairs to automatic door closer including replacement of damaged main spring, oiling and adjusting as necessary including taking out and refitting the same.	Each	40	318.00	12,720.00
<b>107</b>	<b>LABOUR FOR TAKING OUT DOOR AND WINDOW FRAME</b>				
	Labour for taking out door and window frame including shutter for repair or replacement of different parts of the frame & refixing the same including mending good all damaes complete. (Concrete and brick work for mending damage will be paid separately)				
	Upto area 2.5 Sq.m	SQM	440	119.00	52,360.00
	Above area 2.5 Sq.m	SQM	100	146.00	14,600.00
<b>108</b>	<b>TAKING OUT SHUTTER OF DOOR AND WINDOW</b>				

	Taking out shutter of door and window, dismantling by parts (for repair or replacement of damaged parts) , reassembling and refitting and rehangng same with old fittings but with new screws as necessary. (Where different parts of same shutter are renewed under different item, payment under item 73 will be made once only).	SQM	600	126.00	75,600.00
<b>109</b>	<b>EASING OF DOORS AND WINDOWS</b>				
	Easing door and windows.	EACH	350	17.00	5,950.00
	Renewing 12mm. Thick louver of fixed lauwered shutter to match with the existing one including necessary railing pieces:				
	(a) 1st class Burma Grade teak.	SQM	50	3720.00	1,86,000.00
<b>110</b>	<b>STYLES AND RAILS OF WOODEN SHUTTERS</b>				
	Styles and rails of wooden shutters fitted and fixed complete. (Payment to be made on area of new work only). In Ground Floor:				
	(a) 1st class Burma Grade teak.	SQM	150	7650.00	11,47,500.00
	(vi) 50mm. Thick shutter.				
	(a) 1st class best Indian teak.	SQM	70	9430.00	6,60,100.00
	(This is a repair Item, Item No. E (31) will be admissible in addition). Lifting Charges for upper floors refer item H(2).				
<b>111</b>	<b>TAKING OUT EXISTING PARTITION/FALSE CEILING</b>				
	Taking out existing partition/ceiling of particle board, masonite board, ply board, soft board etc. of any thickness and refixing same in new position with necessary clamps making holes in walls, floor, roof and mending damages if any.[concrete plaster will be paid separately]	SQM	6000	55.00	3,30,000.00
<b>112</b>	<b>EASING DRAWERS</b>				
	Easing drawers of laboratory tables of	Each	350	26.00	9,100.00

	any size (labour only)				
<b>113</b>	<b>EASING TOWER WRENCH</b>				
	Easing tower wrench, barrel, skeleton, socket bolt etc. by scraping and oiling.	Each	265	4.00	1,060.00
<b>114</b>	<b>TAKING OUT AND REFIXING WOODEN KNOBS OF DRAWERS</b>				
	Taking Out and Refixing wooden moulded knobs of drawers fitted and fixed complete.	Each	200	17.00	3,400.00
<b>115</b>	<b>ACOUSTIC FALSE CEILING</b>				
	<p>Providing and fixing of false ceiling with powder coated exposed G.I. grid suspension system (E-Grid U-1520 or equivalent load carrying capacity with mid span deflection not exceeding 1/360 span with hanger spacing of 1200mm c/c ) consisting of Main Runner 3600 mm long, Cross Tee 1200 mm / 600 mm long and Wall Angle. The Wall Angle shall be fixed on PVC Dash Fasteners on the perimeter of the wall by steel screws with distance 300mm c/c. The Main Runners to be placed @ 1200 mm. The Cross Tee 1200mm will be inserted in the pre-cut slots of Main Runner at a regular interval of 600 mm to form a modular grid of 1200mm X 600mm. Additional Cross Tees of 600 mm shall be placed perpendicular to the Cross Tee 1200 mm long to finally form a grid of 600 mm X 600 mm. Grid of module size 600 mm X 600 mm shall be supported by 6 mm dia G.I. wire from purlins / soffit. 15mm thick OW Acoustic Board (Mineral Fiber Acoustic Ceiling Tiles) of approved pattern and size 595mm X 595mm with NRC value &gt; 0.65 should be placed in the Grid module to form a False Ceiling. All complete as per the drawing &amp; directions of Engineer-in-charge.</p> <p>In ground floor.</p>				
	a) Acoustic False Ceiling (with 15mm thick OW Acoustic Board and E-Grid U-	SQM	120	1357.00	1,62,840.00

	1520).				
<b>116</b>	<b>WOODEN CEILING</b>				
	Ceiling of commercial ply as per design fitted and fixed complete (excluding the supporting framework but including necessary wood battens of size 40mm x 20mm ). In ground floor				
	(iii) 12mm thick				
	(a) Ordinary Teak	SQM	70	1034.00	72,380.00
	(For upper floors refer to item H(4) also)				
<b>117</b>	<b>PROVING THERMAL INSULATUION</b>				
	Providing and fixing thermal insulation of ceiling (under deck insulation) with Resin Bonded Rockwool conforming to IS: 8183, density 48 kg/m <sup>3</sup> , 50mm thick, wrapped in 200 G Virgin Polythene bags fixed to ceiling with metallic cleats (50x50x3 mm) @ 60 cm and wire mesh of 12.5 mm x 24 gauge wire mesh for top most ceiling of building	SQM	1400	546.00	7,64,400.00
<b>118</b>	<b>GYPSUM PLASTER BOARD CEILING</b>				

	<p>M.F. suspended ceiling made with 12.5 mm thick Gypsum plaster board including G.I. perimeter channel of 0.55 mm flush (having two flanges 20 mm and 30 mm respectively and web 27 mm ) along with perimeter of ceiling with G.I. intermediate channel of 0.9 mm thick size 45 mmx15mm placed at 750 mm c/c with G.I. ceiling angle of size 25 mmx10mmx0.55 mm thick fixed to the ceiling with G.I. Cleat and steel expansion fastener ceiling section 0.55 mm thick of size 51.50 mmx26mm fixed to the intermediate channels with the help of connecting clip and in the direction of perpendicular to the intermediate channel of 300 mm c/c 12.5 mm thick Gypsum plastered board are to be fixed under ceiling section as above by machine screws. The boards are to be joined and finished with jointing compound, paper tape and application of top coat etc. as per the direction of Engineer-in-charge. (The rate includes of cost of all materials including taxes, cost of accessories, fittings and fixtures, scaffolding and labour charges etc. complete)</p> <p>In ground floor</p>	SQM	3150	1159.00	36,50,850.00
<b>119</b>	<b>G.I GRID SUSPENSION SYSTEM</b>				

	Supplying, fitting and fixing of false ceiling framework with powder coated exposed G.I. grid suspension system (E-Grid U-1520 or equivalent load carrying capacity with mid span deflection not exceeding 1/360 span with hanger spacing of 1200mm c/c ) consisting of Main Runner 3600 mm long, Cross Tee 1200 mm / 600 mm long and Wall Angle. The Wall Angle shall be fixed on PVC Dash Fasteners on the perimeter of the wall by steel screws with distance 300mm c/c. The Main Runners to be placed @ 1200 mm. The Cross Tee 1200mm will be inserted in the pre-cut slots of Main Runner at a regular interval of 600 mm to form a modular grid of 1200mm X 600mm. Additional Cross Tees of 600 mm shall be placed perpendicular to the Cross Tee 1200 mm long to finally form a grid of 600 mm X 600 mm. Grid of module size 600 mm X 600 mm shall be supported by 6 mm dia G.I. wire from purlins/ soffit all complete as per the drawing & directions of Engineer-in-charge.	SQM	800	467.00	3,73,600.00
<b>120</b>	<b>MOISTURE RESISTANT FALSE CEILING</b>				
	(g) Supplying ,fitting & fixing Eco-friendly, Moisture Resistant and Incombustable Gypsum plaster board/tiles (Density > 700Kg per Cu.m) conforming to IS 2095- Part 1, 2011 of size 595mm X595mm of approved design and brand placed in the Grid module to form a false ceiling all complete as per drawing & direction of Engineer - in- Charge. False ceiling with				
	(ii) 12.5mm thick Square edged Gypsum Plaster Board / tiles	SQM	250	388.00	97,000.00
<b>121</b>	<b>BOILING WATER PROOF PLYBOARD</b>				



	Supplying, fitting and fixing boiling water proof ply conforming to IS: 710-1977 bonded with phenol formaldehyde synthetic resin conforming to IS: 848-1974 of approved make and brand fitted and fixed as per design as per approval and direction of Engineer-in-Charge. [excluding the cost of supporting frame work and teak wood batten/Lipping]In Ground Floor				
	(i) 4mm	SQM	50	923.00	46,150.00
	(ii) 6mm	SQM	50	1122.00	56,100.00
	(iv) 12mm	SQM	50	1709.00	85,450.00
	(vi) 19mm	SQM	50	2420.00	1,21,000.00
<b>122</b>	<b>BOILING WATER PROOF BLOCK BOARD</b>				
	Supplying, fitting and fixing boiling water proof block board conforming to IS:1659-1990 conforming to IS:848-1974 of approved make and brand, fitted and fixed as per design as per direction of Engineer-in-charge. [Excluding the cost of supporting frame work and teak wood batten/Lipping]. In Ground Floor				
	(ii) 19mm	SQM	50	1827.00	91,350.00
	(Note: For Boiling Water Resistant Block Boards reduce the above rates by 5%).				
	For upper floor refer Item H (4) for item 1, 2, 3, 4 under subhead G				
<b>123</b>	<b>DECORATIVE LAMINATION</b>				
	Supplying fitting, fixing decorative lamination conforming to IS: 2046 : 1995 as per approved make, brand, finish and thickness with fitting, fixing the same on Particle/MDF / Ply Boards with recommended / approved adhesive with proper clipping the sides for better attachment as per direction of Engineer-incharge. The rate includes the cost of labour, adhesive and all incidental charges thereof. In ground floor				

	Glossy/Matt/Suede excluding surface texture or metallic lustre.				
	(i) Thickness of laminate 1.5mm	SQM	50	802.00	40,100.00
<b>124</b>	<b>LABOUR FOR WOOD WORK IN SAWING</b>				
	Labour for wood work in sawing from old timber to sizes as required for making (Payment to be made on quantity of finished work):				
	Door and window frames fitted and fixed complete.	CUM	5	4673.00	23,365.00
	Post, post plates, rafters, battens, truss members, purlins etc. (excluding cost of bolts only but including cost of nails, screws etc. as directed.	CUM	5	5133.00	25,665.00
	(f) Extra over (a) or (b) for hoisting and fitting, fixing beam in position. (Damage if any will be repaired separately)	CUM	5	2763.00	13,815.00
<b>125</b>	<b>FINISHING WITH LIME PLASTER</b>				
	Finishing of 75 mm. or 125 mm. thick wall with 15 mm. thick lime plaster (1:4) and moulding (30 mm deep and 6 mm. or 10 mm. projection) on side, including neat cement punning complete. (Payment to be made on length of wall)	METRE	750	91.00	68,250.00
<b>126</b>	<b>PLASTER WITH LIME AND SURKI MORTAR</b>				
	Sand and lime plaster including rounding off or chamfering corners as directed and raking out joints where necessary.				
	(i) (1:2) with Lime & Sand mortar				
	(a) 19 mm thick plaster	SQM	3000	144.00	4,32,000.00
<b>127</b>	<b>RULE POINTING TO BRICK WORK</b>				
	Rule pointing to brick work with ruled joints in lime and surki 1:2 mortar including raking out joints and top finishing (1 lime paste/ putty : 2 surki ).	SQM	1500	55.00	82,500.00
<b>128</b>	<b>LIME PUNNING</b>				

	Lime punning about 3 mm. thick with stone lime and shell lime (1:2)	SQM	1000	81.00	81,000.00
<b>129</b>	<b>LABOUR FOR CHIPPING BEFORE PLASTERING</b>				
	Labour for Chipping of concrete surface before taking up Plastering work.	SQM	500	21.00	10,500.00
<b>130</b>	<b>SAND RUBBING AND SMOOTHENING SURFACE</b>				
	Sand rubbing including preparing and smoothening surface with admixture of pigment if necessary as directed :				
	(a) Ground floor	SQM	100	54.00	5,400.00
	(b) Extra for each additional floor	SQM	200	4.00	800.00
<b>131</b>	<b>MAKING V GROOVE LINE</b>				
	Making V-groove line ( 12 mm wide,12 mm deep) in plastered surface.	%METRE	700	580.00	4,060.00
<b>132</b>	<b>CLOSING GAP BETWEEN DOOR AND WINDOW FRAME AND JAMBS</b>				
	Closing gap between door and window frame and jambs with cement mortar (1:3) including removing old mortar (throughoutentire surface of contact) and cleaning the joint. (Cement 0.012 Cu.m/100 Mtr.) (This item is not payable for new works).	%METRE	3300	1102.00	36,366.00
<b>133</b>	<b>WHITE WASHING</b>				
	White washing including cleaning and smoothening surface thoroughly.				
	All floors :				
	(b) Two coats (to be done on specific instruction).	%SQM	1000	1814.00	18,140.00
<b>134</b>	<b>RED OXIDE WASH</b>				
	Red oxide wash of approved shade including cleaning and smoothening surface thoroughly (without specific permission from the Engineer-incharge this item of work must not be done on an old painted surfacewhich has not received such red oxide wash before) :				

	External surface (Ground floor)				
	(b) Two coats (on new works only).				
	In Ground floor	%SQM	500	3311.00	16,555.00
	In First Floor	%SQM	500	3382.00	16,910.00
	In Second Floor	%SQM	500	3453.00	17,265.00
	N.B. : Extra for each additional floor in external walls refer item 1 of subhead C				
<b>135</b>	<b>INTERIOR GRADE ACRYLIC PRIMER</b>				
	Applying Interior grade Acrylic Primer of approved quality and brand on plastered or concrete surface old or new surface to receive Distemper/ Acrylic emulsion paint including scraping and preparing the surface thoroughly, complete as per manufacturer's specification and as per direction of the EIC. (In Ground Floor)				
	(b) Two Coats				
	ii) Solvent based interior grade Acrylic Primer	%SQM	14000	4850.00	6,79,000.00
	[This item to be done under specific instruction of the Superintending Engineer]				
<b>136</b>	<b>REMOVING OLD SCALES, BLISTERS</b>				
	Removing old scales, blisters etc. of interior surface of walls, ceiling by scraping etc. and preparing smooth and even surface with rendering or cement mortar (1:2) (as necessary), to make the surface suitable for receiving distemper. (Payment against this item will be made only when this has been done on the specific direction of the Engineer-in-charge).	%SQM	200	1017.00	2,03,400.00
<b>137</b>	<b>WALL PUTTY</b>				
	Rendering the Surface of walls and ceiling with White Cement base WATER PROOF wall putty of approved make & brand.(1.5 mm thick)				
	In Ground Floor	SQM	140	122.00	17,080.00

	In First Floor	SQM	140	122.72	17,181.00
	In Second Floor	SQM	140	123.44	17,282.00
	NOTE: For all structures the ground floor equivalent height shall be taken as 4 meters. Every 4 meters or part thereof above 4 meters shall be taken as each additional floor for purpose of item (3 to 6) and (8), (15 to 17) of subhead A.				
<b>138</b>	<b>PRIMING ON STEEL OR OTHER METAL SURFACE</b>				
	(a) Priming one coat on steel or other metal surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand papering etc.	SQM	1200	29.00	34,800.00
<b>139</b>	<b>PRIMING ON TIMBER OR PLASTERED SURFACE</b>				
	(b) Priming one coat on timber or plastered surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand papering etc.	SQM	3000	38.00	1,14,000.00
	(This item is applicable to new work or old work when the original surface has been exposed by removal of old paint.)				
<b>140</b>	<b>SYNTHETIC ENAMEL PAINT</b>				
	(A) Painting with best quality synthetic enamel paint of approved make and brand including smoothening surface by sand papering etc. including using of approved putty etc. on the surface, if necessary :				
	(a) On timber or plastered surface :				
	With super gloss (hi-gloss) -				
	(iv) Two coats (with any shade except white)	SQM	2900	81.00	2,34,900.00
<b>141</b>	<b>ALUMINIUM PAINT</b>				
	(B) Painting with superior quality aluminium paint of approved make and brand including smoothening surface by				

	sand papering etc. on steel surface :				
	(b) Two coats	SQM	100	57.00	5,700.00
<b>142</b>	<b>ACRYLIC EMULSION PAINT</b>				
	Applying Acrylic Emulsion Paint of approved make and brand on walls and ceiling including sand papering in intermediate coats including putty (to be done under specific instruction of Superintending Engineer) : (Two coats)				
	ii) Luxury Quality	SQM	4000	70.00	2,80,000.00
<b>143</b>	<b>OIL TYPE WOOD PRESERVATIVE</b>				
	Painting with oil type wood preservative of approved brand & make.				
	(b) Two coats	SQM	3000	40.00	1,20,000.00
<b>144</b>	<b>FRENCH POLISHING TO WOOD WORK</b>				
	French polishing to wood work including preparing surface (ordinary gloss)				
	(a) On new wood work	SQM	1200	467.00	5,60,400.00
	(b) On old French polished surface including complete removal of the old polish.	SQM	1800	538.00	9,68,400.00
	NOTE : For high gloss polish the rate shall be increased by 50% over the rate for ordinary gloss. This work should not be executed without specific permission of Superintending Engineer.				
<b>145</b>	<b>POLYURETHANE POLISHING TO WOOD WORK</b>				
	Polyurethane Polishing to woodwork with required colour as approved by Engineer-in-Charge with preparing surface including scaffolding and hire charges of compressor machine including cost of filler and hardener material such as P. U. Sealing, P. U. Top coat (Matt/Glossy), Thinner, Spirit etc. and inclusive of all operation, material and labour complete as per direction of Engineer-in- Charge.	SQM	150	837.00	1,25,550.00

<b>146</b>	<b>MELAMINE FINISH COATING OVER POLISHED WOOD</b>				
	Melamine finish coating over polished wooden surface after preparing the surface as per decision and direction of Engineer-in-Charge.	SQM	1800	75.00	1,35,000.00
<b>147</b>	<b>REMOVING LOOSE SCALES BLISTERS</b>				
	Removing loose scales, blisters etc. from old painted surface and thoroughly smoothening the surface to make the same suitable for receiving fresh coat of paint.	SQM	13600	21.00	2,85,600.00
<b>148</b>	<b>REMOVING OLD PAINT FROM BLISTERED PAINTED SURFACE</b>				
	Removing old paint from blistered painted surface of steel or other metal by chipping including scraping and cleaning and exposing the original surface.	SQM	13600	47.00	6,39,200.00
<b>149</b>	<b>REMOVING LAYERS OF PAINT FROM HEAVILY BLISTERED SURFACE</b>				
	Removing thick layers of paint from heavily cracked and blistered painted surface of timber by careful burning with blow lamp including smoothening exposed surface of timber with pumice stone or glass and preparing the same for fresh treatment.	SQM	3000	52.00	1,56,000.00
	N.B.:(Payment against item (1, 2, 3, 4) of subhead B will be made only when done at specific direction of the Engineer- in-charge. Cost of taking out shutter etc.for this item and rehanging the same or changing glass panes cracked or broken in the operation will be deemed to be covered by the rate of this item and no seperate payment therefore shall be made.)				
<b>150</b>	<b>INDIAN SHEET GLASSS</b>				

	Supplying best Indian Sheet glass 5 mm thick including cutting to required sizes, setting on putty bases and fitted and fixed with teak glazing beads (19 mm x 12 mm) including putty and nails as necessary complete. (In all floors for internal wall & upto 6 m height for external wall)	SQM	150	948.00	1,42,200.00
<b>151</b>	<b>RENEWING PUTTY OF GLASS PANES</b>				
	Renewing worn out putty of glass panes :				
	(a) Panes not exceeding 0.2 Sq.m	EACH	170	33.00	5,610.00
	(b) Panes exceeding 0.2 Sq.m but not exceeding 0.5 Sq.m	EACH	110	51.00	5,610.00
<b>152</b>	<b>RENEWING TEAK WOOD BEADS</b>				
	Renewing teak wood beads of glass panes (each pane not exceeding 0.2 Sq.m)	EACH	650	48.00	31,200.00
<b>153</b>	<b>CLEANING AND REMOVING PAINT MARK FROM GLASS PANE</b>				
	Cleaning and removing paint mark from glass pane with spirit and removing strains etc.	SQM	1100	17.00	18,700.00
<b>154</b>	<b>TAKING OUT BROKEN GLASS PANES</b>				
	Taking out carefully from shutter existing broken glass panes, cutting the same to smaller and utilising the same, small pane including cost of fitting and fixing.				
	(a) Putty and Nails	EACH	120	18.00	2,160.00
	(b) With Teak wood Beads and Nails	EACH	100	33.00	3,300.00
	Note:- Add 5% extra for each 6 Mtr. height or part thereof beyond the initial height of 6 Mtr. for item A (1 to 5) & B (10) only. This extra rates is applicable for external works. For maintenance work, 20% extra on the rate of corresponding item to be added.				



155	<b>ANTI SKID FULL BODY VITRIFIED TILES</b>				
	<p>Supplying and laying true to line and level Anti-Skid, Full Body, Homogeneous &amp; Granular finish Vitrified Tiles conforming to IS:15622-2006 &amp; IS 4457-2007 and testing shall be made in accordance with IS:13630 [Non- modular sizes for tiles with Skid resistance &gt; 0.5, Mohr's hardness &gt; 5.0, Staining resistance: Class-1, Water Absorption: E &lt; 0.5%], MOR &gt; 35 N/sq.mm in Internal area of building e.g. Toilet Block, Passage, Corridor, Accessible Open Terrace etc. set in 20 mm sand cement mortar (1:4) and 2 mm thick cement slurry at back side of tiles using cement @ 2.91 Kg./Sqm or using Polymerised Adhesive (6 mm thick layer applied directly over finished artificial stone floor/ Mosaic etc without any backing course) laid after application slurry using 1.75 Kg of cement per Sqm below mortar only, joints grouted with admixture of white cement and colouring pigment to match with colour of tiles/ epoxy grout materials of approved make as directed and removal of wax coating of top surface of tiles with warm water and polishing the tiles using soft and dry cloth upto mirror finish complete including the cost of materials, labour and all other incidental charges complete true to the manufacturer's specification and direction of Engineer-in-Charge. (White cement, synthetic adhesive and grout material to be supplied by the contractor).</p>				
	a) In Ground Floor: Sizes-300 mm x300mm x10 mm with breaking strength > 1200 N	SQM	15	897.00	13,455.00
	b) In Ground Floor: Sizes-600 mm x600mm x10 mm with breaking strength > 1500 N	SQM	20	1580.00	31,600.00

	Note: Add extra for each addl, floor over the rate above Ground Floor(I) upto 4 th floor- Rs. 12/-per Sq.m(II) above 4th floor -Rs. 16/- per Sq.m				
<b>156</b>	<b>FIRE RESISTANT ACOUSTIC DOOR FRAME</b>				
	Supplying fitting & fixing frames for Fire resistant acoustic door shutters 1st class Malaysian Hardwood Frame (densified to 810 kg/cum) and pressure treated with fire retardant chemicals in vacuum impregnation vessel under 160 psi pressure as per IS:401 and kiln seasoned to moisture below 15% as per IS:1141 of section 120 mm X 70 mm spray quoted with 2 coats of intumescent paint of minimum 200 micron, with standard double acoustic seal (equivalent to Hafele) placed along two faces of rebate for sound insulation and single row of Brush- Type intumescent strip of size 10 mmx 4 mm affixed in the slit of the Frame for fire and smoke sealing, etc. complete as per direction of Engineer - inCharge including a protective coat of painting at the contact surfaces of the frame excluding cost of concrete, Iron butt hinges and M.S clamp at Ground Floor. [Note : Specific permission of the Superintending Engineer is required for execution of this item. ]				
	Note: Add extra for each addl, floor over the rate above Ground Floor for item 4,5 & 11 (I) upto 4 th floor- Rs. 1.00/- per m (II) above 4th floor -Rs. 1.50/- per m				
	In Ground Floor	METRE	10	1509.00	15,090.00
	In First Floor	METRE	10	1510.00	15,100.00
	In Second Floor	METRE	10	1511.00	15,110.00
<b>157</b>	<b>FIRE RESISTANT ACOUSTIC DOOR SHUTTER</b>				

<p>Supplying &amp; fitting of 65mm thick asbestos free - fire, heat and smoke resistant composite Accoustic Door Shutter complying with fire performance- FD120 as per IS:3614 (part -II)-comprising of 2x 8 mm Calcium Silicate boards over Chemically treated (with Fire retardant chemicals in pressure impregnation vessels under 160 psi pressure as per IS:401 and kiln seasoned to moisture below 15% as per IS:1141) internal timber (Malaysian Hard Wood,densified to810kg/cum ) frame work of 100 mm x32 mm with 32mm thick infill of ceramic fiber (density 128Kgs/cum), vermaculite mix faced with 6 mm Fire retardantHigh Density fire board, internally lipped with hardwood beading, and pasted in Hydraulic Press under 25 MPa, spray coated with 2 coats of in-tumescent paint of minimum 200 micron, and with 1 row of Brush- Type intumescent strip of size 10mmx 4mm affixed on peripheral slit on all edges of shutter except bottom for fire and smoke sealing and placement of 3 mm thick rubber membrane, at theinside face, sandwiched between calcium silicate board &amp; high density fire retardant board , without any external lipping including fitting ,fixing shutters in position but excluding the cost of hinges &amp; other fittings as per direction of Engineer -in -charge complete in all respect in Ground Floor. [Note : Specific permission of the Superintending Engineer is required for execution of this item.]</p>				
<p>Note: Add extra for each addl, floor over the rate above Ground Floor for item 6,7 &amp;13 (I) upto 4 th floor- Rs. 12/-per Sq.m (II) above 4th floor -Rs. 16/- per Sq.m</p>				
<p>In Ground Floor</p>	<p>METRE</p>	<p>8</p>	<p>11319.00</p>	<p>90,552.00</p>
<p>In First Floor</p>	<p>METRE</p>	<p>8</p>	<p>11331.00</p>	<p>90,648.00</p>
<p>In Second Floor</p>	<p>METRE</p>	<p>8</p>	<p>11343.00</p>	<p>90,744.00</p>

<b>158</b>	<b>PANIC BAR</b>				
	Supplying, fitting & fixing Surface mounted Crash Bar/ panic Bar of touch pad style, made of heavy duty cast iron/ steel body & latches with SS, BHMA certified & conforming to ANSI A 156.3 for grade-1 (3 hours fire rated) and suitable for surface mounting to wooden/hollow metal/ Al framed door with opening upto 900mm, with maximum operating force 6 kg for unlocking easily & outwardly during emergency, complete in all respect as per direction & satisfaction of Engineer-in-Charge. (Note: To be installed at "FIRE EXIT" only under location specific instruction of Engineer-in-Charge.)				
	for door opening 900	EACH	4	7104.00	28,416.00
<b>159</b>	<b>OVERHEAD DOOR CLOSER</b>				
	Supplying, fitting & fixing Surface mounted overhead Door Closer for 2 hour fire rated doors, of size EN-4 for leaf width upto 950/ 1100mm weighing maximum 60/ 80 kgs, CE certified, marked & conforming to EN 1154-2003 of approved quality of reputed brand, complete as per direction & satisfaction of Engineer-in-Charge.				
	for leaf width upto 950mm	EACH	14	3880.00	54,320.00
	for leaf width upto 1100mm				
<b>160</b>	<b>STAINLESS STEEL TUBULAR HANDLE</b>				
	Supplying, fitting & fixing Stainless Steel 'D' or 'H' type of size 300 mm x 19 mm tubular Handle with Grade 304, CE certified, marked & conforming to EN - 1154, of approved quality of reputed brand as per direction of Engineer-in-Charge fitted and fixed complete including all incidental charges.	EACH	4	1571.00	6,284.00

<b>161</b>	<b>FRP WALL PANELS</b>				
	Providing and Fixing Structural FRP members composition that shall consist of a glass fiber reinforced polyester or vinyl ester resin matrix, approximately 50% glass by weight. Continuous strand glass mats or stitched reinforcements shall be used internally for transverse strength. The FRP wall panels shall be used to make designed wall panels of approved designs and shade. The designs shall be made by methods of die- cast moulding. The section of the FRP Panels shall not be less than 100mm thick The panels shall be fixed with the wall by means of M.S. Structural members or other necessary fixing arrangements.	SQM.	20	17900.00	3,58,000.00
<b>162</b>	<b>WALLPAPER</b>				
	Providing & fixing Living wall paper (Danmi, Benz specification) gravureprinted-pre-trimmed-washable -strippable of approved shade and designincluding preparation of wall surface, fixing with suitable glue as per the manufacturer specification and as per direction of EIC.	SQM.	135	1035.00	1,39,725.00
<b>163</b>	<b>WOODEN JAMB LINING TO DOORS AND WINDOWS</b>				
	Providing and fixing wooden jamb lining to the windows and doors usingSAL wood frame out of 50 x 25 mm covered with 12 mm thick BWR plywoodand 4 mm thick wooden veneer complete with 50 x 18 mm Teak woodmoulding at periphery of window duly melamine polish etc. complete.	METRE	2350	1549.00	36,40,150.00
<b>164</b>	<b>TEAK WOOD MOULDINGS</b>				
	Providing and fixing decorative machine cut Teak Wood mouldings/skirtings of approved profiles including all labour and materialscomplete, as per drawings,				

	specifications and directions of the Engineer-in-Charge.				
	MOULDING 100 MM X 100 MM	METRE	60	1072.00	64,320.00
<b>165</b>	<b>WALL PANELLING WITH DECORATIVE PLYWOOD</b>				
	WALL PANELLING WITH DECORATIVE PLYWOOD: Providing & fixing panelling with one side Decorative plywood having natural veneer of select wood on walls including corners of windows columns, column cladding etc. consisting of frame work with 50 mm x 25 mm size seasoned Sal wood @ 600mm c/c (approximately) both ways (i.e. horizontally and vertically) jointed rigidly with nails, screws etc. with wooden plugs fixed with cement mortar (1:3) and providing and fixing 6 mm thick BWR plywood (Greenply / Centuryply make) on top of the frame work and 4 mm thick one side decorative plywood veneers (Red oak/walnut/cherry/beechn/white oak/white ash/swedish/cidar/maple or other approved shade and texture of Greenply/ Centuryply make) of approved shade & texture to be pasted over the plywood with adhesive (Fevicol) without nailing in approved pattern. Finally the paneling will be finished with 25 mm x 100 mm teak wood skirting. The rate to also include cost of applying preservation treatment of timber for rot & termite proofing with wood preservative oil of Berger make fire proofing, finishing the exposed surface of timber with stained spirit polish to the desired colour and melamine finish of (Wood keeper of Berger make) melamine finish on decorative plywood, provision of extra frame work as necessary for skirting and making cutouts for electrical switch board, conduits etc. all as per drawing and direction of the Engineer in charge.	SQM.	1260	4121.00	51,92,460.00
<b>166</b>	<b>DECORATIVE PLYWOOD VENEER</b>				
	FIXING 4 MM THICK DECORATIVE PLYWOOD VENEER : Providing and fixing 4 mm thick decorative plywood veneer or approved type (cherry white beech/steamed beech/silver oak/oregon pine natural cedar/maple) on old and new surface cedar/maple) on old and new surface	SQM.	100	2302.00	2,30,200.00
<b>167</b>	<b>LOW HEIGHT PARTITIONS</b>				
	Providing & fixing in position DOUBLE SKIN	SQM	260	7000.00	18,20,000.00

	LOW HEIGHT PARTITIONS on floor consisting of 50 x50 mm well seasoned hard wood battons placed at 600 mm c/c bothways, jointed rigidly with nails, screws etc. & fixed to the floor with metal clamps grouted to floor and providing and fixing 6 mm thick BWR plywood as per IS 303 of " Green ply / Century or approved equivalent make on both sides of the frame work and best quality 1 mm thick laminated sheet of " "Greenlam", "Formica" "Century Mica" Marine make of approved shade, design, & texture to be pasted over the plywood with fevicol SH etc. without nailing in approved patterns.Finally the partition will be provided with 100 x 12 mm Teak wood skirting and 75 mm x 12 mm Teak wood moulding at the top complete with high gloss polishing with Melamine finish, grouting of frame work in walls, floors, etc. with all enabling works complete as per drawing and direction of Engineer in charge. The rate to also include cost of applying preservative treatment of timber for rot & termite proofing (ASCU), finishing the exposed surfaces of timber with stained spirit polish to desired colour & melamine finish.				
<b>168</b>	<b>OFFICER'S TABLE</b>				
	Supplying & placing in position <b>OFFICE TABLE of size 1500 x 750 x 750 (HT)</b> . The table will be provided with one no metal computer keyboard pull out tray, one no drawer unit ( 400 x 450 x 675 mm) with castors containing 2 stationery drawers & 1 no. filing drawer and CPU Trolley. The table top, sides, drawer front and sides, wardrobe shutter, to be made with 25 mm & 18 mm thick Particle Board with laminated finish of 1mm thick laminate of approved shade, factory made with PVC leaping. The rate to include the cost of all fittings and fixtures, the runner for drawer (Quadro 30 of Hettich ) Drawer lock (Prestige 2000 of Hettich) , Drawer handle of approved type (hettich make) all complete with labour and material as per drawing and direction of engineer in charge.	NOS.	48	13025.00	6,25,200.00
<b>169</b>	<b>POLYESTER INSULATING FILM</b>				
	Providing & installing POLYESTER INSULATING FILM as specified below of M/S Garware polyester or approved equivalent ) on glasses of doors / partitions including thorough cleaning of glass surfaces, scaffolding etc. with all labour & materials complete as per manufacturer's specifications & direction of the Engineer-in charge.				
	Frosted film 1.5 mil .(25 micron)	SQM	750	550.00	4,12,500.00

<b>170</b>	<b>CP BRASS DOOR STOPPER</b>				
	<b>CP BRASS DOOR STOPPER</b> of hanging type , double buffer with necessary screws etc. with all labor and materials complete as per directions of Engineer in charge.	EACH	265	99.00	26,235.00
<b>171</b>	<b>HEAVY DUTY HYDRAULIC FLOOR SPRING</b>				
	Providing and fixing in position Heavy duty Hydraulic <b>FLOOR SPRING</b> as per related IS code ( Garnish/Ozone or approved equivalent) , quality and design, for fixing to doors including necessary screws, adjustable spanners etc. with all labor and materials complete, as per drawing, specification and direction of Engineer-in charge.	EACH	20	3182.00	63,640.00
<b>172</b>	<b>HARDWARE FITTINGS FOR DOORS</b>				
	Supplying and fixing Chromium plated brass <b>HARDWARE FITTINGS</b> of approved quality , make and colour to doors and window shutter with required number of screws, etc. with all labour and materials complete,as per (Hettich make ) manufacture's recommendations, drawings, and direction of the Engineer in charge.				
	Tower bolt				
	600 mm x 10 mm	EACH	265	1193.00	3,16,145.00
<b>173</b>	<b>MORTICE LOCK</b>				
	Providing and fixing in position <b>MORTICE LOCK</b> of approved make ( Godrej or approved equivalent) CP brass body, 6 lever, conforming to IS 2209 inclusive of pair of handles of pressure Die cast Zinc alloy , Satin Chromium finished, with necessary screws etc. with all labour and materials complete, as per drawings, specifications and direction of the Engineer -in charge.	EACH	265	845.00	2,23,925.00
<b>174</b>	<b>URINAL PARTITION</b>				
	Providing and fixing 18 mm thick marble partition in between two urinals as per instruction including chamferig of the corners of the marble. The size of the urinal partition shall be 750mm high and 600mm deep. The work includes cutting chase in the wall and using adhesives to fix the partitions.	EACH	36.00	1812.00	65,232.00
<b>175</b>	<b>WOODEN PELMATE</b>				



	Providing & fixing in position wooden Pelmate of size 150 mm x 150 mm made of 18mm thick BWR Plywood jointed with fevicol & nails finished on top with 4mm thick decorative plywood vineer pasted over plywood with adhesive (Fevicol SH).finished with melamine polish. Finally all the edges of the plywood will be covered with 4mm thick Teak Wood Lipping finished with stained spirit polish. The cost also include cost of polishing the internal surface of the pelmate with stained spirit polish.	RM	250.00	1662.00	4,15,500.00
<b>176</b>	<b>BAFFLE FALSE CEILING</b>				
	Providing and fixing Luxalon® 50mm wide Baffle Ceiling System manufactured by M/s. Hunter Douglas India Pvt. Ltd. / Armstrong , of approved colour consisting of Baffle 50 mm wide x 100mm height x 0.6mm thick square edged baffle having a length upto 4 mtrs, Coil Coated (chromatised for maximum bond between metal and paint, enamelled twice under high temperature, visible side with a full primer and finish coat, the inner side with a Primer coating and skin coat on a Continuous Paint line) corrosion resistant aluminium alloy for higher strength. The Baffle shall be bolted on to a U100 top & bottom cover, which will be fixed on to L-shaped Galvanised steel angle. The baffle shall be fixed in a module of 100-150mm as per architect's specifications. The L shaped galvanised angle is spaced at a centre to centre distance of 1200mm. The L shaped galvanised angle is suspended by means of suspension angle and anchor fasteners at a centre to centre distance of 1200mm.	SQM	220.00	2905.00	6,39,100.00
<b>177</b>	<b>PARTLY GLAZED FULL HEIGHT PARTITION</b>				

	Providing and erecting Partly Glazed Full Height Double Skin Partition in metal stud framework as per drawing for side partition. The framework is to be done by fixing metal studs to floor & ceiling channels, and intermediate channels with suitable fixtures. The sections are to be placed at 600 mm c/c both vertically & horizontally except for the glazed portion. Vertical Metal Studs shall be 48 mm GI sections (Gypsteel Ultra make) of 0.55 mm thickness with flanges of 32 mm & 34 mm. Horizontal Channels shall be 50 mm GI sections (Gypsteel Ultra make) of 0.55 mm thickness with equal flanges of 32 mm. The framework is to be covered by 9 mm thick BWP plywood on both sides with suitable fixtures. The surface is to be finished with [1 mm thick high gloss laminate], or, [4 mm thick teak wood veneer with high gloss Polyurethane coating] of approved shade & make. The veneer/ laminate shall be pasted on both sides of the partition. The partition shall be made solid up to a height of 900 mm from FFL, and thereafter, glazed up to a height of 2000 mm. The glazing is to be done with machine polished 8 mm thick clear float glass as per standard specification, fixed with continuous polished teak wood glazing beads of approved shape & shade. The work is to include all necessary materials, accessories, labour, tools & tackles, and also allow provisions for electrical, computer & telephone wiring conduits, switch boxes, etc." All materials should be approved by the EIC. Executed elevation area is to be measured for finished work."	SQM	240.00	3600.00	8,64,000.00
<b>178</b>	<b>1200MM HIGH DOUBLE SKIN PARTITION</b>				
	Providing and erecting 1200 mm high Double Skin Solid Partition in metal stud framework as per drawing: The framework is to be done by fixing metal studs to floor & ceiling channels, and intermediate channels with suitable fixtures. The sections are to be placed at 600 mm c/c both vertically & horizontally. Vertical Metal Studs shall be 48 mm GI sections (Gypsteel Ultra make) of 0.55 mm thickness with flanges of 32 mm & 34 mm. Horizontal Channels shall be 50 mm GI sections (Gypsteel Ultra make) of 0.55 mm thickness with equal flanges of 32 mm. The framework is to be covered by 9 mm thick BWP plywood on both sides with suitable fixtures. The surface is to be finished with [1 mm thick high gloss laminate], or, [4 mm thick teak wood veneer with high gloss Polyurethane coating] of approved shade & make. The work is to include all necessary materials, accessories, labour, tools & tackles, and also allow provisions for electrical, computer & telephone wiring conduits, switch boxes, etc." All materials should be	SQM	470.00	3000.00	14,10,000.00

	approved by the EIC.Executed elevation area is to be measured for finished work."				
<b>179</b>	<b>FRAMELES GLASS PARTITION</b>				
	Providing and erecting Fixed-type Frameless Glass Partition as per drawing. The glazing shall be done with 12 mm thick machine polished toughened glass. The partition is to be fixed with patch fittings, and / or, continuous polished teak wood glazing beads of approved shape & shade, as directed. All edges of the glass are to be finished with mirror polishing. The work is to include all necessary materials, accessories, labour, tools & tackles. "All materials should be approved by the EIC Executed elevation area is to be measured for finished work."	SQM	20.00	8250.00	1,65,000.00
<b>180</b>	<b>SOLID CORE DOOR SHUTTER FOR PARTITIONS</b>				
	Providing and fixing Partly Glazed Solid Core Door Shutter, 2100 mm high, as per drawing:The core of the shutter is to be made out of 35 mm thick phenol-bonded best quality flush door of approved make.The surface is to be finished with [1 mm thick high gloss laminate],.The door shall be made solid up to a height of 900 mm from FFL, and thereafter, glazed up to a height of 2000 mm.The glazed portion is to be fitted with 8 mm thick clear glass as per standard specification, fixed with continuous polished teak wood glazing beads of approved shape & shade.The door is to be provided with 125 mm heavy duty SS butt hinges @ 3 no. per door shutter, and 1 no. door stopper, 1 no. SS handle & 1 no. SS tower bolt per door shutter, all of approved make.The work is to include all necessary materials, accessories, labour, tools & tackles."All materials should be approved by the EIC.Executed elevation area is to be measured for finished work."	SQM	120.00	3800.00	4,56,000.00
<b>181</b>	<b>DOOR FRAMES FOR PARTITION</b>				
	Providing and fixing Door Frames to partitions as per drawing: The frame shall be of size 75 mm X 50 mm, made out of clear steam beech wood or well-seasoned teak wood, free of knots. Proper rivets & grooves for fixing of door shutters & locks are to be made before fixing to the partitions. The job is to be finished with melamine polish and other accessories like clamp, screw, etc. as required complete. The work is to include all necessary materials,	CUM	1.50	60000.00	90,000.00

	accessories, labour, tools & tackles. "All materials should be approved by the EIC. Executed volume of finished wood work is to be measured for complete work."				
<b>182</b>	<b>STORAGE UNITS</b>				
	Providing and placing in position Storage Units with openable shutters, 450 mm deep & 900 mm high, as per drawing: The storage unit shall be made out of 19 mm thick BWP block board for sides, top & bottom. There shall be a shelf in the centre, made out of 19 mm thick BWP block board. The back and shutters of the storage unit shall be made out of 12 mm thick BWP plywood. All the exposed sides, top & front are to be finished with [6 mm thick solid surface material], or, [1 mm thick high gloss laminate], or, [4 mm thick teak or natural wood veneer with high gloss Polyurethane coating] of approved shade & make on the surface. The inner surfaces are to be finished with French polish. All the exposed edges are to be covered with polished teak wood lipping. The job is to be completed with all necessary hardware like 100 mm SS butt hinges, ball catches, locks, handles, tower bolts, etc. as applicable. The bottom of the unit is to be fixed to a 75 mm X 37.5 mm polished teak wood framework. The work is to include all necessary materials, accessories, labour, tools & tackles except for only solid surface material. The fixing of solid surface material on top only as above shall be a separate item. "All materials should be approved by the EIC. Total executed area of the face of all units shall be measured for finished work."	SQM	220.00	7050.00	15,51,000.00
<b>183</b>	<b>FULL HEIGHT STORAGE CABINET</b>				
	Providing and placing in position 450 mm deep Storage Units, 2100 mm high or more, as per drawing: The storage unit shall be made out of 19 mm thick BWP block board for sides, top & bottom and shelves. The back of the storage unit shall be made out of 12 mm thick BWP plywood, and shutters out of 19 mm thick BWP plywood. Each cabinet shall be approximately 750 mm high & 600 mm wide or as directed. All the exposed sides, top & front are to be finished with [1 mm thick high gloss laminate], or, [4 mm thick	SQM	130.00	6750.00	8,77,500.00

	teak or natural wood veneer with high gloss Polyurethane coating] of approved shade & make on the surface. All the exposed edges are to be covered with polished teak wood lipping. The inner surfaces are to be finished with French polish. The job is to be completed with all necessary hardwares like 100 mm stainless steel butt hinges, ball catches, locks, handles, tower bolts, etc. as applicable. The bottom of the unit is to be fixed to a 75 mm X 37.5 mm polished teak wood framework. The work is to include all necessary materials, accessories, labour, tools & tackles. "All materials should be approved by the EIC. Total executed area of the face of all units shall be measured for finished work."				
<b>184</b>	<b>REPAIRING CRACK IN WALL BY CEMENT GROUTING</b>				
	Repairing crack in wall by cement grouting (1 : 2) including widening the crack on the surface (into V section) cleaning and packing the same with cement mortar (1 : 2) and finishing off to match with adjacent surface. (Cement-69 Kg/100 m)	%MTR	1000	1360.00	13,600.00
<b>185</b>	<b>STITCHING CRACK IN BRICK WALL BY CUTTING OUT FACE BRICK 125.MM DEEP</b>				
	(A) Stitching crack in brick wall by carefully cutting out face brick 125 mm. deep into the wall, cleaning the gap and filling up the same with precast cement concrete block carefully set in cement mortar (1:3) including mending good damages and finishing the surface to match with adjacent areas complete as per direction.				
	(i) With plain cement concrete blocks (1:1½:3) with stone chips.				
	(a) Block size 250 x 125 x 75 mm.	EACH	310	86.00	26,660.00
<b>186</b>	<b>STITCHING CRACK IN BRICK WALL BY CUTTING OUT FACE BRICK 250MM DEEP</b>				

	(B) Stitching crack in brick wall by carefully cutting out face brick 250 mm. long, 75 mm. thick and 125 mm deep into the wall, cleaning the gap and filling up the same with sound new brick, carefully set in cement mortar (1:3) including mending good damages and finishing the surface to match with adjacent areas complete as per direction.	EACH	480	42.00	20,160.00
<b>187</b>	<b>RENEWING WEATHERED FACE BRICK</b>				
	(C) Renewing weathered face brick including taking out the old brick completely and setting the head brick carefully in cement mortar (1:3) complete, including making good all damages.				
	(i) In stretcher course. ( Cement-0.75 Kg/No.)	EACH	450	37.00	16,650.00
	(ii) In header course- ( Cement-1.0 Kg/No.)	EACH	1500	38.00	57,000.00
	(iii) In header course with the new brick projecting 62 mm. to 225 mm. from the wall surface (Cement-0.5Kg/No.)	EACH	490	33.00	16,170.00
<b>188</b>	<b>HIGH BACK EXECUTIVE CHAIR</b>				
	High Back with Head rest, Black Mesh Back, Seat Black Fabric, Synchro Tilt Mechanism, Adjustable Lumbar Support, Height Adjustable arms with Polypropylene Pad, Black Nylon Base of approved best make.	EACH	48	17700.00	8,49,600.00
<b>189</b>	<b>MIDBACK CHAIR</b>				
	Supplying and Installation of Midback Chair of approved make.	EACH	96	16620.00	15,95,520.00
<b>190</b>	<b>CONFERENCE TABLE</b>				
	Prelam Conference Table of size 4200 x 1200 x 730mm ht with Table top made of 25mm prelamPB supported on metal powdercoated understructure with 4 nos Access Flap on Table Top.	EACH	2	71680.00	1,43,360.00

<b>191</b>	<b>SINGLE SEATER SOFA</b>				
	Supply & installation of Single seater Sofa with handrest made of Wooden frame work and PU cushion of 6" thickness covered with fabric upholstery of approved shade and make.	EACH	15	12300.00	1,84,500.00
<b>192</b>	<b>DOUBLE SEATER SOFA</b>				
	Supply & Installation of Two seater sofa with handrest made of wooden frame with and P.U Cushion of 6" thickness covered with fabric upholstery of approved shade & made	EACH	10	25100.00	2,51,000.00
<b>193</b>	<b>SIDE TABLE FOR SOFA SET</b>				
	Supply & installation of Wooden Corner Table / Center Table (600 x 600) finished with melamine polish of matching shade Table Top should be covered with glass / acrylic straight sheet	EACH	15	9000.00	1,35,000.00
<b>194</b>	<b>CENTRE TABLE</b>				
	Supply & Installation of Center Table (900 x 450) finished with melamine polish of matching shade , Table top should be provided with glass / acrylic straight sheet.	EACH	10	14000.00	1,40,000.00
<b>195</b>	<b>CURTAINS</b>				
	Supplying, stitching and fixing in position good quality curtain of Vimal or approved equivalent ( cost of cloth not less than Rs. 400/- four hundred ) only per meter of approved cloth and design including providing necessary lining with markin cloth, fixing curtain tape & PVC curtain hooks , etc. fixing in position with all labour and materials as per directions of engineer in charge with all labour and materials complete	Metre	250	680.00	1,70,000.00
<b>196</b>	<b>POP CORNICE</b>				
	"Providing mouldings, cornices and floral patterns in the ceilings and walls with plaster of paris in approved designs and patterns including all materials,	Sq.M.	570	394.00	2,24,580.00

	labours, scaffoldings, tools and tackles complete to the entire satisfaction of the Engineer-in-Charge. Note: Only area of base in contact with wall / ceiling shall be measured.				
<b>197</b>	<b>FRAMELESS GLASS DOOR</b>				
	Providing and fixing in position FRAMELESS GLASS DOOR made with 12 mm thick clear toughened glass of Saint Gobain / Pilkington / Modiguard make fixed to floor and soffit of ceiling / false ceiling rigidly and at the centres wherever required in line and level with SS patch fittings, floor spring of Dorma, Ozone or approved equivalent make. Finally the door will be finished with S S door handle with locking arrangement of Ozone / Hettich make with all enabling works complete as per drawing. Specification and direction of the Engineer in charge.	Sq.M.	50	8421.00	4,21,050.00
<b>TOTAL OF PART A (SECTION 1)</b>					<b>Rs. 11,72,87,818.00</b>

**PART A: CIVIL, INTERIOR, SANITARY PLUMBING AND FIRE WORKS FOR  
REFURBISHMENT OF K&PT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -  
700001**

**Section 2: Interior Beautification (Annexe Building)**

	Description	Unit	Quantity	Unit Rate	Amount
	<b>ANTI-TERMITE TREATMENT</b>				
	<b>POST CONSTRUCTIONAL MEASURES</b>				
<b>1</b>	<b>ANTI TERMITE TREATMENT OUTSIDE FOUNDATIONS BY CUTTING SHALLOW CHANNEL</b>				



	(a) Anti-termite treatment to the outside of foundations with chemical emulsion by admixing chloropyrofos emulsifiable concentrates (1%concentration) with water by weight including cutting shallow channel by excavating soil along and close to the wall face ensuring uniform dispersal of the chemical emulsion to a depth of 300mm. from the ground level by rodding with 12mm. dia. M.S. rod at 150mm.interval in the channel. 1.75 litres of chemical emulsion per metre length shall be used and a balance quantity of 0.5 litres of the chemical emulsion per running metre shall then be used to treat the back fill earth by directing the spray of the imulsion towards the wall surface. The entire work is to be carried out as per specification laid down in para 4.3.1.1 of code IS-6313 (Part-III) 1981.	MTR	55	72	3,960.00
<b>2</b>	<b>ANTI TERMITE TREATMENT OUTSIDE FOUNDATIONS BY DRILLING HOLES</b>				
	(b) Anti-termite treatment to the outside of foundation with chemical emulsion by admixing chloropyrofos emulsifiable concentrate (1% concentration) with water by weight, drilling 12mm. dia holes in concrete or masonry apron at an interval of 300mm. to a depth, of 300mm or more as close to the plinth wall as possible and the chemical emulsion pumped into those holes to soak the soil below at a rate of 2.25 litres per linear metre complete as per specification laid down in para 4.3.1.1 of Code I.S.-6313 (Part-III)-1981.	MTR	50	83	4,150.00
<b>3</b>	<b>ANTI TERMITE TREATMENT TO SOIL UNDER FLOOR</b>				

	(c) Anti-termite treatment to the soil under floor with chemical emulsion by admixing chloropyrofos emulsifiable concentrate (1% concentration) with water by weight including drilling vertically 12mm. dia holes at the junction of floor and wall at 300mm. interval to reach the soil below using hand operated pressure pump to squirt chemical emulsion into the pump to squirt chemical emulsion into the holes at the rate of one litre per hole. The holes shall be sealed after operation to match with the existing floor. The entire work is to be carried out as per specification laid down in para 4.3.1.4 of code I.S.-6313 (Part-III)-1981.	SQM	410	93	38,130.00
<b>4</b>	<b>ANTI TERMITE TREATMENT TO JUNCTION OF WOOD WORK AND MASONRY WALLS</b>				
	d) Anti-termite treatment to the junction of wood work and masonry walls with chemical emulsion by admixing chloropyrofos emulsifiable concentrates (1% concentration) with water by weight including spraying at the points of contact with the adjoining masonry by drilling 6m. dia holes at a downward angle of about 45 degree at the junction of woodwork and masonry and squirting chemical emulsion into these holes at the rate of half litre per hole. The entire work is to be carried out as per specification of Code I.S.-6313 (Part-III)-1981. The shutters are to be sprayed with emulsion. on both sides. All wooden fixtures like almirahs, racks etc. are also to be thoroughly sprayed with chemical emulsion.(Payment will be made on the basis of outside measurements of doors and windows)	SQM	330	61	20,130.00
<b>5</b>	<b>SPOT APPLICATION OF INSECTICIDES USING AQUA BASE</b>				

	(e) Spot application for insecticides using Aqua base spray for pest (for bugs, cockroaches, silverfish, spider, termites, mosquitoes) to walls and ceiling etc. with chemical emulsion by admixing chloropyrofos emulsifiable concentrates (1% concentration) with water by weight including spraying the emulsified chemical @ 0.5 litres per sq.m. by a hand operated pressure pump on wall surfaces, ceiling, electrical fixture, electrical lines including drilling holes in places where source of termite is detected squirting chemical solution into the holes and sealing the holes with cement grout. <b>(Rate is per sq.m. of the floor area while actual work will be all walls ceiling, rack, partition and furniture).</b>	SQM	1680	49	82,320.00
<b>6</b>	<b>DISMANTLING MASONRY WORKS AND REMOVING RUBBISH</b>				
	Dismantling all types of masonry excepting cement concrete plain or reinforced, stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m.				
	In ground floor	CUM	2	447	894.00
	In first floor	CUM	14	497	6,958.00
	In second floor	CUM	21	547	11,487.00
	In third floor	CUM	14	597	8,358.00
	In fourth floor	CUM	15	647	9,705.00
	In fifth floor	CUM	27	697	18,819.00
	In sixth floor	CUM	24	747	17,928.00
	In seventh floor	CUM	100	797	79,700.00
	In roof	CUM	15	847	12,705.00
	<b>Note: For each additional floor, Rs. 50 has been added to the rate of the preceeding floor.</b>				
	Extra rate for careful dismantling and recovering at least 150 no of useable bricks per cum.	CUM	120	57	6,840.00
<b>7</b>	<b>DISMANTLING P.C.C WORKS AND REMOVING RUBBISH</b>				
	Dismantling all types of plain cement concrete works, stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m.				
	upto 150 mm. thick				

	In ground floor	CUM	3	939	2,817.00
	In first floor	CUM	3	989	2,967.00
	In second floor	CUM	3	1039	3,117.00
	In third floor	CUM	3	1089	3,267.00
	In fourth floor	CUM	3	1139	3,417.00
	In fifth floor	CUM	3	1189	3,567.00
	In sixth floor	CUM	3	1239	3,717.00
	In seventh floor	CUM	3	1289	3,867.00
	In roof	CUM	3	1339	4,017.00
	<b>Note: For each additional floor, Rs. 50 has been added to the rate of the preceeding floor.</b>				
<b>8</b>	<b>DISMANTLING R.C.C. WORKS AND REMOVING RUBBISH</b>				
	Dismantling R.C. floor, roof, beams etc. including cutting rods and removing rubbish as directed within a lead of 75 m. including stacking of steel bars.				
	In ground floor	CUM	3	1956	5,868.00
	In first floor	CUM	3	2006	6,018.00
	In second floor	CUM	3	2056	6,168.00
	In third floor	CUM	3	2106	6,318.00
	In fourth floor	CUM	3	2156	6,468.00
	In fifth floor	CUM	3	2206	6,618.00
	In sixth floor	CUM	3	2256	6,768.00
	In seventh floor	CUM	3	2306	6,918.00
	In roof	CUM	60	2356	1,41,360.00
	<b>Note: For each additional floor, Rs. 50 has been added to the rate of the preceeding floor.</b>				
<b>9</b>	<b>DISMANTLING TERRACED ROOFING AND REMOVING RUBBISH</b>				
	Dismantling terraced roof in ground floor roof (including floor finish, if any.) taking out carefully tiles with beams, joists, tees or burgahs covering floor below, sorting and stacking sevicable materials at site and removing rubbish as directe within a lead of 75 m.				
	In Roof	SQM	405	278	1,12,590.00
	<b>Note: For each additional floor, Rs. 6 has been added to the rate of the preceeding floor.</b>				

<b>10</b>	<b>DISMANTLING ARTIFICIAL STONE FLOORING AND REMOVING RUBBISH</b>				
	Dismantling artificial stone flooring upto 50 mm. thick by carefully chiselling without damaging the base and removing rubbish as directed within a lead of 75 m.				
	In ground floor	SQM	405	50	20,250.00
	In first floor	SQM	405	56	22,680.00
	In second floor	SQM	405	62	25,110.00
	In third floor	SQM	405	68	27,540.00
	In fourth floor	SQM	405	74	29,970.00
	In fifth floor	SQM	405	80	32,400.00
	In sixth floor	SQM	405	86	34,830.00
	In seventh floor	SQM	405	92	37,260.00
	In roof	SQM	405	50	20,250.00
<b>11</b>	<b>STRIPPING OFF WORN OUT PLASTER AND REMOVING RUBBISH</b>				
	Stripping off worn out plaster and raking out joints of walls, celings etc. upto any height and in any floor including removing rubbish within a lead of 75m as directed.	SQM	3590	19	68,210.00
<b>12</b>	<b>CUTTING CHASE AND MENDING DAMAGES</b>				
	Cutting chase upto 125 x 150 mm. and subsequent mending of damages.				
	in brick wall	Mtr	665	93	61,845.00
	in concrete wall	Mtr	70	112	7,840.00
<b>13</b>	<b>CUTTING HOLES AND MENDING DAMAGES</b>				
	Cutting holes and subsequent mending good damages.				
	<b>Diameter upto 150 mm.</b>				
	In brick work	Mtr	35	111	3,885.00
	In concrete work (plain or R.C.)	Mtr	1	137	□ 137.00
	<b>Diameter exceeding 150 mm. but not exceeding 300 mm.</b>				
	In brick work	Mtr	35	162	5,670.00
	In concrete work (plain or R.C.)	Mtr	1	288	288.00

	<b>Diameter exceeding 300 mm. but not exceeding 450 mm.</b>				
	In brick work	Mtr	18	249	4,482.00
	In concrete work (plain or R.C.)	Mtr	1	390	390.00
<b>14</b>	<b>REMOVAL OF RUBBISH FORM WORKING SITE</b>				
	Removal of rubbish,earth etc. from the working site and disposal of the same beyond the compound, in conformity with the Municipal / Corporation Rules for such disposal, loading into truck and cleaning the site in all respect as per direction of Engineer in charge	CUM	550	166	91,300.00
<b>15</b>	<b>LABOUR FOR BREAKING BRICKS INTO KHOA</b>				
	Labour for breaking 1/2 Bricks or Full Bricks (Old / New) into metal / Khoa / chips as per specific size and stacking the same at site or stackyard with due allowance of sinkage / shrinkage as per direction of the Engineer in charge.				
	Chips Size 20 mm to 10 mm	CUM	110	519	57,090.00
<b>16</b>	<b>DISMANTLING WOODEN WORKS AND STACKING MATERIALS</b>				
	Dismantling carefully wooden walling, flooring of ceiling and stacking dismantled materials as directed.	SQM	15450	14	2,16,300.00
<b>17</b>	<b>CLEANING OF MORTAR FROM BRICKS</b>				
	Labour for scrapping and picking up old dilapidated mortar / plaster (Cement / Surki / Lime mortar) from the surface of old Brick faces including cleaning the frog without damaging the Brick and stacking the Bricks at Site / Stacking yard as per direction of Engineer-in-charge including removing all debris rubbish from site complete.	1000 nos	18	950	17,100.00
<b>18</b>	<b>250MM THK BRICK WORK WITH CEMENT MORTAR</b>				
	Brick work with 1st class bricks in cement mortar (1:4)				
	In superstructure	CUM	1	5904	5,904.00

	In ground floor	CUM	1	5916	5,916.00
	In first floor	CUM	1	5928	5,928.00
	In second floor	CUM	1	5940	5,940.00
	In third floor	CUM	1	5952	5,952.00
	In fourth floor	CUM	1	5964	5,964.00
	In fifth floor	CUM	1	5977	5,977.00
	In sixth floor	CUM	1	5990	5,990.00
	In roof	CUM	1	6003	6,003.00
	<b>Note: Add extra for each additional floor over the rate for ground floor on items</b>				
	<b>i) upto 4th Floor : 12</b>				
	<b>ii) above 4th Floor: 13</b>				
<b>19</b>	<b>125MM THK BRICK WORK WITH CEMENT MORTAR</b>				
	125 mm. thick brick work with 1st class bricks in cement mortar (1:4)				
	In ground floor	SQM	200	736	1,47,200.00
	In first floor	SQM	200	748	1,49,600.00
	In second floor	SQM	200	760	1,52,000.00
	In third floor	SQM	200	772	1,54,400.00
	In fourth floor	SQM	200	784	1,56,800.00
	In fifth floor	SQM	200	797	1,59,400.00
	In sixth floor	SQM	200	810	1,62,000.00
	In roof	SQM	200	823	1,64,600.00
	<b>Note: Add extra for each additional floor over the rate for ground floor on items</b>				
	<b>i) upto 4th Floor : 12</b>				
	<b>ii) above 4th Floor: 13</b>				
<b>20</b>	<b>75MM THK BRICK WORK WITH CEMENT MORTAR</b>				
	(a) 75 mm. thick brick work with 1st class bricks set in cement, sand mortar (1:4) in ground floor including H.B. netting in every alternate layers.				
	In ground floor	SQM	5	497	2,485.00
	In first floor	SQM	5	509	2,545.00
	In second floor	SQM	5	521	2,605.00
	In third floor	SQM	5	533	2,665.00
	In fourth floor	SQM	5	545	2,725.00
	In fifth floor	SQM	5	558	2,790.00
	In sixth floor	SQM	5	571	2,855.00
	In roof	SQM	5	584	2,920.00

	<b>Note: Add extra for each additional floor over the rate for ground floor on items</b> <b>i) upto 4th Floor : Rs. 12/-</b> <b>ii) above 4th Floor: Rs. 13/-</b>				
<b>21</b>	<b>BONDING OLD BRICK WORK WITH NEW BRICK WORK</b>				
	Bonding new brick work with old at every 4th course including cutting chase and mending damages in cement mortar (1:4) and curing. [Mode of measurement: The actual bonded area shall be considered for payment]				
	In ground floor	SQM	72	265	19,080.00
	In first floor	SQM	72	277	19,944.00
	In second floor	SQM	72	289	20,808.00
	In third floor	SQM	72	301	21,672.00
	In fourth floor	SQM	72	313	22,536.00
	In fifth floor	SQM	72	326	23,472.00
	In sixth floor	SQM	72	339	24,408.00
	In roof	SQM	72	352	25,344.00
	<b>Note: Add extra for each additional floor over the rate for ground floor on items</b> <b>i) upto 4th Floor : 12</b> <b>ii) above 4th Floor: 13</b>				
<b>22</b>	<b>MAKING SCAFFOLDING</b>				
	Making one set of scaffolding only for replacing glass panels, painting, uprooting plant and another repairing works of building and S&P works for external works only with 10 cm. dia bamboo as main posts at the rate of 1 metre centre to centre and 7.5 cm. dia bamboo ties @ 0.75 metre apart fitting and fixing with necessary coir, nails etc. as per direction of the Engineer-incharge. (This item should be executed only after prior approval of the Engineer-incharge). Firstly, one number to be paid and then labour rate for shifting up to further nineteenth (19) times @ 10% each time to be considered. If necessary further after twenty times of total use, another one number new and labour rate for shifting to be considered accordingly.				
	a) 3.90 metre height	EACH	12	279	3,348.00



<b>23</b>	<b>PLAIN CEMENT CONCRETE WITH GRADED STONE CHIPS OF 20 MM NOMINAL SIZE</b>				
	Ordinary Cement concrete (mix 1:2:4) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement,if any, in ground floor as per relevant IS codes.				
	a) Pakur Variety				
	In ground floor	CUM	6	5450	32,700.00
	In first floor	CUM	6	5545	33,270.00
	In second floor	CUM	6	5640	33,840.00
	In third floor	CUM	6	5735	34,410.00
	In fourth floor	CUM	6	5830	34,980.00
	In fifth floor	CUM	6	5946	35,676.00
	In sixth floor	CUM	6	6062	36,372.00
	In roof	CUM	6	6178	37,068.00
	<b>Note: Add extra for each additional floor over the rate for ground floor on items</b> <b>i) upto 4th Floor : Rs. 95/-</b> <b>ii) above 4th Floor: Rs. 116/-</b>				
<b>24</b>	<b>CONTROLLED CEMENT CONCRETE WITH GRADED STONE CHIPS OF 20 MM NOMINAL SIZE</b>				
	Controlled Cement concrete with well graded stone chips (20 mm nominal size) excluding shuttering and reinforcement with complete design of concrete as per IS : 456 and relevant special publications, submission of job mix formula after preliminary mix design after testing of concrete cubes as per direction of Engineer-in charge. Consumption of cement will not be less than 300 Kg of cement with Super plasticiser per cubic meter of controlled concrete but actual consumption will be determined on the basis of preliminary test and job mix foomula. In ground floor and foundation.[using concrete mixture]M 25 Grade				
	(i) Pakur Variety				
	In ground floor	CUM	15	6499	97,485.00
	In first floor	CUM	1	6594	6,594.00
	In second floor	CUM	1	6689	6,689.00
	In third floor	CUM	1	6784	6,784.00
	In fourth floor	CUM	1	6879	6,879.00
	In fifth floor	CUM	1	6995	6,995.00

	In sixth floor	CUM	10	7111	71,110.00
	In roof	CUM	1	7227	7,227.00
	<b>Note: Add extra for each additional floor over the rate for ground floor on items</b> <b>i) upto 4th Floor : Rs. 95/-</b> <b>ii) above 4th Floor: Rs. 116/-</b>				
<b>25</b>	<b>PRECAST CONCRETE JALLY WORKS</b>				
	Precast pierced concrete jally work as per design and manufacturer's specification including moulding etc. with stone chips and necessary reinforcement shuttering complete including fitting, fixing in position in all floors.				
	(a) 50 mm. thick panels	SQM	35	359	12,565.00
<b>26</b>	<b>SUPPLYING FIXING AND FITTING FAN HOOK</b>				
	Supplying, fitting and fixing Fan Hook for ceiling with 1 metre long 16mm. dia rod complete including mending damages. Payment for damage and repair to be made separately.	EACH	210	100	21,000.00
<b>27</b>	<b>CONTROLLED CEMENT CONCRETE WITH GRADED STONE CHIPS OF 6 MM NOMINAL SIZE</b>				
	Ordinary Cement concrete (mix 1:2:4) with graded stone chips (6mm nominal size) excluding shuttering and reinforcement, if any, in ground floor as per relevant IS codes.				
	Pakur variety	CUM	60	6177	3,70,620.00
	<b>Note: Add extra for each additional floor over the rate for ground floor on items</b> <b>i) upto 4th Floor : Rs. 95/-</b> <b>ii) above 4th Floor: Rs. 116/-</b>				
<b>28</b>	<b>SHUTTERING, CENTERING AND STAGING</b>				
	Hire and labour charges for shuttering with centering and necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor)				

	(When the height of a particular floor is more than 4 m the equivalent floor height shall be taken as 4 m and extra for works beyond the initial 4 m ht. shall be allowed under 12 (e) for every 4 m or part thereof)				
	(a) 25 mm to 30 mm thick wooden shuttering as per decision & direction of Engineer-In-Charge.	SQM	150	335	50,250.00
	(e) Extra for staging beyond 4 m in any floor (Mode of measurement: area in plan x mean height of staging upto soffit of shuttering above initial 4 m)	SQM	75	61	4,575.00
	Notes:- For shuttering in shell roof, grid roof with vertical faces folded plate, arched roof the rate in 36 (a), 36 (b) & 37 (c) of subhead B above to be increased by 100 % . For grid roof with splayed faces, rate is to be increased by 150%.				
<b>29</b>	<b>REINFORCEMENT FOR R.C.C WORKS</b>				
	Reinforcement for reinforced concrete work in all sorts of structures including distribution bars, stirrups, binders etc initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape, placing in proper position and binding with 16 gauge black annealed wire at every intersection, complete as per drawing and direction.				
	(a) For works in foundation and upto roof of ground floor/upto 4 m				
	(i) Tor steel/Mild Steel				
	I. SAIL/ TATA/RINL	MT	6	71416	4,28,496.00
	(b)Add extra over the rate of ground floor/initial 4 m for each basement floor and each additional floor below/ above ground floor				
	(i) Upto 4 th floor roof in each addl. Floor	QNTL	30	56	1,680.00
<b>30</b>	<b>LABOUR FOR PLACING REINFORCEMENT ON FORM WORK FOR R.C.C WORKS</b>				
	Labour for Placing on forms (i.e. shuttering) I.R.C. or similar welded mesh fabric of approved sizes. (Payment to be made on net area used including cutting straightening, bending, binding with 16 gauge black annealed wire, removing rust etc, complete as per direction)	SQM	850	26	22,100.00

	<b>REPAIR AND REHABILITATION WORKS FOR BRICKWORK AND CONCRETE WORKS</b>				
<b>31</b>	<b>CLEANING CONCRRETE SURFACES</b>				
	Cleaning the concrete surface by removing dirt and debris, marking defective locations and removing loose concrete by careful stripping untill hard surface is exposed, cutting the concrete to regular shape, wire brushing the exposed surface and removing debris from site complete as per direction of the Engineer - in - Charge	SQM	1450	90	1,30,500.00
<b>32</b>	<b>CLEANING EXPOSED REINFORCEMENT SURFACES</b>				
	Cleaning the exposed reinforcement preferably upto full diameter by wire brush, applying two coats of polymer based rust removing compound left for 24 hours, removing the coating and then applying two (2) coats of polymer modified anti corrosive protective coating formulated to inhibit the corrosion of reinforcement as per manufacturer's specification][Mode of measurement:The affected surface area of reinforcement shall be considered for payment]	SQM	900	782	7,03,800.00
<b>33</b>	<b>EPOXY BASED AGENT FOR JOINING OLD AND NEW CONCRETE WORKS</b>				
	Applying epoxy based reactive joining agent for joining the old concrete with fresh concrete to be applied within manufacturer's specified time as per manufacturers specification. (0.4 Kg / m <sup>2</sup> of concrete surface).	SQM	1150	309	3,55,350.00
<b>34</b>	<b>REMOVING CORRODED WORN OUT PORTION OF REINFORCEMENT</b>				
	Removing corroded worn out portion of reinforcement (when the area of bar is damaged by more than 25%) by cutting and replacing the same by a new plain round bar of requisite diameter by binding with required lap / welding with old bar, including cost of reinforcement, complete in all respect including removing unserviceable materials from site as per direction of the Engineer - in - charge. Note : Payment on weight (Kg.) of new	kg	500	87	43,500.00

	reinforcement.				
<b>35</b>	<b>POLYTHENE SHEET OVER D.P.C</b>				
	Supplying and laying Polythene Sheet (150gm / sq.m.) over damp proof course or below flooring or roof terracing or in foundation or in foundation trenches.	SQM	40	24	960.00
<b>36</b>	<b>DAMP PROOF COURSE</b>				
	40 mm. thick damp proof course with cement concrete (1:1.5:3) (with graded stone chips 20 mm nominal size) with water proofing compound of approved brand @ 0.2% weight of cement including cost of materials over two coats of non toxic acrylic polymer modified cementitious waterproofing slurry coat complete [cost of water proofing compound and non toxic paint to be paid seperately) for underground water retaining structures.[water proofing as per item no 9 and non toxic paint as per item no. 8 (b) of subhead C of Section 'C' ]	SQM	40	297	11,880.00
<b>37</b>	<b>KOTA STONE FLOORING</b>				
	18 mm. to 22 mm. thick, kota stone slab set in 20 mm thick (avg) cement mortar (1:4) in floor, stair & lobby including pointing in cement slurry with admixture of pigment matching the stone shade, including grinding & polishing as per direction of Engineer - in - charge to match with the existing work. [Slurry for bedding @ 4.4 kg/Sq.m and pointing @2.0 kg/Sq.m]	SQM	160	1024	1,63,840.00
<b>38</b>	<b>GRINDING TO FLOORING</b>				
	Grinding to marble / mosaic floor including remaining stone, if necessary, after cutting with manual labour / machine, where necessary	SQM	2800	20	56,000.00
<b>39</b>	<b>ITALIAN MARBLE FLOORING</b>				
	Providing and fixing machine cut, mirror polished, Italian Marble stone (Imported quality, such as Perlato, Bottichino, Crema, Antique Beige, Dark Emperadore, Red Verona, Black Marquino etc.) flooring laid in required pattern in linear portion of the building all complete as per architectual drawings with Italian Marble stone				

slab laid over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with white cement slurry @ 4.4 kg/sqm including pointing with white cement slurry mixed with pigment to match the marble shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. [This work should not be executed without specific permission of Superintending Engineer]				
a) Light Beige Colour (such as Perlato, Bottichino, Crema)				
ii) 20 mm thick Italian Marble stone slab				
In ground floor	SQM	85	4947	4,20,495.00
In first floor	SQM	200	4959	9,91,800.00
In second floor	SQM	200	4971	9,94,200.00
In third floor	SQM	120	4983	5,97,960.00
In fourth floor	SQM	200	4995	9,99,000.00
In fifth floor	SQM	160	5011	8,01,760.00
In sixth floor	SQM	210	5027	10,55,670.00
<b>Note: Add extra for each additional floor over the rate for ground floor on items</b> <b>i) upto 4th Floor : Rs. 12/-</b> <b>ii) above 4th Floor: Rs. 16/-</b>				
c) Dark Colour (such as Dark Emperadore, Red Verona, Black)				
ii) 20 mm thick Italian Marble stone slab				
In ground floor	SQM	25	6019	1,50,475.00
In first floor	SQM	60	6031	3,61,860.00
In second floor	SQM	60	6043	3,62,580.00
In third floor	SQM	40	6055	2,42,200.00
In fourth floor	SQM	60	6067	3,64,020.00
In fifth floor	SQM	45	6080	2,73,600.00
In sixth floor	SQM	70	6093	4,26,510.00
<b>Note: Add extra for each additional floor over the rate for ground floor on items</b> <b>i) upto 4th Floor : Rs. 12/-</b> <b>ii) above 4th Floor: Rs. 13/-</b>				
f) More White with less veins				
ii) 20 mm thick Italian Marble stone slab				
In ground floor	SQM	25	8846	2,21,150.00
In first floor	SQM	60	8858	5,31,480.00

	In second floor	SQM	60	8870	5,32,200.00
	In third floor	SQM	40	8882	3,55,280.00
	In fourth floor	SQM	60	8894	5,33,640.00
	In fifth floor	SQM	45	8907	4,00,815.00
	In sixth floor	SQM	70	8920	6,24,400.00
	<b>Note: Add extra for each additional floor over the rate for ground floor on items</b> <b>i) upto 4th Floor : Rs. 12/-</b> <b>ii) above 4th Floor: Rs. 13/-</b>				
<b>40</b>	<b>MARBLE WORKS IN SKIRTING</b>				
	Supplying fitting and fixing Italian Marble slab/Tile in skirting (upto 300 mm ht) over 15mm (avg) thick base of Cement mortar (1:2) laid with white cement slurry @ 4.4 kg/ Sq.m at back side of marble and jointed with white cement slurry @ 2.2 kg/ Sq.m with necessary pigments including grinding and Granite Polishing. [White cement and Pigment to be supplied by the Agency] [This work should not be executed without specific permission of Superintending Engineer]				
	c) Dark Colour (such as Dark Emperadore, Red Verona, Black				
	ii) 20 mm thick Italian Marble stone slab				
	In ground floor	SQM	20	6145	1,22,900.00
	In first floor	SQM	35	6157	2,15,495.00
	In second floor	SQM	35	6169	2,15,915.00
	In third floor	SQM	25	6181	1,54,525.00
	In fourth floor	SQM	30	6193	1,85,790.00
	In fifth floor	SQM	30	6206	1,86,180.00
	In sixth floor	SQM	35	6219	2,17,665.00
	<b>Note: Add extra for each additional floor over the rate for ground floor on items</b> <b>i) upto 4th Floor : Rs. 12/-</b> <b>ii) above 4th Floor: Rs. 13/-</b>				
<b>41</b>	<b>GRANITE WORKS IN DADO</b>				

	Supplying, fitting & fixing granite slabs 15mm to 18 mm. thick with uniform texture & without decorative veins in columns, wall, facia etc. with 15 mm thick [avg] cement mortar (1:2) including making suitable arrangements to hold the stones properly by brass / copper hooks including pointing in cement mortar (1:2) (1 white cement : 2 marble dust) with admixture of pigment matching the stone shades all complete as per direction of the Engineer-in-charge including cost of all materials, labours, scaffolding, staging ,curing and roughening of concrete surface complete. Area of each Granite slab > 0.6 upto 1.0 square metre. [Using cement slurry at back side of granite @ 4.4 kg/sq.m & white cement slurry for joint filling @ 1.8 kg/sq.m]				
	In ground floor	SQM	170	2323	3,94,910.00
	In first floor	SQM	170	2335	3,96,950.00
	In second floor	SQM	170	2347	3,98,990.00
	In third floor	SQM	170	2359	4,01,030.00
	In fourth floor	SQM	170	2371	4,03,070.00
	In fifth floor	SQM	170	2384	4,05,280.00
	In sixth floor	SQM	170	2397	4,07,490.00
	<b>Note: Add extra for each additional floor over the rate for ground floor on items</b> <b>i) upto 4th Floor : Rs. 12/-</b> <b>ii) above 4th Floor: Rs. 13/-</b>				
<b>42</b>	<b>GRANITE WORKS IN FLOORING</b>				
	Supplying,fitting & fixing granite slab 15mm to 18mm thick in floor, lobby, stair, landing and treads etc. over 20mm (avg) thick base of cement mortar (1:2) laid with white cement slurry @ 4.40Kg per Square meter before placing of granite and jointed with white cement slurry @ 2.0 Kg per square meter with necessary pigments and complete as per direction of Engineer-in-charge including cost of all materials, labours, curing and roughening of concrete surface complete.In ground floor				
	(a) Area of each Granite slab upto 0.60 Square meter.				
	In ground floor	SQM	40	2181	87,240.00
	In first floor	SQM	60	2193	1,31,580.00



	In second floor	SQM	60	2205	1,32,300.00
	In third floor	SQM	50	2217	1,10,850.00
	In fourth floor	SQM	50	2229	1,11,450.00
	In fifth floor	SQM	55	2242	1,23,310.00
	In sixth floor	SQM	55	2255	1,24,025.00
	<b>Note: Add extra for each additional floor over the rate for ground floor on items</b>				
	<b>i) upto 4th Floor : Rs. 12/-</b>				
	<b>ii) above 4th Floor: Rs. 13/-</b>				
<b>43</b>	<b>PARQUETTE FLOORING WITH 38 MM THICK BLOCK BOARD</b>				
	38 mm thick wood block flooring of first class teak wood laid over 25 mm thick leveling layer of cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 10 mm nominal size) to be paid separately, coated with a thin layer of hot bitumen penetration 80/25 (blown type) @ 2.45 kg per sqm, including fixing blocks in position after dipping in hot bitumen (blown type) up to half depth, planed, levelled smooth and finished complete.	SQM	275	9971.2	27,42,080.00
<b>44</b>	<b>LABOUR FOR SETTING TILES IN FLOOR</b>				
	Labour for setting tiles in floor / pavement in cement mortar (1 : 4) joints finished with white cement.	SQM	2880	100	2,88,000.00
<b>45</b>	<b>REPAIRING CRACKS IN FLOOR WITH CEMENT MORTAR</b>				
	Repairing cracks in floor with cement mortar (1:2) with necessary pigment to match with existing works, including prior cutting and cleaning the cracks as directed.	%M	5000	688	34,400.00
<b>46</b>	<b>FILLING RAT HOLES</b>				
	Filling rat-holes with broken glass and cement concrete (1:3:6) with jhama chips including shaping holes and mending damages.	Each	210	55	11,550.00
<b>47</b>	<b>WASHING AND CLEANING FLOOR</b>				
	Washing and cleaning with oxalic acid powder using 33 gms./sq.m.				

	(a) Marble floor/ marble dado	%SQM	1900	696	13,224.00
	(b) Floor/ dado other than marble	%SQM	1000	552	5,520.00
<b>48</b>	<b>POLISHING OLD MARBLE/TERRAZO WORK</b>				
	Polishing only of old marble or terrazo work with oxalic acid powder using 33 gms/ sq.m. by manual labour / machine where necessary.	SQM	2000	38	76,000.00
<b>49</b>	<b>WASHING FLOOR WITH SOAP WATER</b>				
	Washing and cleaning with soap water and rubbing with oil cloth in all types of floor and dado.	SQM	2880	6	17,280.00
	(E) Roofing, Sheet Walling & Waterproofing				
<b>50</b>	<b>ROOFING</b>				
	Supplying & laying 3mm thick pre-fabricated plastomericwater proofing membrane conforming to EN 12311-1 &ASTMD 5147, manufactured with atactic poly propylene(APP) modified premium grade asphalt , specially reinforcedwith non-woven polyester core with polyester reinforcement@ 160 gms per sqm & both faces covered with thermo-fusiblepolyethylene film /MineraL on top face over a coat of primer @ 0.40 lit/sqm of manufacturer's specification onsmooth, clean dry surface prepared wherever required.Lapjoint shall be provided of 75 mm in longitudinal & 100 mm in transverse direction and fused using LPG/ Propane torch employing extra care ensuring full bondage, complete removal of entrapped air and sealing edges into grooves in appropriate manner as per direction of Engineer -in-charge all complete including materials,labour and applicable taxes. (Payment shall be made on the basis of finishedsurface area.).Membrane Property: Softening Point > 150 deg C, ColdFlexibility < -6 deg C, Tensile Strength, N/cm : 600(longitudinal), 450 (transverse), Tearing Strength, N:300 (longitudinal), 200 (transverse)	SQM	405	407	1,64,835.00
<b>51</b>	<b>REPAIR &amp; REHABILITATION WORKS FOR WATERPROOFING</b>				
	Taking out old damaged tarfelt from the roof, parapet etc. preparing the roof surfaces by				

	removing all spoils, blisters, moss etc. from the working site and disposal of the same beyond the compound and cleaning the site in all respect as per direction of Engineer-in-Charge.				
	All floor	SQM	405	12	4,860.00
<b>52</b>	<b>REPAIR &amp; REHABILITATION FOR ROOFING</b>				
	Renewing rounding only (100 mm. radius) at the junction of roof and parapet etc. with beaten lime concrete (2:2:7) with slaked lime (2 lime putty / paste : 2 surki : 7 brick khoa )	Meter	100	72	7,200.00
<b>53</b>	<b>REPAIRS TO ROOF CRACKS WITH CEMENT MORTAR</b>				
	Repairs to roof cracks with cement and sand mortar (1:4) including cutting grooves and cleaning cracks and grouting the cracks with neat cement before repairs. (Cement 0.63 Kg/Mtr. )	Meter	200	14	2,800.00
<b>54</b>	<b>REPAIR TO ROOF CRACKS WITH BITUMEN</b>				
	Repair to roof cracks with Bitumen (VG-40) including cutting grooves and cleaning cracks, heating bitumen as directed and finished with sand blinding. (Bitumen 1.687 Kg/ Sq.m, Medium Sand 0.6 Cu.m/100 Sq.m) (Bitumen to be supplied by contractor)	SQM	405	223	90,315.00
<b>55</b>	<b>ENCASING R.S. JOIST/BEAM WITH WIRE AND CONCRETE</b>				
	Encasing R.S. joist / beam with 16 to 18 B.W.G. wire netting (13 to 19 mm. mesh) and cement concrete (1:1..5:3) with stone chips including finishing with 15 mm. thick cement plaster (1:4) and 2 coats white washing complete.( Cement 18.9 Kg/ Sq.m)	SQM	250	556	1,39,000.00
	(Payment to be made on area of exposed surface)				
<b>56</b>	<b>CUTTING CHANNEL DRAIN ON ROOF</b>				
	Cutting shallow channel drain of roof for easy passage of rain water cement plastered (1:4) complete. (Payment for Cement plaster to be paid separately)	Metre	100	19	1,900.00

<b>57</b>	<b>M.S. STRUCTURAL WORKS WITH R.S.J SECTIONS</b>				
	M.S. structural works in columns, beams etc. with simple rolled structural members (e.g. joists, angle, channel sections conforming to IS: 226, IS: 808 & SP (6)- 1964 connected to one another with bracket, gussets, cleats as per design, direction of Engineer-in-charge complete including cutting to requisite shape and length, fabrication with necessary bolting, metal arc welding conforming to IS: 816- 1969 & IS: 1995 using electrodes of approved make and brand conforming to IS:814- 2004, haulage, hoisting and erection all complete. The rate includes the cost of rolled steel section, consumables such as electrodes, gas and hire charge of all tools and plants and labour required for the work including all incidental charges such as electricity charges, labour insurance charges etc.				
	Payment to be made on the basis of calculated weight of structural members only in finished work as per IS specified weight. Payment for gusset, bracket, cleat, rivets, bolts and nuts may be made by adding the actual weight of such items with the weight of finished structural members or 7% of weight for finished structural members weighing not less than 22.5 Kg. / m. or 15 % of weight for finished structural members weighing less than 22.5 Kg. / m. may be increased allow for bracket, cleat, rivet, bolts and nuts etc. and no separate payment being made for these items, as per direction of Engineer In Charge. The rates are considered for a height of erection 8m. / 2nd floor level from the ground. Add 1.5% extra over the rate for each additional floor or 4m. beyond initial 8m. or part thereof.				
	I) For structural members of specified sections weighing less than 22.5 Kg./m	MT	3	72603	2,17,809.00
	II) For Structural Works in Roof Trusses etc. using joists, channels and angles of specified section weighing less than 22.5 kg/ m	MT	1	73761	73,761.00
	III) For built up sections / structural members of specified sections weighing not less than 22.5 Kg./m	MT	1	75266	75,266.00
<b>58</b>	<b>M.S. STRUCTURAL WORKS WITH HOLLOW SECTIONS</b>				

	<p>M.S. structural works with hollow sections (square or rectangular shape) conforming to IS: 806-1968 &amp; IS:1161-1998) connected to one another with bracket, gusset, cleat as per design, drawing &amp; direction of Engineer-in-Charge complete including cutting to requisite shape &amp; size, fabrication including metal arc welding conforming to IS: 816-1969 &amp; IS: 9595 using electrodes of approved make and brand conforming to IS:814- 2004, haulage, hoisting and erection all complete.</p> <p>The rate includes the cost of all M.S. Hollow section, all consumables such as electrodes, gas and hire charges of all tools and plants and labour required for execution and all incidental charges (such as electricity, labour insurance) etc. complete.</p>				
	<p>Payment to be made on the basis of calculated weight of structural members of MS Hollow Section as specified in relevant IS code in finished work. Payment for gusset, bracket, cleat may be made by adding the actual weight of such items with weight of finished structural members. The rates are considered for a height of erection 8 m. / 2nd floor level from the ground. Add 1.5 % extra over the rate for each additional floor or 4m. beyond the initial 8 m. or part thereof.</p>				
	ii) For other Structural works like galleries etc.	MT	3	74900	2,24,700.00
<b>59</b>	<b>CUTTING DEPARTMENTAL R.S.J SECTIONS</b>				
	Cutting to requisite length or shape departmental R.S. joists, channels, angles, tees, plates etc.	SQCM	1000	8	8,000.00
	(Payment to be made on area of cut surface)				
<b>60</b>	<b>DRILLING HOLES IN R.S.J SECTIONS</b>				
	Drilling holes of requisite diameter in R.S. joists channels, tees. Plates etc.				
	(a) (i) Dia. Upto 12mm and depth upto 10 mm.	EACH	250	10	2,500.00
	(ii) Extra for drilling beyond depth of 10mm	EACH	250	10	2,500.00

	(b) (i) Dia.above 12mm and depth upto 10 mm.	EACH	250	15	3,750.00
	(ii) Extra for drilling beyond depth of 10mm	EACH	250	15	3,750.00
<b>61</b>	<b>LABOUR FOR HOISTING AND PLACING R.S.J SECTIONS</b>				
	Labour for hoisting and placing in proper position (up to 1st floor level) departmental R.S. joists, channels, angles. Tees, plates etc. including fitting and fixing same with bolts and nuts, if necessary (but excluding cost of such bolts and nuts)	QNTL	20	412	8,240.00
	(a) Add extra for each additional floor over 1st floor.	QNTL	15	74	1,110.00
<b>62</b>	<b>HOLDING DOWN BOLT</b>				
	Holding down bolt with nut including 100 x 100 x 6 mm plate washer at bottom fitted complete and packing the hole with cement concrete or cement grout as directed.				
	(i) 16 mm dia bolt				
	(a) 300 mm long	EACH	5	120	600.00
	(b) 450 mm long	EACH	5	165	825.00
	(ii) 20 mm dia bolt.				
	(a) 300 mm long	EACH	10	204	2,040.00
	(b) 450 mm long	EACH	10	236	2,360.00
	(c) 600 mm long	EACH	10	279	2,790.00
	(iii) 25 mm dia.				
	(a) 450 mm long.	EACH	5	325	1,625.00
	(b) 500 mm long.	EACH	5	372	1,860.00
	(c) 750 mm long	EACH	5	508	2,540.00
	(iv) 32 mm dia:				
	(a) 450 mm long	EACH	10	462	4,620.00
	(b) 500 mm long	EACH	10	508	5,080.00
	(c) 750 mm long	EACH	10	630	6,300.00
<b>63</b>	<b>SUPPLYING AND FIXING BOLTS</b>				
	Supplying, fitting, fixing bolts with nuts, washer:				
	(i) 10 to 16 mm dia:				

	(a) Length up to 75 mm	kg	5	157	785.00
	(b) Length above 75 mm and upto 150 mm.	kg	10	146	1,460.00
	(c) Length above 150mm.	kg	5	118	590.00
	(ii) 20 to 25 mm dia bolt:				
	(a) Length up to 75 mm dia:	kg	15	165	2,475.00
	(b) Length above 75 mm and upto 150 mm.	kg	10	158	1,580.00
	(c) Length above 150mm.	kg	15	154	2,310.00
<b>64</b>	<b>M.S./W.I. GRILLS</b>				
	(a) M.S.or W.I. Ornamental grill of approved design joints continuously welded with M.S, W.I. Flats and bars of windows, railing etc. fitted and fixed with necessary screws and lugs in ground floor.				
	(Add extra @ 1% for each addl. floor upto 4th floor and @ 1.25% for each addl. floor above 4th floor)				
	(i) Grill weighing above 10 Kg./sq.mtr and up to 16 Kg./sq. mtr.	QNTL	5	7238	36,190.00
	(MODE OF MEASUREMENT):-				
	The weight of grill per sq.m. will be determined by taking the physical weight of fabricated grill and dividing the same by covered area of the same.				
	N.B. No shop priming will be allowed to facilitate inspection of workmanship. Weight of grill is to be taken after final grinding and finishing the weld.				
	(b) Extra for work in grill gate.				
	(I) For hanging and locking arrangements including supply of materials and labour complete.				
	(15% extra over the corresponding item of grill )				
	(ii) For supplying fitting and fixing bottom rollers including all labour complete.				
	(5% extra over the corresponding item of grill )				
<b>65</b>	<b>COLLAPSIBLE GATE</b>				

	Collapsible gate with 40mm x 40mm x 6mm Tee as top and bottom guide rail, 20mm x 10mm x 2mm vertical channels 100mm apart in fully stretched position 20mm x 5mm M.S. flats as collapsible bracings properly rivetted and washered including 38mm steel rollers including locking arrangements, fitted and fixed in position with lugs set in cement concrete and including cutting necessary holes, chasing etc. in walls, floors etc. and making good damages complete.				
	(Add extra @ 1% for each addl. floor upto 4th floor and @ 1.25% for each addl. floor above 4th floor)				
	In ground floor.	SQM	35	3402	1,19,070.00
	(Payment will be made on the area of the gate covered by two guard rails and two extreme channels)				
<b>66</b>	<b>FIRE RESISTANT DOOR FRAME AND SHUTTER</b>				
	Supplying, fitting & fixing fire resistant door frame conforming to IS:3614, tested and certified as per laboratory approved by Engineer-in-charge, of section 143 x 57 mm having built in rebate made out of 16 SWG G.I.sheet (zinc coating not less than 120 gm/sqm) duly filled with vermiculite based concrete mix, suitable for mounting 120 minutes fire rated door shutters. The frame is fitted with intumescent fire seal strip of size 10x4 mm (minimum) around the frame and fixing with back plate bracket and anchor fastener of approved size and make. Rubber door silencers should be provided on striking jamb.				
	Supplying, fitting & fixing fire resistant Door leaf of 46 mm thick fully flush double skin glazed fire resistant door shutters with or without vision lite, of 120 minutes fire rating conforming to IS:3614 (Part-II), tested and certified as per laboratory approved by Engineer-in-charge, with suitable mounting on door frame, consisting of vertical styles, lock rail, top rail 100 mm wide, bottomrail 200 mm wide, made out of 18 SWG G.I. sheet (zinc coating not less than 120 gm/ m2) duly filled heat-resistant phenolic resin bonded				



	insulation material (honeycomb craft) and fixing with necessary stainless steel ball bearing hinges of approved make. For pair of doors astragals has to be provided on the meeting stile for both active and inactive leaf. Vision lite wherever applicable should be provided as per manufacturer recommendation with a bedding and screw from inside. The glass should be 6mm clear borosilicate fire rated glass of relevant rating. All door and frames shall be finished with polyurethane aliphatic grade paint of approved colour including applying a coat of approved brand fire resistant primer. The door leaf and frame shall have passed minimum 250 hours of salt spray test. Rate should include supply and installation complete as per direction of Engineer-in-charge.				
	i) 2 hour Fire rated door single leaf of size (1200 mm x 2180 mm)				
	In ground floor	EACH	2	22523	45,046.00
	In first floor	EACH	2	22748.23	45,496.00
	In second floor	EACH	2	22975.71	45,951.00
	In third floor	EACH	2	23205.47	46,411.00
	In fourth floor	EACH	2	23437.52	46,875.00
	In fifth floor	EACH	2	23671.9	47,344.00
	In sixth floor	EACH	2	23908.62	47,817.00
	<b>Note: Add 1% extra for each additional floor over the rate for Ground Floor</b>				
	<b>REPAIRING OF STEEL WORKS</b>				
<b>67</b>	<b>LABOUR FOR HANDLING R.S.J SECTIONS</b>				
	Labour for lowering and stacking after dismantling in parts R.S. joists, channels, angles, tees, plates etc. complete as directed.				
	From 1st floor level				
	In ground floor	Qntl	60	197	11,820.00
	In first floor	Qntl	60	255	15,300.00
	In second floor	Qntl	60	313	18,780.00
	In third floor	Qntl	60	371	22,260.00
	In fourth floor	Qntl	60	429	25,740.00
	In fifth floor	Qntl	60	487	29,220.00
	In sixth floor	Qntl	60	545	32,700.00
	<b>Note: Add extra Rs. 58/- for each addl. Floor</b>				

<b>68</b>	<b>WELDING IN M.S STRUCTURAL WORKS</b>				
	Welding in M.S. structural work with gas or electric:				
	Tack weld	Point	6000	9	54,000.00
	Continuous weld.	cm run	12000	9	1,08,000.00
<b>69</b>	<b>EASING COLLAPSIBLE GATE</b>				
	Easing and oiling, cleaning collapsible gate and repairing to locking arrangements.	SQM	100	17	1,700.00
<b>70</b>	<b>EASING ROLLING SHUTTERS</b>				
	Easing and oiling, cleaning rolling shutters excluding repair to inside locks	SQM	150	12	1,800.00
<b>71</b>	<b>EASING W.I./G.I/ GATE</b>				
	Easing and oiling W.I. Gate or G.I. Gate.	SQM	200	7	1,400.00
<b>72</b>	<b>LABOUR FOR TAKING OUT ROLLING SHUTTER</b>				
	Labour for taking out rolling shutter (only shutter portion) dismantling by parts for repair or (replacement of damaged parts only), rehanging and refitting the same in position after necessary repairs (excluding the cost of supply of new parts).	SQM	50	283	14,150.00
<b>73</b>	<b>RENEWING SEAM PIPE OF ROLLING SHUTTER</b>				
	Renewing seam pipe for rolling shutter as per existing size and shape fitting, fixing complete.	Mtr	70	210	14,700.00
<b>74</b>	<b>SIDE SPLIT PIN OF ROLLING SHUTTER</b>				
	Renewing side split pin for seam pipe for rolling shutter.	Each	30	26	780.00
<b>75</b>	<b>REPAIR INSIDE LOCK OF ROLLING SHUTTER</b>				
	Oiling and greasing of rolling shutter and repair to in side lock.	SQM	70	73	5,110.00
<b>76</b>	<b>RENEWING PROFILE OF ROLLING SHUTTER</b>				

	Renewing profile of rolling shutter including fitting fixing complete as per existing size and shape.	M.	200	54	10,800.00
<b>77</b>	<b>RENEWING SPRING OF ROLLING SHUTTER</b>				
	Renewing spring of rolling shutter as per existing size and shape including fitting fixing complete.	Each	10	609	6,090.00
<b>78</b>	<b>WOOD WORK IN DOOR AND WINDOW FRAME</b>				
	Wood work in door and window frame fitted and fixed in position complete including a protective coat of painting at the contact surface of the frame exluding cost of concrete, Iron Butt Hinges and M.S clamps. (The quantum should be correted upto three decimals).				
	(a) 1st class Burma Grade teak.	CUM	1.2	328447	3,94,136.00
<b>79</b>	<b>DOOR FRAME WITH M.S. ANGLE</b>				
	(A) Supplying fitting and fixing door frame with M.S. angle as per drawing & direction of required section.The holes for counter sunk machine screw & nuts will be such as to fit 8 to 10 mm Iron screw. The counter sunk nut to be welded . The nuts are to be welded after careful checking with screw.All welding spots should be properly filed or rounded smooth including cost of welding hinges for hinge cleats , lugs for hasp bolt, socket bolt etc. and necessary M.S. clamps of 25mm x 6mm flat 225mm long as per direction welded to the frame fitted and fixed in position excluding cost of concrete.	kg	200	79	15,800.00
	Mode of measurement : Weight of frame shall be calculated for the M.S. sections of frames. Payment of butt hinges, clamps, hasp bolt, socket bolts, screws etc. will be paid separately. The weight of section should be calculated at 7.85 gm/Cu.cm				
<b>80</b>	<b>WOOD WORK IN DOOR WINDOW SHUTTER</b>				
	Panel shutters of door and window, as per design (each panel consisting of single plank without joint), including fitting and fixing the same in				

	position but excluding the cost of hinge and other fittings. In ground floor. (In case of non-supply of single plank, penal rate of reduction of 20% will be made)				
	(i) 50mm thick shutters with 25mm thick panel of size 30 to 45 cm				
	(a) 1st class Burma Grade teak.	SQM	80	14460	11,56,800.00
<b>81</b>	<b>GLAZED SHUTTER OF DOORS AND WINDOWS</b>				
	Glazed shutters of doors, as per design with sheet glass of 5.0mm thick bedded in putty and fitted with teak bead and nails (the styles 150mm wide, top & bottom rail 200mm wide if not otherwise mentioned) including fitting and fixing shutters in position but excluding the cost of glass, putty, teak bead, nails, hinges etc. and other fittings, in ground floor.				
	50mm Thick shutters				
	(a) 1st class Burma Grade teak.	SQM	100	12186	12,18,600.00
<b>82</b>	<b>FLUSH TYPE DECORATIVE DOORS</b>				
	Supplying solid flush type doors of deluxe decorative (both side) quality, conforming to I:S 2202 timber frame consisting of top and bottom rail and side styles of well seasoned timber 65mm wide each and the entire frame fitted with 27.5mm wide battens places both ways in order to make the door of solid core and internal lipping with teak, mahogany or rose wood approved decorative veneers using phenol formaldehyde as glue etc. complete, including fitting, fixing the shutters in position but excluding the cost of hinges and other fittings in ground floor:				
	(a) 35mm thick shutters (single leaf)				
	In ground floor	SQM	20	3955	79,100.00
	In first floor	SQM	60	3967	2,38,020.00
	In second floor	SQM	60	3979	2,38,740.00
	In third floor	SQM	60	3991	2,39,460.00
	In fourth floor	SQM	60	4003	2,40,180.00
	In fifth floor	SQM	60	4016	2,40,960.00

	In sixth floor	SQM	60	4029	2,41,740.00
	<b>Note: Add extra for each additional floor over the rate for ground floor on items</b> <b>i) upto 4th Floor : Rs. 12/-</b> <b>ii) above 4th Floor: Rs. 13/-</b>				
<b>83</b>	<b>WOOD WORK IN POSTS, PLATES, RAFTERS, BATTENS</b>				
	(A) Wood work in posts, post plates, rafters, battens, truss members, purlins etc. fitted and fixed complete (excluding the cost of bolts, paints, but including the cost of nails, screws etc.) (The quantum should be corrected upto three decimals)				
	(a) 1st class Burma Grade teak.	CUM	0.5	308588	1,54,294.00
<b>84</b>	<b>DRESSED WOOD WORK</b>				
	(B) Dressed wood work in post , plate , battens . etc. fitted & fixed complete (excluding the cost of bolts only, but including the cost of nails, screws etc.) (The quantum should be corrected upto three decimals)				
	(a) 1st class Burma Grade teak.	CUM	0.5	369015	1,84,508.00
<b>85</b>	<b>WOOD WORK IN RAILS OF RAILINGS, HAND RAILS OF STAIRCASE</b>				
	Wood work in upper rails of railing, hand rail of staircase, balcony etc. includig necessary bend, moulding fitted and fixed complete (for purpose of payment section will be measured in the square).				
	(a) 1st class Burma Grade teak.	CUM	0.5	325562	1,62,781.00
<b>86</b>	<b>REPAIRS TO AUTOMATIC DOOR CLOSER</b>				
	Repairs to automatic door closer including replacement of damaged main spring, oiling and adjusting as necessary including taking out and refitting the same.	Each	100	318	31,800.00
<b>87</b>	<b>LABOUR FOR TAKING OUT DOOR WINDOW FRAME</b>				

	Labour for taking out door and window frame including shutter for repair or replacement of different parts of the frame & refixing the same including mending good all damages complete. (Concrete and brick work for mending damage will be paid separately)				
	Upto area 2.5 Sq.m	SQM	225	119	26,775.00
	Above area 2.5 Sq.m	SQM	510	146	74,460.00
<b>88</b>	<b>LABOUR FOR TAKING OUT DOOR WINDOW SHUTTER</b>				
	Taking out shutter of door and window, dismantling by parts (for repair or replacement of damaged parts) , reassembling and refitting and rehanging same with old fittings but with new screws as necessary. (Where different parts of same shutter are renewed under different item, payment under item 73 will be made once only).	SQM	735	126	92,610.00
<b>89</b>	<b>TAKING OUT EXISTING PARTITION/CEILING</b>				
	Taking out existing partition/ceiling of particle board, masonite board, ply board, soft board etc. of any thickness and refixing same in new position with necessary clamps making holes in walls, floor, roof and mending damages if any.[concrete plaster will be paid separately]	SQM	10500	55	5,77,500.00
<b>90</b>	<b>EASING DRAWERS</b>				
	Easing drawers of laboratory tables of any size (labour only)	Each	350	26	9,100.00
<b>91</b>	<b>EASING HARDWARES</b>				
	Easing tower wrench, barrel, skeleton, socket bolt etc. by scraping and oiling.	Each	350	4	1,400.00
<b>92</b>	<b>REFIXING WOODEN MOULDED KNOBS</b>				
	Taking Out and Refixing wooden moulded knobs of drawers fitted and fixed complete.	Each	350	17	5,950.00
	<b>FALSE CEILING</b>				
<b>93</b>	<b>ACOUSTIC FALSE CEILING</b>				

	<p>Providing and fixing of false ceiling with powder coated exposed G.I. grid suspension system (E-Grid U-1520 or equivalent load carrying capacity with mid span deflection not exceeding 1/360 span with hanger spacing of 1200mm c/c ) consisting of Main Runner 3600 mm long, Cross Tee 1200 mm / 600 mm long and Wall Angle. The Wall Angle shall be fixed on PVC Dash Fasteners on the perimeter of the wall by steel screws with distance 300mm c/c. The Main Runners to be placed @ 1200 mm. The Cross Tee 1200mm will be inserted in the pre-cut slots of Main Runner at a regular interval of 600 mm to form a modular grid of 1200mm X 600mm. Additional Cross Tees of 600 mm shall be placed perpendicular to the Cross Tee 1200 mm long to finally form a grid of 600 mm X 600 mm. Grid of module size 600 mm X 600 mm shall be supported by 6 mm dia G.I. wire from purlins / soffit. 15mm thick OW Acoustic Board (Mineral Fiber Acoustic Ceiling Tiles) of approved pattern and size 595mm X 595mm with NRC value &gt; 0.65 should be placed in the Grid module to form a False Ceiling. All complete as per the drawing &amp; directions of Engineer-in-charge. In ground floor.</p>				
	a) Acoustic False Ceiling (with 15mm thick OW Acoustic Board and E-Grid U- 1520).	SQM	120	1357	1,62,840.00
<b>94</b>	<b>CEILING WITH WOODEN PLANKS</b>				
	<p>Ceiling with 12mm thick wooden planks fitted and fixed complete (excluding the supporting framework) as per direction of the Engineer-in-charge. In Ground Floor</p>				
	1st Class Burma Grade Teak Wood	SQM	150	2650	3,97,500.00
<b>95</b>	<b>CEILING OF COMMERCIAL PLY</b>				
	<p>Ceiling of commercial ply as per design fitted and fixed complete (excluding the supporting framework but including necessary wood battens of size 40mm x 20mm ). In ground floor</p>				
	(iii) 12mm thick				
	(a) Ordinary Teak	SQM	70	1054	73,780.00
	(For upper floors refer to item H(4) also)				

<b>96</b>	<b>THERMAL INSULATION UNDER DECK</b>				
	Providing and fixing thermal insulation of ceiling (under deck insulation) with Resin Bonded Rockwool conforming to IS: 8183, density 48 kg/m <sup>3</sup> , 50mm mm thick, wrapped in 200 G Virgin Polythene bags fixed to ceiling with metallic cleats (50x50x3 mm) @ 60 cm and wire mesh of 12.5 mm x 24 gauge wire mesh for top most ceiling of building	SQM	405	546	2,21,130.00
<b>97</b>	<b>GYPSUM BOARD SEAMLESS FALSE CEILING</b>				
	M.F. suspended ceiling made with 12.5 mm thick Gypsum plaster board including G.I. perimeter channel of 0.55 mm flush (having two flanges 20 mm and 30 mm respectively and web 27 mm ) along with perimeter of ceiling with G.I. intermediate channel of 0.9 mm thick size 45 mmx15mm placed at 750 mm c/c with G.I. ceiling angle of size 25 mmx10mmx0.55 mm thick fixed to the ceiling with G.I. Cleat and steel expansion fastener ceiling section 0.55 mm thick of size 51.50 mmx26mm fixed to the intermediate channels with the help of connecting clip and in the direction of perpendicular to the intermediate channel of 300 mm c/c 12.5 mm thick Gypsum plastered board are to be fixed under ceiling section as above by machine screws. The boards are to be joined and finished with jointing compound, paper tape and application of top coat etc. as per the direction of Engineer-in-charge. (The rate includes of cost of all materials including taxes, cost of accessories, fittings and fixtures, scaffolding and labour charges etc. complete) In ground floor	SQM	1900	1159	22,02,100.00
<b>98</b>	<b>EXPOSED FALSE CEILING FRAMEWORK</b>				



	Supplying, fitting and fixing of false ceiling framework with powder coated exposed G.I. grid suspension system (E-Grid U-1520 or equivalent load carrying capacity with mid span deflection not exceeding 1/360 span with hanger spacing of 1200mm c/c ) consisting of Main Runner 3600 mm long, Cross Tee 1200 mm / 600 mm long and Wall Angle. The Wall Angle shall be fixed on PVC Dash Fasteners on the perimeter of the wall by steel screws with distance 300mm c/c. The Main Runners to be placed @ 1200 mm. The Cross Tee 1200mm will be inserted in the pre-cut slots of Main Runner at a regular interval of 600 mm to form a modular grid of 1200mm X 600mm. Additional Cross Tees of 600 mm shall be placed perpendicular to the Cross Tee 1200 mm long to finally form a grid of 600 mm X 600 mm. Grid of module size 600 mm X 600 mm shall be supported by 6 mm dia G.I. wire from purlins/ soffit all complete as per the drawing & directions of Engineer-in-charge.	SQM	450	467	2,10,150.00
<b>99</b>	<b>CONCEALED FALSE CEILING FRAMEWORK</b>				

	Supplying fitting & fixing concealed False ceiling Framework with G.I. Section (perimeter channels having one flange of 20 mm. and another flange of 30 mm. with thickness of 0.55 mm. and web of length 27 mm., along the perimeter of the ceiling, screws fixed to the wall with help of nylon sleeves or PVC dash fastners @ 610 mm c/c. then suspend G.I. intermediate 'C' section with web 90 mm. and flanges of 15 mm. each from soffit @ 1200 mm c/c with ceiling angle of size 25 mm. X 10 mm. X 0.55 mm. fixed to soffit G.I. Cleat and Steel expansion fasteners. Ceiling section of 0.55 mm. thickness having web of 51.5 mm. and two flanges of 26 mm. each with lips of 10.55 mm., are then fixed on to the intermediate channel with the help of connecting clips in the direction perpendicular to the intermediate channel @ 610 mm c/c) with fully threaded fiber cement screws @ 300 mm c/c. all complete as per the drawing and direction of Engineer-in-Charge. Section specification :- Perimeter Channel :- 30 mm X 20 mm X 27 mm, thickness 0.55 mm (min), Intermediate Channel :- 15 mm X 90 mm, thickness 0.90 mm (min), Ceiling Section :- 51.5 mm X 26 mm X 10.55 mm, thickness 0.55 mm (min), Ceiling Angle :- 25 mm X 10 mm, thickness 0.55 mm (min).	SQM	200	351	70,200.00
<b>100</b>	<b>MINERAL FIBRE ACOUSTIC CEILING TILES</b>				
	(d) Supplying, fitting & fixing OW Acoustic Board (mineral Fibre Acoustic Ceiling Tiles) of approved pattern and size 595mm X 595mm with NRC value > 0.65 should be placed in the Grid module to form a false ceiling all complete as per drawing & direction of Engineer - in- Charge. False ceiling with				
	(i) 15mm thick OW Acoustic Board/Tiles.	SQM	150	727	1,09,050.00
<b>101</b>	<b>MOISTURE RESISTANT GYPSUM BOARD</b>				
	(g) Supplying ,fitting & fixing Eco-friendly, Moisture Resistant and Incombustable Gypsum plaster board/tiles (Density > 700Kg per Cu.m) conforming to IS 2095- Part 1, 2011 of size 595mm X 595mm of approved design and brand placed in the Grid module to form a false ceiling				

	all complete as per drawing & direction of Engineer - in- Charge.False ceiling with				
	(ii) 12.5mm thick Square edged Gypsum Plaster Board / tiles	SQM	350	388	1,35,800.00
<b>10 2</b>	<b>PLY BOARD</b>				
	Supplying, fitting and fixing boiling water proof ply conforming to IS: 710-1977 bonded with phenol formaldehyde synthetic resin conforming to IS: 848-1974 of approved make and brand fitted and fixed as per design as per approval and direction of Engineer-in-Charge. [excluding the cost of supporting frame work and teak wood batten/Lipping] In Ground Floor				
	(ii) 6mm	SQM	50	1122	56,100.00
	(vi) 19mm	SQM	50	2420	1,21,000.00
<b>10 3</b>	<b>BLOCK BOARD</b>				
	Supplying, fitting and fixing boiling water proof block board conforming to IS:1659-1990 conforming to IS:848-1974 of approved make and brand, fitted and fixed as per design as per direction of Engineer-in-charge. [Excluding the cost of supporting frame work and teak wood batten/Lipping]. In Ground Floor				
	(ii) 19mm	SQM	50	1827	91,350.00
	(iii) 25mm	SQM	50	2456	1,22,800.00
	For upper floor refer Item H (4) for item 1, 2, 3, 4 under subhead G				
<b>10 4</b>	<b>PARTITION UPTO CEILING HEIGHT</b>				

	<p>Providing and fixing partition upto ceiling height consisting of G.I. frame and required board, consisting of floor and ceiling channel 50/51 mm wide having equal flanges of 32 mm and 0.50 mm thick, fixed to the floor and ceiling at the spacing of 610mm centre to centre with dash fastener of 12.5 mm dia meter 50 mm length or suitable anchor fastener or metal screws with nylon plugs and the studs 48 mm wide having one flange of 34 mm and other flange 36 mm and 0.50 mm thick fixed vertically within flanges of floor and ceiling channel and placed at a spacing of 610 mm centre to centre by 6 mm dia bolts and nuts, including fixing of studs along both ends of partition fixed flush to wall with suitable anchor fastener or metal screws with nylon plugs at spacing of 450 mm centre to centre, and fixing of boards to both side of frame work by 25 mm long dry wall screws on studs, floor and ceiling channels at the spacing of 300 mm centre to centre. The boards are to be fixed to the frame work with joints staggered to avoid through cracks, M.S. fixing channel of 99 mm width (0.9 mm thick having two flanges of 9.5 mm each) to be provided at the horizontal joints of two boards, fixed to the studs using metal to metal flat head screws, including jointing and finishing to a flush finish with recommended jointing compound, jointing tape, angle beads at corners (25 mm x 25 mm x 0.5 mm), joint finisher and two coats of primer suitable for board as per manufacture's specification and direction of engineer in charge all complete</p>				
	i) 66 to 67 mm overall thickness partition using 8 mm thick High pressure steam cured non-Asbestos multipurpose Cement Board reinforced with cellulose fibre (Density > 1250 kg/m <sup>3</sup> ) manufactured through autoclaving process as per IS: 14862 with suitable fibre cement screws.	SQM	50	1300	65,000.00
	ii) 70 to 71 mm overall thickness partition using 10 mm thick High pressure steam cured non-Asbestos multipurpose Cement Board reinforced with cellulose fibre (Density > 1250 kg/m <sup>3</sup> ) manufactured through autoclaving process as per IS: 14862 with suitable fibre cement screws.	SQM	50	1474	73,700.00
<b>10</b>	<b>WALL PANELLING OF GLASS WOOL</b>				

<b>5</b>					
	Supplying and fitting in all places of wall panelling to all heights and fixing on pre- framed existing frame work grid with glass wool of 50mm thick having density of 48 Kg per cum. to be inserted into the pre - fabricated slot covered the glass wool by marking cloths treated with Naptha @ 0.07 Ltr.per Sq.m. of cloths. Finally 12.5mm thick gypsum Fulton board having size 595mmX595mm fitted & fixed into the pre-fabricated grid and covered the all perifirial gaps of fulton board by self additive fibre tape with necessary filler if required, complete in all respect as per direction of the Engineer-in-charge.	SQM	50	1182	59,100.00
<b>10 6</b>	<b>DECORATIVE LAMINATED BOARD</b>				
	Supplying fitting, fixing decorative lamination conforming to IS: 2046 : 1995 as per approved make, brand, finish and thickness with fitting, fixing the same on Particle/MDF / Ply Boards with recommended / approved adhesive with proper clipping the sides for better attachment as per direction of Engineer-incharge. The rate includes the cost of labour, adhesive and all incidental charges thereof. In ground floor				
	Glossy/Matt/Suede excluding surface texture or metallic lustre.				
	(i) Thickness of laminate 1.5mm	SQM	300	802	2,40,600.00
<b>10 7</b>	<b>COMMERCIAL PLY PARTITION</b>				
	(A) Partition of commercial ply as per design fitted and fixed complete (excluding the supporting framework but including necessary teak wood battens of size 40mmx 25 mm): In Ground Floor				
	(iii) 12mm thick	SQM	850	1039	8,83,150.00
<b>10 8</b>	<b>PARTITION OF TEAK VENEER</b>				
	Partition of teak veneer [1 mm] as per design fitted and fixed complete (excluding the supporting frame work & necessary teak wood battens):In ground floor				

	(i) 4mm thick commercial quality	SQM	850	465	3,95,250.00
	(For upper floors refer to item H(4) for 17, 18 under subhead G)				
<b>109</b>	<b>LABOUR FOR WOOD WORK</b>				
	Labour for wood work in sawing from old timber to sizes as required for making (Payment to be made on quantity of finished work):				
	(a) Beams of smaller length but of same section.	CUM	5	556	2,780.00
	(b) Beams of smaller section.	CUM	5	2223	11,115.00
	(c) Burgahs fitted and fixed complete.	CUM	5	5455	27,275.00
	(d) Door and window frames fitted and fixed complete.	CUM	5	4673	23,365.00
	(e) Post, post plates, rafters, battens, truss members, purlins etc. (excluding cost of bolts only but including cost of nails, screws etc. as directed.	CUM	5	5133	25,665.00
	(f) Extra over (a) or (b) for hoisting and fitting, fixing beam in position. (Damage if any will be repaired separately)	CUM	5	2763	13,815.00
	Add extra over the rate of ground floor for each addl. Floor.				
	(i) Upto 4th floor.	SQM	5	29	145.00
	Extra for Teak wood corner moulding (50mm x 12mm) of panel partition or panel door.	EACH	5	67	335.00
<b>110</b>	<b>CEMENT PLASTER TO WALL, CEILING</b>				
	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints including throating, nosing and drip course, scaffolding/staging where necessary (Ground floor).[Excluding cost of chipping over concrete surface]				
	(ii) With 1:4 cement mortar				
	(a) 20 mm thick plaster	SQM	50	186	9,300.00
	(b) 15 mm thick plaster	SQM	50	161	8,050.00
	(iv) 1:2 cement mortar (to be used in floors and for specialworks)				
	(a) 15 mm. thick plaster	SQM	50	195	9,750.00
	(b) 10 mm. thick plaster	SQM	50	160	8,000.00

<b>11 1</b>	<b>RULE POINTING TO BRICK WORK</b>				
	Rule pointing to brick work in cement mortar (1:4) with admixture of pigment to match with colour of brick including raking out joints.	SQM	500	84	42,000.00
<b>11 2</b>	<b>CHIPPING CONCRETE SURFACE</b>				
	Labour for Chipping of concrete surface before taking up Plastering work.	SQM	500	21	10,500.00
<b>11 3</b>	<b>SAND RUBBING SURFACE</b>				
	Sand rubbing including preparing and smoothening surface with admixture of pigment if necessary as directed :				
	(a) Ground floor				
	In ground floor	SQM	350	54	18,900.00
	In first floor	SQM	400	58	23,200.00
	In second floor	SQM	350	62	21,700.00
	In third floor	SQM	420	66	27,720.00
	In fourth floor	SQM	300	70	21,000.00
	In fifth floor	SQM	320	74	23,680.00
	In sixth floor	SQM	410	78	31,980.00
<b>11 4</b>	<b>RED OXIDE WASH FOR METAL WORKS</b>				
	Red oxide wash of approved shade including cleaning and smoothening surface thoroughly (without specific permission from the Engineer-incharge this item of work must not be done on an old painted surface which has not received such red oxide wash before) :				
	External surface (Ground floor)				
	(b) Two coats (on new works only).	%SQM	15	3311	49,665.00
<b>11 5</b>	<b>INTERIOR GRADE ACRYLIC PRIMER</b>				

	Applying Interior grade Acrylic Primer of approved quality and brand on plastered or concrete surface old or new surface to receive Distemper/ Acrylic emulsion paint including scraping and preparing the surface thoroughly, complete as per manufacturer's specification and as per direction of the EIC. (In Ground Floor)				
	(b) Two Coats				
	ii) Solvent based interior grade Acrylic Primer	%SQM	80	4850	3,88,000.00
<b>11 6</b>	<b>REMOVING OLD SCALES, BLISTERS FROM INTERIOR SURFACE</b>				
	Removing old scales, blisters etc. of interior surface of walls, ceiling by scraping etc. and preparing smooth and even surface with rendering or cement mortar (1:2) (as necessary), to make the surface suitable for receiving distemper. (Payment against this item will be made only when this has been done on the specific direction of the Engineer-in-charge).	%SQM	80	1017	81,360.00
<b>11 7</b>	<b>RENDERING SURFACE WITH WATER PROOF WALL PUTTY</b>				
	Rendering the Surface of walls and ceiling with White Cement base WATER PROOF wall putty of approved make & brand.(1.5 mm thick)	SQM	150	122	18,300.00
<b>11 8</b>	<b>PRIMING ON STEEL OR OTHER METAL SURFACE</b>				
	(a) Priming one coat on steel or other metal surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand papering etc.	SQM	640	29	18,560.00
<b>11 9</b>	<b>PRIMING TIMBERED OR PLASTERED SURFACE</b>				
	(b) Priming one coat on timber or plastered surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand papering etc.	SQM	1020	38	38,760.00
	(This item is applicable to new work or old work when the original surface has been exposed by removal of old paint.)				
<b>12</b>	<b>SYNTHETIC ENAMEL PAINT</b>				



<b>0</b>					
	(A) Painting with best quality synthetic enamel paint of approved make and brand including smoothening surface by sand papering etc. including using of approved putty etc. on the surface, if necessary :				
	(a) On timber or plastered surface :				
	With super gloss (hi-gloss) -				
	(iv) Two coats (with any shade except white)	SQM	150	81	12,150.00
	With super gloss (hi-gloss) -				
	(ii) Two coats (white in shade)	SQM	220	77	16,940.00
	(iv) Two coats (with any shade except white)	SQM	380	79	30,020.00
	With other than hi-gloss of approved quality-				
	(iv) Two coats (with any shade except white)	SQM	650	72	46,800.00
<b>12 1</b>	<b>ALUMINIUM PAINT</b>				
	(B) Painting with superior quality aluminium paint of approved make and brand including smoothening surface by sand papering etc. on steel surface :				
	(b) Two coats	SQM	100	57	5,700.00
<b>12 2</b>	<b>ACRYLIC EMULSION PAINT</b>				
	Applying Acrylic Emulsion Paint of approved make and brand on walls and ceiling including sand papering in intermediate coats including putty (to be done under specific instruction of Superintending Engineer) : (Two coats)				
	ii) Luxury Quality	SQM	550	70	38,500.00
<b>12 3</b>	<b>FRENCH POLISHING ON WOOD WORK</b>				
	French polishing to wood work including preparing surface (high gloss)				
	(a) On new wood work	SQM	180	700.5	1,26,090.00
	(b) On old French polished surface including complete removal of the old polish.	SQM	680	807	5,48,760.00

	<b>NOTE : For high gloss polish the rate shall be increased by 50% over the rate for ordinary gloss. This work should not be executed without specific permission of Superintending Engineer.</b>				
<b>12 4</b>	<b>POLYURETHANE POLISH TO WOOD WORK</b>				
	Polyurethane Polishing to woodwork with required colour as approved by Engineer-in-Charge with preparing surface including scaffolding and hire charges of compressor machine including cost of filler and hardener material such as P. U. Sealing, P. U. Top coat (Matt/Glossy), Thinner, Spirit etc. and inclusive of all operation, material and labour complete as per direction of Engineer-in- Charge.	SQM	320	837	2,67,840.00
<b>12 5</b>	<b>MELAMINE FINISH OVER POLISHED WOOD WORK</b>				
	Melamine finish coating over polished wooden surface after preparing the surface as per decision and direction of Engineer-in-Charge.	SQM	1020	75	76,500.00
<b>12 6</b>	<b>REMOVING SCALES, BLISTERS FROM PAINTED SURFACE</b>				
	Removing loose scales, blisters etc. from old painted surface and thoroughly smoothening the surface to make the same suitable for receiving fresh coat of paint.	SQM	10500	21	2,20,500.00
<b>12 7</b>	<b>REMOVING OLD PAINT FROM BLISTERED SURFACE</b>				
	Removing old paint from blistered painted surface with application of soda, sajimati or any approved chemical paint remover and exposing the original surface including cleaning and thorough washing to remove all traces of the removing agent including taking out shutters and refixing the same where necessary.	SQM	10500	39	4,09,500.00
<b>12 8</b>	<b>REMOVING OLD PAINT FROM METAL SURFACE</b>				
	Removing old paint from blistered painted surface of steel or other metal by chipping	SQM	450	47	21,150.00

	including scraping and cleaning and exposing the original surface.				
<b>12 9</b>	<b>REMOVING PAINT FROM TIMBER SURFACE</b>				
	Removing thick layers of paint from heavily cracked and blistered painted surface of timber by careful burning with blow lamp including smoothening exposed surface of timber with pumice stone or glass and preparing the same for fresh treatment.	SQM	350	52	18,200.00
	N.B.: (Payment against item (1, 2, 3, 4) of subhead B will be made only when done at specific direction of the Engineer- in-charge. Cost of taking out shutter etc.for this item and rehangng the same or changing glass panes cracked or broken in the operation will be deemed to be covered by the rate of this item and no seperate payment therefore shall be made.)				
<b>13 0</b>	<b>RENDERING SURFACE WITH PLASTER OF PARIS</b>				
	(a) Rendering the surface of walls and ceiling with plaster of paris (thickness not less than 1.5 mm.)	SQM	250	65	16,250.00
<b>13 1</b>	<b>RENDERING SURFACE WITH CEMENT BASED WALL PUTTY</b>				
	(b) Rendering the surface of walls and ceiling with white cement based wall putty of approved make and brand(1.5mm thick)	SQM	3700	110	4,07,000.00
<b>13 2</b>	<b>CLEANING WALLS</b>				
	(a)Cleaning the walls and ceiling by scraping, sand papering and smoothening down the surface including putting.	SQM	1200	17	20,400.00
<b>13 3</b>	<b>WASHING WALLS</b>				
	(b) Washing & cleaning the wall surface & ceiling by soft detergent powder & soft water & render the surface free of dust, stain etc.	SQM	2000	8	16,000.00
	<b>A. ORIGINAL WORKS</b>				

<b>13 4</b>	<b>INDIAN SHEET GLASS</b>				
	Supplying best Indian Sheet glass 5 mm thick including cutting to required sizes, setting on putty bases and fitted and fixed with teak glazing beads (19 mm x 12 mm) including putty and nails as necessary complete. (In all floors for internal wall & upto 6 m height for external wall)	SQM	350	948	3,31,800.00
<b>13 5</b>	<b>SUN CONTROL WINDOW FILM</b>				
	Supplying and affixing optically clear polyester sun control window film having acrylic pressure sensitive adhesive on one side & an acrylic abrasion resistant coating on the other, with composition of infrared absorbing carbon & free from any optical defect. The film characteristics should conform to ASTM E308, ASTM E903, ASTM E84 and ASHRAE. The film should be pasted after preparatory works without any cracking, delamination, bubbling, discolouring and variation in total transmission of light across the width at any portion long the length doesn't exceed 2% over the average including scaffolding & relevant others to complete in all respect as per manufacturer's specification & direction of Engineer -in-Charge. (Note: This work should not be executed without specific permission of Superintending Engineer)				
	(b) Superior Quality : Film Thickness - 2.0 Mil, Glare Reduction > 75%, U factor < 1.03, Emissivity < 0.70	SQM	320	544	1,74,080.00
	<b>B. MISCELLANEOUS ITEMS</b>				
<b>13 6</b>	<b>RENEWING TEAK WOOD BEADS</b>				
	Renewing teak wood beads of glass panes (each pane not exceeding 0.2 Sq.m)	EACH	350	48	16,800.00
<b>13 7</b>	<b>REMOVING PAINT MARK FROM GLASS PANES</b>				
	Cleaning and removing paint mark from glass pane with spirit and removing strains etc.	SQM	350	17	5,950.00
<b>13</b>	<b>TAKING OUT EXISTING BROKEN GLASS</b>				

<b>8</b>	<b>FROM SHUTTER</b>				
	Taking out carefully from shutter existing broken glass panes, cutting the same to smaller and utilising the same, small pane including cost of fitting and fixing.				
	(a) Putty and Nails	EACH	120	18	2,160.00
	(b) With Teak wood Beads and Nails	EACH	100	33	3,300.00
	<b>Additional Items</b>				
<b>13 9</b>	<b>ANTI SKID FULL BODY GRANULAR FINISHED VITRIFIED TILES</b>				
	Supplying and laying true to line and level Anti-Skid, Full Body, Homogeneous & Granular finish Vitrified Tiles conforming to IS:15622-2006 & IS 4457-2007 and testing shall be made in accordance with IS:13630 [Non- modular sizes for tiles with Skid resistance > 0.5, Mohr's hardness > 5.0, Staining resistance: Class-1, Water Absorption: E < 0.5%], MOR > 35 N/sq.mm in Internal area of building e.g. Toilet Block, Passage, Corridor, Accessible Open Terrace etc. set in 20 mm sand cement mortar (1:4) and 2 mm thick cement slurry at back side of tiles using cement @ 2.91 Kg./Sqm or using Polymerised Adhesive (6 mm thick layer applied directly over finished artificial stone floor/ Mosaic etc without any backing course) laid after application slurry using 1.75 Kg of cement per Sqm below mortar only, joints grouted with admixture of white cement and colouring pigment to match with colour of tiles/ epoxy grout materials of approved make as directed and removal of wax coating of top surface of tiles with warm water and polishing the tiles using soft and dry cloth upto mirror finish complete including the cost of materials, labour and all other incidental charges complete true to the manufacturer's specification and direction of Engineer-in-Charge. (White cement, synthetic adhesive and grout material to be supplied by the contractor).				
	Sizes-300 mm x300mm x10 mm with breaking strength > 1200 N				
	In Ground Floor	SQM	20	897	17,940.00
	In First Floor	SQM	20	909	18,180.00
	In Second Floor	SQM	20	921	18,420.00

	In Third Floor	SQM	20	933	18,660.00
	In Fourth Floor	SQM	20	945	18,900.00
	In Fifth Floor	SQM	20	961	19,220.00
	In Sixth Floor	SQM	20	977	19,540.00
	Sizes-600 mm x600mm x10 mm with breaking strength > 1500 N				
	In Ground Floor	SQM	20	1580	31,600.00
	In First Floor	SQM	20	1592	31,840.00
	In Second Floor	SQM	20	1604	32,080.00
	In Third Floor	SQM	20	1616	32,320.00
	In Fourth Floor	SQM	20	1628	32,560.00
	In Fifth Floor	SQM	20	1640	32,800.00
	In Sixth Floor	SQM	20	1656	33,120.00
	<b>Note: Add extra for each addl, floor over the rate above Ground Floor (I) upto 4 th floor- Rs. 12/-per Sq.m (II) above 4th floor -Rs. 16/- per Sq.m</b>				
<b>140</b>	<b>FRAMES FOR FIRE DOOR SHUTTERS</b>				
	Supplying fitting & fixing frames for Fire resistant acoustic door shutters 1st class Malaysian Hardwood Frame (densified to 810 kg/cum) and pressure treated with fire retardant chemicals in vacuum impregnation vessel under 160 psi pressure as per IS:401 and kiln seasoned to moisture below 15% as per IS:1141 of section 120 mm X 70 mm spray quoted with 2 coats of intumescent paint of minimum 200 micron, with standard double acoustic seal (equivalent to Hafele) placed along two faces of rebate for sound insulation and single row of Brush- Type intumescent strip of size 10 mmx 4 mm affixed in the slit of the Frame for fire and smoke sealing, etc. complete as per direction of Engineer - inCharge including a protective coat of painting at the contact surfaces of the frame excluding cost of concrete, Iron butt hinges and M.S clamp at Ground Floor. [Note : Specific permission of the Superintending Engineer is required for execution of this item. ]				
	In Ground Floor	METRE	15	1509	22,635.00
	In First Floor	METRE	15	1510	22,650.00
	In Second Floor	METRE	15	1511	22,665.00

	In Third Floor	METRE	15	1512	22,680.00
	In Fourth Floor	METRE	15	1513	22,695.00
	In Fifth Floor	METRE	15	1514.5	22,718.00
	In Sixth Floor	METRE	15	1516	22,740.00
	<b>Note: Add extra for each addl, floor over the rate above Ground Floor for item: (I) upto 4 th floor- Rs. 1.00/- per m (II) above 4th floor -Rs. 1.50/- per m</b>				
<b>14 1</b>	<b>FIRE DOOR SHUTTER</b>				
	Supplying & fitting of 65mm thick asbestos free - fire, heat and smoke resistant composite Accoustic Door Shutter complying with fire performance- FD120 as per IS:3614 (part -II)- comprising of 2x 8 mm Calcium Silicate boards over Chemically treated (with Fire retardant chemicals in pressure impregnation vessels under 160 psi pressure as per IS:401 and kiln seasoned to moisture below 15% as per IS:1141) internal timber (Malaysian Hard Wood,densified to 810kg/cum ) frame work of 100 mm x32 mm with 32mm thick infill of ceramic fiber (density 128Kgs/cum), vermaculite mix faced with 6 mm Fire retardant High Density fire board, internally lipped with hardwood beading, and pasted in Hydraulic Press under 25 MPa, spray coated with 2 coats of in-tumescent paint of minimum 200 micron, and with 1 row of Brush-Type intumescent strip of size 10mmx 4mm affixed on peripheral slit on all edges of shutter except bottom for fire and smoke sealing and placement of 3 mm thick rubber membrane, at the inside face, sandwiched between calcium silicate board & high density fire retardant board , without any external lipping including fitting ,fixing shutters in position but excluding the cost of hinges & other fittings as per direction of Engineer -in -charge complete in all respect in Ground Floor. [Note : Specific permission of the Superintending Engineer is required for execution of this item.]				
	In Ground Floor	SQM	6	11319	67,914.00
	In First Floor	SQM	6	11331	67,986.00
	In Second Floor	SQM	6	11343	68,058.00
	In Third Floor	SQM	6	11355	68,130.00

	In Fourth Floor	SQM	6	11367	68,202.00
	In Fifth Floor	SQM	6	11380	68,280.00
	In Sixth Floor	SQM	6	11393	68,358.00
	<b>Note: Add extra for each addl, floor over the rate above Ground Floor for item:(I) upto 4 th floor- Rs. 12/-per Sq.m(II) above 4th floor -Rs. 16/- per Sq.m</b>				
<b>14 2</b>	<b>CRASH BAR/PANIC BAR</b>				
	Supplying, fitting & fixing Surface mounted Crash Bar/ panic Bar of touch pad style, made of heavy duty cast iron/ steel body & latches with SS, BHMA certified & conforming to ANSI A 156.3 for grade-1 (3 hours fire rated) and suitable for surface mounting to wooden/hollow metal/ Al framed door with opening upto 900mm, with maximum operating force 6 kg for unlocking easily & outwardly during emergency, complete in all respect as per direction & satisfaction of Engineer-in-Charge. (Note: To be installed at "FIRE EXIT" only under location specific instruction of Engineer-in -Charge.)				
	for door opening 900	EACH	15	7104	1,06,560.00
	for door opening 1200	EACH	5	8081	40,405.00
<b>14 3</b>	<b>DOOR CLOSER</b>				
	Supplying, fitting & fixing Surface mounted overhead Door Closer for 2 hour fire rated doors, of size EN-4 for leaf width upto 950/ 1100mm weighing maximum 60/ 80 kgs, CE certified, marked & conforming to EN 1154-2003 of approved quality of reputed brand, complete as per direction & satisfaction of Engineer-in-Charge.				
	for leaf width upto 950mm	EACH	160	3511	5,61,760.00
<b>14 4</b>	<b>D TYPE DOOR HANDLE</b>				
	Supplying, fitting & fixing Stainless Steel 'D' or 'H' type of size 300 mm x 19 mm tubular Handle with Grade 304, CE certified, marked & conforming to EN - 1154, of approved quality of	EACH	8	1571	12,568.00



	reputed brand as per direction of Engineer-in-Charge fitted and fixed complete including all incidental charges.				
<b>14 5</b>	<b>FRP WALL PANELS</b>				
	Providing and Fixing Structural FRP members composition that shall consist of a glass fiber reinforced polyester or vinyl ester resin matrix, approximately 50% glass by weight. Continuous strand glass mats or stitched reinforcements shall be used internally for transverse strength. The FRP wall panels shall be used to make designed wall panels of approved designs and shade. The designs shall be made by methods of die- cast moulding. The section of the FRP Panels shall not be less than 100mm thick The panels shall be fixed with the wall by means of M.S. Structural members or other necessary fixing arrangements.	SQM.	10	17900	1,79,000.00
<b>14 6</b>	<b>WALLPAPER</b>				
	Providing & fixing Living wall paper (Danmi, Benz specification) gravure printed-pre-trimmed-washable -strippable of approved shade and design including preparation of wall surface, fixing with suitable glue as per the manufacturer specification and as per direction of EIC.	SQM.	120	1035	1,24,200.00
<b>14 7</b>	<b>WOODEN JAMB LINING TO DOORS AND WINDOWS</b>				
	Providing and fixing wooden jamb lining to the windows and doors using SAL wood frame out of 50 x 25 mm covered with 12 mm thick BWR plywood and 4 mm thick wooden veneer complete with 50 x 18 mm Teak wood moulding at periphery of window duly melamine polish etc. complete.	METRE	1995	1549	30,90,255.00
<b>14 8</b>	<b>TEAK WOOD MOULDINGS</b>				
	Providing and fixing decorative machinecut Teak Wood mouldings/skirtings of approved profiles including all labour and materials complete, as per drawings, specifications and directions of the Engineer-in-Charge.				

	MOULDING 100 MM X 100 MM	METRE	180	1072	1,92,960.00
<b>149</b>	<b>WALL PANELLING WITH DECORATIVE PLYWOOD</b>				
	Providing & fixing panelling with one side Decorative plywood having natural veneer of select wood on walls including corners of windows columns , column cladding etc. consisting of frame work with 50 mm x 25 mm size seasoned Sal wood @ 600mm c/c ( approximately ) both ways ( i.e horizontally and vertically ) jointed rigidly with nails, screws etc. with wooden plugs fixed with cement mortar ( 1:3 ) and providing and fixing 6 mm thick BWR plywood ( Greenply / Centuryply make ) on top of the frame work and 4 mm thick one side decorative plywood veneers ( Red oak / walnut / cherry / beech / white oak / white ash / swedish / cedar / maple or other approved shade and texture of Greenply / Centuryply make ) of approved shade & texture to be pasted over the plywood with adhesive ( Fevicol ) without nailing in approved pattern. Finally the paneling will be finished with 25 mm x 150 mm teak wood skirting. The rate to also include cost of applying preservation treatment of timber for rot & termite proofing with wood preservative oil of Berger make fire proofing, finishing the exposed surface of timber with stained spirit polish to the desired colour and melamine finish of ( Wood keeper of Berger make ) melamine finish on decorative plywood, provision of extra frame work as necessary for skirting and making cutouts for electrical switch board, conduits etc. all as per drawing and direction of the Engineer in charge .	SQM.	310	4121	12,77,510.00
<b>150</b>	<b>DECORATIVE PLYWOOD VENEER</b>				
	FIXING 4 MM THICK DECORATIVE PLYWOOD VENEER : Providing and fixing 4 mm thick decorative plywood veneer or approved type ( cherry white beech / steamed beech / silver oak / oregon pine natural cedar / maple ) on old and new surface cedar / maple ) on old and new surface	SQM.	200	2302	4,60,400.00

<b>15 1</b>	<b>LOW HEIGHT PARTITIONS</b>				
	Providing & fixing in position DOUBLE SKIN LOW HEIGHT PARTITIONS on floor consisting of 50 x50 mm well seasoned hard wood battons placed at 600 mm c/c bothways, jointed rigidly with nails, screws etc. & fixed to the floor with metal clamps grouted to floor and providing and fixing 6 mm thick BWR plywood as per IS 303 of "Green ply / Century or approved equivalent make on both sides of the frame work and best quality 1 mm thick laminated sheet of " "Greenlam", "Formica" "Century Mica" Marine make of approved shade, design, & texture to be pasted over the plywood with fevicol SH etc. without nailing in approved patterns.Finally the partition will be provided with 100 x 12 mm Teak wood skirting and 75 mm x 12 mm Teak wood moulding at the top complete with high gloss polishing with Melamine finish, grouting of frame work in walls, floors, etc.	SQM.	200	7000.00	14,00,000.00
	with all enabling works complete as per drawing and direction of Engineer in charge. The rate to also include cost of applying preservative treatment of timber for rot & termite proofing (ASCU), finishing the exposed surfaces of timber with stained spirit polish to desired colour & melamine finish.				
<b>15 2</b>	<b>OFFICER'S TABLE</b>				
	Supplying & placing in position <b>OFFICE TABLE of size 1500 x 750 x 750 (HT)</b> . The table will be provided with one no metal computer keyboard pull out tray, one no drawer unit ( 400 x 450 x 675 mm) with castors containing 2 stationery drawers & 1 no. filing drawer and CPU Trolley. The table top, sides, drawer front and sides, wardrobe shutter, to be made with 25 mm & 18 mm thick Particle Board with laminated finish of 1mm thick laminate of approved shade, factory made with PVC leaping. The rate to include the cost of all fittings and fixtures, the runner for drawer (Quadro 30 of Hettich ) Drawer lock (Prestige 2000 of Hettich) , Drawer handle of approved type (hettich make) all complete with labour and material as per drawing and direction of engineer in charge.	Nos	152	12815.00	19,47,880.00
<b>15 3</b>	<b>POLYESTER INSULATING FILM</b>				
	Providing & installing POLYESTER INSULATING FILM as specified below of M/S Garware polyester or approved equivalent ) on glasses of doors / partitions including thorough cleaning of glass surfaces, scaffolding etc. with all labour & materials complete as per manufacturer's specifications & direction of the Engineer-in charge.				
	Frosted film 1.5 mil .(25 micron)	SQM.	200	550.00	1,10,000.00
<b>15</b>	<b>CP BRASS DOOR STOPPER</b>				

<b>4</b>					
	<b>CP BRASS DOOR STOPPER</b> of hanging type , double buffer with necessary screws etc. with all labor and materials complete as per directions of Engineer in charge.	EACH	160	99.00	15,840.00
<b>15 5</b>	<b>HEAVY DUTY HYDRAULIC FLOOR SPRING</b>				
	Providing and fixing in position Heavy duty Hydraulic <b>FLOOR SPRING</b> as per related IS code ( Garnish/Ozone or approved equivalent) , quality and design, for fixing to doors including necessary screws, adjustable spanners etc. with all labor and materials complete, as per drawing, specification and direction of Engineer-in charge.	EACH	4	3182.00	12,728.00
<b>15 6</b>	<b>HARDWARE FITTINGS FOR DOORS</b>				
	Supplying and fixing Chromium plated brass <b>HARDWARE FITTINGS</b> of approved quality , make and colour to doors and window shutter with required number of screws, etc. with all labour and materials complete,as per (Hettich make ) manufacture's recommendations, drawings, and direction of the Engineer in charge.				
	<b>TOWER BOLT</b>				
	600 mm x 10 mm	EACH	160	1193.00	1,90,880.00
<b>15 7</b>	<b>MORTICE LOCK</b>				
	Providing and fixing in position <b>MORTICE LOCK</b> of approved make ( Godrej or approved equivalent) CP brass body, 6 lever, conforming to IS 2209 inclusive of pair of handles of pressure Die cast Zinc alloy , Satin Chromomium finished, with necessary screws etc. with all labour and materials complete, as per drawings, specifications and direction of the Engineer -in charge.	EACH	160	845.00	1,35,200.00
<b>15 8</b>	<b>URINAL PARTITION</b>				
	Providing and fixing 18 mm thick marble partition in between two urinals as per instruction including chamferig of the corners of the marble. The size of the urinal partition shall be 750mm high and 600mm deep. The work includes cutting chase in the wall and using adhesives to fix the partitions.	EACH	14.00	1812.00	25,368.00
<b>15 9</b>	<b>WOODEN PELMATE</b>				
	Providing & fixing in position wooden Pelmate of size 150 mm x 150 mm made of 18mm thick BWR Plywood jointed with fevicol & nails finished on top with 4mm thick decorative plywood veneer pasted over plywood with adhesive (Fevicol SH).finished with melamine polish. Finally all the edges of the plywood will be covered with	RM	130.00	1662.00	2,16,060.00

	4mm thick Teak Wood Lipping finished with stained spirit polish. The cost also include cost of polishing the internal surface of the pelmate with stained spirit polish.				
<b>160</b>	<b>BAFFLE FALSE CEILING</b>				
	Providing and fixing Luxalon® 50mm wide Baffle Ceiling System manufactured by M/s. Hunter Douglas India Pvt. Ltd. / Armstrong , of approved colour consisting of Baffle 50 mm wide x 100mm height x 0.6mm thick square edged baffle having a length upto 4 mtrs, Coil Coated (chromatised for maximum bond between metal and paint, enamelled twice under high temperature, visible side with a full primer and finish coat, the inner side with a Primer coating and skin coat on a Continuous Paint line) corrosion resistant aluminium alloy for higher strength. The Baffle shall be bolted on to a U100 top & bottom cover, which will be fixed on to L-shaped Galvanised steel angle. The baffle shall be fixed in a module of 100-150mm as per architect's specifications. The L shaped galvanised angle is spaced at a centre to centre distance of 1200mm. The L shaped galvanised angle is suspended by means of suspension angle and anchor fasteners at a centre to centre distance of 1200mm.	SQM	850.00	2905.00	24,69,250.00
<b>161</b>	<b>PARTLY GLAZED FULL HEIGHT PARTITION</b>				
	Providing and erecting Partly Glazed Full Height Double Skin Partition in metal stud framework as per drawing for side partition. The framework is to be done by fixing metal studs to floor & ceiling channels, and intermediate channels with suitable fixtures. The sections are to be placed at 600 mm c/c both vertically & horizontally except for the glazed portion. Vertical Metal Studs shall be 48 mm GI sections (Gypsteel Ultra make) of 0.55 mm thickness with flanges of 32 mm & 34 mm. Horizontal Channels shall be 50 mm GI sections (Gypsteel Ultra make) of 0.55 mm thickness with equal flanges of 32 mm. The framework is to be covered by 9 mm thick BWP plywood on both sides with suitable fixtures. The surface is to be finished with [1 mm thick high gloss laminate], or, [4 mm thick teak wood veneer with high gloss Polyurethane coating] of approved shade & make. The veneer/ laminate shall be pasted on both sides of the partition. The partition shall be made solid up to a height of 900 mm from FFL, and thereafter, glazed up to a height of 2000 mm. The glazing is to be done with machine polished 8 mm thick clear float glass as per standard specification, fixed with continuous polished teak wood glazing beads of approved shape & shade. The work is to include all necessary materials, accessories, labour, tools & tackles, and also allow provisions for electrical, computer & telephone wiring conduits, switch boxes, etc." All materials should be approved by the EIC. Executed elevation area is to be measured for finished work."	SQM	350.00	3200.00	11,20,000.00

<b>16 2</b>	<b>1200MM HIGH DOUBLE SKIN PARTITION</b>				
	Providing and erecting 1200 mm high Double Skin Solid Partition in metal stud framework as per drawing: The framework is to be done by fixing metal studs to floor & ceiling channels, and intermediate channels with suitable fixtures. The sections are to be placed at 600 mm c/c both vertically & horizontally. Vertical Metal Studs shall be 48 mm GI sections (Gypsteel Ultra make) of 0.55 mm thickness with flanges of 32 mm & 34 mm. Horizontal Channels shall be 50 mm GI sections (Gypsteel Ultra make) of 0.55 mm thickness with equal flanges of 32 mm. The framework is to be covered by 9 mm thick BWP plywood on both sides with suitable fixtures. The surface is to be finished with [1 mm thick high gloss laminate], or, [4 mm thick teak wood veneer with high gloss Polyurethane coating] of approved shade & make. The work is to include all necessary materials, accessories, labour, tools & tackles, and also allow provisions for electrical, computer & telephone wiring conduits, switch boxes, etc." All materials should be approved by the EIC. Executed elevation area is to be measured for finished work."	SQM	580.00	3000.00	17,40,000.00
<b>16 3</b>	<b>FRAMELES GLASS PARTITION</b>				
	Providing and erecting Fixed-type Frameless Glass Partition as per drawing. The glazing shall be done with 12 mm thick machine polished toughened glass. The partition is to be fixed with patch fittings, and / or, continuous polished teak wood glazing beads of approved shape & shade, as directed. All edges of the glass are to be finished with mirror polishing. The work is to include all necessary materials, accessories, labour, tools & tackles. "All materials should be approved by the EIC Executed elevation area is to be measured for finished work."	SQM	30.00	5225.00	1,56,750.00
<b>16 4</b>	<b>SOLID CORE DOOR SHUTTER FOR PARTITIONS</b>				
	Providing and fixing Partly Glazed Solid Core Door Shutter, 2100 mm high, as per drawing: The core of the shutter is to be made out of 35 mm thick phenol-bonded best quality flush door of approved make. The surface is to be finished with [1 mm thick high gloss laminate]. The door shall be made solid up to a height of 900 mm from FFL, and thereafter, glazed up to a height of 2000 mm. The glazed portion is to be fitted with 8 mm thick clear glass as per standard specification, fixed with continuous polished teak wood glazing beads of approved shape & shade. The door is to be provided with 125 mm heavy duty SS butt hinges @ 3 no. per door shutter, and 1 no. door stopper, 1 no. SS handle & 1 no. SS tower bolt per door shutter, all of	SQM	160.00	3000.00	4,80,000.00

	approved make. The work is to include all necessary materials, accessories, labour, tools & tackles. "All materials should be approved by the EIC. Executed elevation area is to be measured for finished work."				
<b>16 5</b>	<b>DOOR FRAMES FOR PARTITION</b>				
	Providing and fixing Door Frames to partitions as per drawing: The frame shall be of size 75 mm X 50 mm, made out of clear steam beech wood or well-seasoned teak wood, free of knots. Proper rivets & grooves for fixing of door shutters & locks are to be made before fixing to the partitions. The job is to be finished with melamine polish and other accessories like clamp, screw, etc. as required complete. The work is to include all necessary materials, accessories, labour, tools & tackles. "All materials should be approved by the EIC. Executed volume of finished wood work is to be measured for complete work."	CUM	1.90	40000.00	76,000.00
<b>16 6</b>	<b>STORAGE UNITS</b>				
	Providing and placing in position Storage Units with openable shutters, 450 mm deep & 900 mm high, as per drawing: The storage unit shall be made out of 19 mm thick BWP block board for sides, top & bottom. There shall be a shelf in the centre, made out of 19 mm thick BWP block board. The back and shutters of the storage unit shall be made out of 12 mm thick BWP plywood. All the exposed sides, top & front are to be finished with [6 mm thick solid surface material], or, [1 mm thick high gloss laminate], or, [4 mm thick teak or natural wood veneer with high gloss Polyurethane coating] of approved shade & make on the surface. The inner surfaces are to be finished with French polish. All the exposed edges are to be covered with polished teak wood lipping. The job is to be completed with all necessary hardwares like 100 mm SS butt hinges, ball catches, locks, handles, tower bolts, etc. as applicable. The bottom of the unit is to be fixed to a 75 mm X 37.5 mm polished teak wood framework. The work is to include all necessary materials, accessories, labour, tools & tackles except for only solid surface material. The fixing of solid surface material on top only as above shall be a separate item. "All materials should be approved by the EIC. Total executed area of the face of all units shall be measured for finished work."	SQM	320.00	5000.00	16,00,000.00
<b>16 7</b>	<b>FULL HEIGHT STORAGE CABINET</b>				

	Providing and placing in position 450 mm deep Storage Units, 2100 mm high or more, as per drawing: The storage unit shall be made out of 19 mm thick BWP block board for sides, top & bottom and shelves. The back of the storage unit shall be made out of 12 mm thick BWP plywood, and shutters out of 19 mm thick BWP plywood. Each cabinet shall be approximately 750 mm high & 600 mm wide or as directed. All the exposed sides, top & front are to be finished with [1 mm thick high gloss laminate], or, [4 mm thick teak or natural wood veneer with high gloss Polyurethane coating] of approved shade & make on the surface. All the exposed edges are to be covered with polished teak wood lipping. The inner surfaces are to be finished with French polish. The job is to be completed with all necessary hardware like 100 mm stainless steel butt hinges, ball catches, locks, handles, tower bolts, etc. as applicable. The bottom of the unit is to be fixed to a 75 mm X 37.5 mm polished teak wood framework. The work is to include all necessary materials, accessories, labour, tools & tackles. "All materials should be approved by the EICT. Total executed area of the face of all units shall be measured for finished work."	SQM	160.00	3500.00	5,60,000.00
<b>168</b>	<b>REPAIRING CRACK IN WALL BY CEMENT GROUTING</b>				
	Repairing crack in wall by cement grouting (1 : 2) including widening the crack on the surface (into V section) cleaning and packing the same with cement mortar (1 : 2) and finishing off to match with adjacent surface. (Cement-69 Kg/100 m)	%MTR	10	1360	13,600.00
<b>169</b>	<b>STITCHING CRACK IN BRICK WALL BY CUTTING OUT FACE BRICK 125.MM DEEP</b>				
	(A) Stitching crack in brick wall by carefully cutting out face brick 125 mm. deep into the wall, cleaning the gap and filling up the same with precast cement concrete block carefully set in cement mortar (1:3) including mending good damages and finishing the surface to match with adjacent areas complete as per direction.				
	(i) With plain cement concrete blocks(1:1½:3) with stonechips.				
	(a) Block size 250 x 125 x 75 mm. (Cement-1.85 Kg/No.)	EACH	105	86	9,030.00
	(b) Block size 250 x 125 x 150 mm. (Cement-2.5 Kg/No.)	EACH	120	100	12,000.00
	(ii) With reinforced cement concrete blocks				



	(1:1½:3) with stone chips and nominal reinforcement.				
	(a) Block size 250 x 125 x 75 mm. (Cement-1.85 Kg/No.)	EACH	135	106	14,310.00
	(b) Block size 250 x 125 x 150 mm. (Cement-2.5 Kg/No.)	EACH	120	127	15,240.00
<b>17 0</b>	<b>STITCHING CRACK IN BRICK WALL BY CUTTING OUT FACE BRICK 250MM DEEP</b>				
	(B) Stitching crack in brick wall by carefully cutting out face brick 250 mm. long, 75 mm. thick and 125 mm deep into the wall, cleaning the gap and filling up the same with sound new brick, carefully set in cement mortar (1:3) including mending good damages and finishing the surface to match with adjacent areas complete as per direction.	EACH	480	42	20,160.00
<b>17 1</b>	<b>RENEWING WEATHERED FACE BRICK</b>				
	(C) Renewing weathered face brick including taking out the old brick completely and setting the head brick carefully in cement mortar (1:3) complete, including making good all damages.				
	(i) In stretcher course. ( Cement-0.75 Kg/No.)	EACH	450	37	16,650.00
	(ii) In header course- ( Cement-1.0 Kg/No.)	EACH	1500	38	57,000.00
	(iii) In header course with the new brick projecting 62 mm. to 225 mm. from the wall surface (Cement-0.5Kg/No.)	EACH	490	33	16,170.00
<b>17 2</b>	<b>BONDING AGENT</b>				
	a) Applying 2 coats of bonding agent with synthetic multi functional rubber emulsion having adhesive and water proofing properties by mixing with water in proportion (1 bonding agent : 4 water : 6 cement) as per Manufacturer's specification	SQM	8000	88	7,04,000.00
<b>17 3</b>	<b>HIGH BACK EXECUTIVE CHAIR</b>				

	Gale, High Back with Head rest, Black Mesh Back, Seat Black Fabric, Synchro Tilt Mechanism, Adjustable Lumbar Support, Height Adjustable arms with Polypropylene Pad, Black Nylon Base	EACH	152	17700	26,90,400.00
<b>17 4</b>	<b>MIDBACK CHAIR</b>				
	Supplying and Installation of Midback Chair	EACH	304	16620	50,52,480.00
<b>17 5</b>	<b>CONFERENCE TABLE</b>				
	Prelam Conference Table of size 4200 x 1200 x 730mm ht with Table top made of 25mm prelamPB supported on metal powdercoated understructure with 4 nos Access Flap on Table Top.	EACH	1	71680	71,680.00
<b>17 6</b>	<b>SINGLE SEATER SOFA</b>				
	Supply & installation of Single seater Sofa with handrest made of Wooden frame work and PU cushion of 6" thickness covered with fabric upholstery of approved shade and make.	EACH	10	12300	1,23,000.00
<b>17 7</b>	<b>DOUBLE SEATER SOFA</b>				
	Supply & Installation of Two seater sofa with handrest made of wooden frame with and P.U Cushion of 6" thickness covered with fabric upholstery of approved shade & made	EACH	5	25100	1,25,500.00
<b>17 8</b>	<b>SIDE TABLE FOR SOFA SET</b>				
	Supply & installation of Wooden Corner Table / Center Table (600 x 600) finished with melamine polish of matching shade Table Top should be covered with glass / acrylic straight sheet	EACH	10	9000	90,000.00
<b>17 9</b>	<b>CENTRE TABLE</b>				
	Supply & Installation of Center Table (900 x 450) finished with melamine polish of matching shade , Table top should be provided with glass / acrylic straight sheet.	EACH	5	14000	70,000.00

<b>180</b>	<b>CURTAINS</b>				
	Supplying, stitching and fixing in position good quality curtain of Vimal or approved equivalent ( cost of cloth not less than Rs. 400/- four hundred ) only per meter of approved cloth and design including providing necessary lining with markin cloth, fixing curtain tape & PVC curtain hooks , etc. fixing in position with all labour and materials as per directions of engineer in charge with all labour and materials complete	Metre	130	680	88,400.00
<b>181</b>	<b>POP CORNICE</b>				
	"Providing mouldings, cornices and floral patterns in the ceilings and walls with plaster of paris in approved designs and patterns including all materials, labours, scaffoldings, tools and tackles complete to the entire satisfaction of the Engineer-in-Charge. Note: Only area of base in contact with wall / ceiling shall be measured. "	Sq.M.	140	394	55,160.00
<b>182</b>	<b>FRAMELESS GLASS DOOR</b>				
	Providing and fixing in position FRAMELESS GLASSDOOR made with i 2 mm thick clear ioughned glass ofSaint Gobain / Pilkington / Modiguard make fixed to floor and sofiit of ceiling / false ceiling rigidly and ai the centres wnerever required in line and level with SS patch fittings, floor spring of Dorma, Ozone or approved equivalent make. Finally the dooi'will be finished with S S door handle with locking arrangement of Ozone / Hettich make with all enabling wrks ccmpleie as per drawing . specification and direction of the Engineer tn charge.	Sq.M.	50	8421.00	4,21,050.00
<b>TOTAL OF PART A (SECTION 2)</b>					<b>7,11,55,428.00</b>

**PART A: CIVIL, INTERIOR, SANITARY PLUMBING AND FIRE WORKS FOR REFURBISHMENT  
OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001**

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**Section 3: Plumbing and Sanitary Works of Main and Annexe Building**

	Description	Unit	Quantity	Unit Rate	Amount
1	Supplying, fitting and fixing white vitreous china best quality approved make wash basin with C.I. brackets on 75 mm X 75 mm wooden blocks, C.P. nut including mending good all damages and painting the brackets with two coats of approved paint.				
	Model - 10103, Star White, Neo largo basin 63x45 cm	each	61	3340.00	2,03,740.00
2	Supplying, fitting and fixing complete Bottle waste trap (Heavy Quality).				
	(a) Chromium plated Bottle trap 32 mm with 190 mm long connecting pipe and wall flange. Model - F850004, Add ons. HIND WARE / EQUIVALENT MAKE	Each	94	1605.00	1,50,870.00
3	Supplying, fitting and fixing complete Waste coupling 32mm Full thread. Model - F850001CP, Add ons. HIND WARE / EQUIVALENT MAKE	Each	61	430.00	26,230.00
4	Supplying, fitting and fixing complete Piller cock. Model - F360001, Waste coupling 32mm Full thread. HIND WARE / EQUIVALENT MAKE	Each	61	1550.00	94,550.00
5	Chromium plated Angular Stop Cock with wall flange. Model - F330043, Contessa plus. HIND WARE / EQUIVALENT MAKE	each	228	870.00	1,98,360.00
6	Supplying, fitting and fixing approved brand P.V.C. CONNECTOR white flexible, with both ends coupling with heavy brass C.P. nut, 15 mm dia. HIND WARE / EQUIVALENT MAKE				
	i) 600mm long	each	228	107.00	24,396.00
7	Supplying, fitting and fixing E.W.C. in white glazed vitreous chinaware of approved make complete in position with necessary bolts, nuts etc.				
	Model - 20024, 21038, Star White, Constellation dual flushing floor mounted WC (P/S Trap). HIND WARE / EQUIVALENT MAKE	each	59	11080.00	6,53,720.00
8	Supplying, fitting and fixing Health Faucet Brass with double lock 1m brass plated flexible hose and wall hook. Model - F160002. HIND WARE / EQUIVALENT MAKE	Each	59	1840.00	1,08,560.00
9	11. Supplying, fitting and fixing 32 mm dia. Flush Pipe of approved make with necessary fixing materials and clamps complete.				
	i) Polythene Flush Pipe	each	59	155.00	9,145.00
10	Supplying, fitting and fixing cp toilet paper holder of approved make with spindle as necessary.				
	Model - F840008, Immacula	each	59	1085.00	64,015.00

11	Chromium plated double Robe Hook. Model - F870007, Rubbic	each	59	760.00	44,840.00
12	Supplying, fitting and fixing liquid soap container.				
	(a) Cromium plated.	each	48	393.00	18,864.00
13	Supplying, fitting and fixing bevelled edged mirror 5.5 mm thick silver red as per I.S. 3438 / 1965 together with brass C.P. hinges.				
	(ii) 600 mm X 450 mm	each	29	484.00	14,036.00
14	Supplying, fitting and fixing Flat back urinal star white vitreous chinaware of approved make in position with brass screws on 75 mm X 75 mm X 75 mm wooden blocks complete.				
	60021, Star White, Flow sensor urinal 29.5x32.5x 57.5 cm	each	31	12020.00	3,72,620.00
15	Supplying, fitting and fixing porcelain partition wall of approved make of size 618 mm X 310 mm complete in all respect.	each	31	1132.00	35,092.00
16	Supplying, fitting & fixing Aluminium domical grating.				
	i) 100 mm dia	each	125	49.00	6,125.00
17	Supplying fitting fixing of SS sink with all fittings of approved make complete.				
	Sink with drain board 1050x450x180	Each	2	5006.00	10,012.00
	Sink only 530x430x180	Each	RO	3285.00	
18	CP Sink Cock with regular swinging spout (table mounted model) (Equivalent to code no. 5357 of Jaquar or similar brand)	Each	2	1022.00	2,044.00
19	Supplying, fitting and fixing C.P. Extension Pipe	Each	100	133.00	13,300.00
20	1 Supplying, fitting & fixing Cast iron soil pipe only conforming to I.S. 3989 / 1970 and I.S. 1729/1964 with bobbins, nails etc. including making holes in the wall, floor etc. and cutting trenches etc. in any floor through masonry concrete, if necessary, and mending good damages with necessary jointing materials and painting two coats to the exposed surface with approved paint complete. (Measurement will be made along the center line of the total pipe line in fitted condition including specials, payment for specials & Painting will however be paid seperately).				
	(a) With valamoid joints including sealing with sand cement mortar (4:1) upto quarter depth.				
	(i) 150 mm dia. (internal)	Mtr	RO	1373.00	
	(ii) 100 mm dia. (internal)	Mtr	RO	688.00	
	(iii) 75 mm dia. (internal)	Mtr	RO	571.00	
	(iv) 50 mm dia. (internal)	Mtr	RO	447.00	
	<b>(b) With lead caulked joints.</b>				
	(i) 150 mm dia. (internal)	Mtr	462	1469.00	6,78,678.00

	(ii) 100 mm dia. (internal)	Mtr	1194	751.00	8,96,694.00
	(iii) 75 mm dia. (internal)	Mtr	RO	617.00	
	(iv) 50 mm dia. (internal)	Mtr	RO	490.00	
21	Supplying, fitting and fixing PVC pipes of approved make of schedule -80 (medium duty) confirm to ASTM D - 1785 and threaded to match with GI pipe as per IS: 1239 (Part-I) with all necessary accessories, specials viz. socket, bend, tee, union, cross, elbo, nipple, long screw, reducing socket, reducing tee, short piece etc. fitted with holder bats clamps, including cutting pipes, making threads, fitting, fixing etc. complete in all respect including cost of all necessary fittings as required, jointing materials and two coats of painting with approved paint in any position above ground. (Payment will be made on the centre line measurements of total pipe line including all specials. No separate payment will be made for accessories, specials. Payment for painting will be made separately)				
	32 mm	metre	64	236.00	15,104.00
	40 mm	metre	42	292.00	12,264.00
	50 mm	metre	18	384.00	6,912.00
22	Supplying, fitting & fixing Cast iron single branch equal with door conforming to I.S. 1729/1970 including joining and painting two coats to the exposed surface with approved paint complete. (Payment of Painting will however be paid separately).				
	(a) With valamoid joints including sealing the top with cement mortar (4:1)				
	(i) 150 mm dia.	each	RO	1539.00	
	(ii) 100 mm dia.	each	RO	794.00	
	(iii) 75 mm dia.	each	RO	543.00	
	(iv) 50 mm dia.	each	RO	476.00	
	<b>(b) With lead caulked joints</b>				
	(i) 150 mm dia.	each	10	1727.00	17,270.00
	(ii) 100 mm dia.	each	66	905.00	59,730.00
	(iii) 75 mm dia.	each	RO	622.00	
	(iv) 50 mm dia.	each	RO	510.00	
23	Supplying, fitting & fixing Cast iron double branch equal with door conforming to I.S. 1729/1970 including jointing and painting two coats to the exposed surface with approved paint complete. (Payment of Painting will however be paid separately).				
	(a) With valamoid joints including sealing the top with cement mortar (4:1)				

	(i) 150 mm dia.	each	RO	1803.00	
	(ii) 100 mm dia.	each	RO	916.00	
	(iii) 75 mm dia.	each	RO	709.00	
	(iv) 50 mm dia.	each	RO	634.00	
	<b>(b) With lead caulked joints</b>				
	(i) 150 mm dia.	each	5	2074.00	10,370.00
	(ii) 100 mm dia.	each	5	1069.00	5,345.00
	(iii) 75 mm dia.	each	RO	818.00	
	(iv) 50 mm dia.	each	RO	699.00	
24	Supplying, fitting & fixing H.C.I. bend with door conforming to I.S.S. including jointing complete and painting two coats to the exposed surface with approved paint complete. (Payment of Painting will however be paid seperately).				
	(a) With valamoid joints including sealing the top with cement mortar (4:1)				
	(i) 150 mm dia.	each	RO	862.00	
	(ii) 100 mm dia.	each	RO	543.00	
	(iii) 75 mm dia.	each	RO	421.00	
	(iv) 50 mm dia.	each	RO	372.00	
	<b>(b) With lead caulked joints</b>				
	(i) 150 mm dia.	each	28	1040.00	29,120.00
	(ii) 100 mm dia.	each	100	646.00	64,600.00
	(iii) 75 mm dia.	each	RO	505.00	
	(iv) 50 mm dia.	each	RO	420.00	
25	Supplying, fitting & fixing H.C.I. bend without door conforming to I.S.S. including jointing complete and painting two coats to the exposed surface with approved paint complete. (Payment of Painting will however be paid seperately).				
	(a) With valamoid joints including sealing the top with cement mortar (4:1)				
	(i) 150 mm dia.	each	RO	890.00	
	(ii) 100 mm dia.	each	RO	496.00	
	(iii) 75 mm dia.	each	RO	410.00	
	(iv) 50 mm dia.	each	RO	320.00	
	<b>(b) With lead caulked joints</b>				
	(i) 150 mm dia.	each	60	1068.00	64,080.00
	(ii) 100 mm dia.	each	100	600.00	60,000.00

	(iii) 75 mm dia.	each	RO	494.00	
	(iv) 50 mm dia.	each	RO	369.00	
26	Supplying, fitting & fixing H.C.I. heel rest bend conforming to I.S.S. including jointing complete and painting two coats to the exposed surface with approved paint complete. (Payment of Painting will however be paid seperately).				
	(a) With valamoid joints including sealing the topwith cement mortar (4:1)				
	(i) 150 mm dia.	each	RO	996.00	
	(ii) 100 mm dia.	each	RO	550.00	
	(iii) 75 mm dia.	each	RO	435.00	
	(iv) 50 mm dia.	each	RO	395.00	
	<b>(b) With lead caulked joints</b>				
	(i) 150 mm dia.	each	10	1167.00	11,670.00
	(ii) 100 mm dia.	each	10	649.00	6,490.00
	(iii) 75 mm dia.	each	RO	544.00	
	(iv) 50 mm dia.	each	RO	455.00	
27	(A) Supplying, fitting & fixing H.C.I. offset conforming to I.S.S. including jointing complete with or without ear (75 mm projection) and painting two coats to the exposed surface with approved paint complete. (Payment of Painting will however be paid seperately).				
	(a) With valamoid joints including sealing the top with cement mortar (4:1)				
	(i) 150 mm dia.	each	RO	846.00	
	(ii) 100 mm dia.	each	RO	619.00	
	(iii) 75 mm dia.	each	RO	443.00	
	(iv) 50 mm dia.	each	RO	350.00	
	<b>(b) With lead caulked joints</b>				
	(i) 150 mm dia.	each	5	1023.00	5,115.00
	(ii) 100 mm dia.	each	20	722.00	14,440.00
	(iii) 75 mm dia.	each	RO	527.00	
	(iv) 50 mm dia.	each	RO	399.00	
28	Supplying, fitting & fixing approved patent vent cowl I.C.I. conforming to I.S.S and painting two coats to the exposed surface with approved paint complete. (Payment of Painting will however be paid seperately).				
	(i) 100 mm dia.	each	25	367.00	9,175.00
	(ii) 75 mm dia.	each	RO	273.00	
	(iii) 50 mm dia.	each	RO	241.00	



29	Supplying, fitting and fixing cast iron 'P' or 'S' trap conforming to I.S. 3989 / 1970 and 1729 / 1964 including lead caulked joints and painting two coats to the exposed surface. (Painting to be paid separately).				
	(A) 'P' Trap				
	(i) 50 mm	each	RO	507.00	
	(ii) 75 mm	each	RO	602.00	
	(iii) 100 mm	each	125	948.00	1,18,500.00
	(iv) 150 mm	each	RO	1687.00	
	(B) 'S' Trap				
	(i) 50 mm	each	RO	675.00	
	(ii) 75 mm	each	RO	656.00	
	(iii) 100 mm	each	RO	803.00	
	(iv) 150 mm	each	RO	1468.00	
30	Supplying, fitting and fixing cast iron extension pipes for using in Traps only (connector) conforming to I.S.3989/1970 and 1729/1964 including lead caulked joints complete and painting two coats to the exposed surface with approved paint complete. (Payment of Painting will however be paid separately).				
	(a)(i) 100 mm X 150 mm	each	10	461.00	4,610.00
	(ii) 100 mm X 225 mm	each	10	511.00	5,110.00
	(iii) 100 mm X 300 mm	each	10	555.00	5,550.00
	(iv) 100 mm X 375 mm	each	10	586.00	5,860.00
	(v) 100 mm X 450 mm	each	10	616.00	6,160.00
	(vi) 100 mm X 525 mm	each	RO	685.00	
	(vii) 100 mm X 600 mm	each	20	710.00	14,200.00
31	Supplying, fitting and fixing C.I. square jalli.				
	(i) 100 mm	each	RO	73.00	
	(ii) 150 mm	each	30	102.00	3,060.00
	(iii) 225 mm	each	RO	142.00	
	(iv) 300 mm	each	RO	185.00	
	(v) 450 mm	each	RO	307.00	
32	Supplying, fitting and fixing yard gully with approved H.C.I. grating complete.				
	(i) 225 mm X 150 mm with 230 mm gratings	each	RO	508.00	
	(ii) 150 mm X 100 mm with 150 mm gratings	each	20	311.00	6,220.00
33	Supplying, fitting and fixing S.W. master trap.				
	(i) 150 mm X 150 mm	each	2	947.00	1,894.00

	(ii) 225 mm X 225 mm	each	RO	5720.00	
34	Supplying, fitting and fixing gunmetal wheel valve of approved brand and make tested to 21 kg per sq. cm. (for water lines only).				
	(i) 100 mm dia	each	RO	9608.00	
	(ii) 80 mm dia	each	RO	5591.00	
	(iii) 65 mm dia	each	RO	3929.00	
	(iv) 50 mm dia	each	3	2277.00	6,831.00
	(v) 40 mm dia	each	6	1590.00	9,540.00
	(vi) 32 mm dia	each	24	1160.00	27,840.00
	(vii) 25 mm dia	each	4	778.00	3,112.00
	(viii) 20 mm dia	each	16	604.00	9,664.00
35	Supplying, fitting and fixing CI holder bad clamp including cutting holes in wall ect. and mending good all damages in cement concrete with jhama chips (4:2:1) and cement plaster (6:1) to match and curing complete in all respect.				
	(i) 15 mm dia	each	170	25.00	4,250.00
	(ii) 20 mm dia	each	100	29.00	2,900.00
	(iii) 25 mm dia	each	50	31.00	1,550.00
36	Supplying, fitting and fixing PVC pipes of approved make of schedule -80 (medium duty) confirm to ASTM D - 1785 and threaded to match with GI pipe as per IS: 1239 (Part-I) with all necessary accessories, specials viz. socket, bend, tee, union, cross, elbo, nipple, long screw, reducing socket, reducing tee, short piece etc. fitted with holder bats clamps, including cutting pipes, making threads, fitting, fixing etc. complete in all respect including cost of all necessary fittings as required, jointing materials and two coats of painting with approved paint in any position above ground. (Payment will be made on the centre line measurements of total pipe line including all specials. No separate payment will be made for accessories, specials. Payment for painting will be made separately)				
	(A) For Exposed Work PVC PIPES				
	15 mm	metre	RO	101.00	
	20 mm	metre	110	129.00	14,222.25
	25 mm	metre	11	177.00	1,858.50
	32 mm	metre	84	236.00	19,824.00
	40 mm	metre	110	292.00	32,193.00
	50 mm	metre	77	384.00	29,568.00
	65 mm	metre	95	599.00	56,605.50
	80 mm	metre	194	768.00	1,49,184.00

	100 mm	metre	RO	1134.00	
	125 mm	metre	RO	1504.00	
	150 mm	metre	RO	1824.00	
	<b>(B) For Concealed Work PVC PIPES</b>				
	15 mm	metre	244	137.00	33,445.13
	20 mm	metre	143	158.00	22,562.40
	25 mm	metre	73	205.00	14,959.88
37	Supplying, fitting and fixing PVC pipes <i>for underground work</i> of approved make of schedule -80 (medium duty) confirm to ASTM D - 1785 and threaded to match with GI pipe as per IS: 1239 (Part-I) with all necessary accessories, specials viz. socket, bend, tee, union, cross, elbo, nipple, long screw, reducing socket, reducing tee, short piece etc. fitted with holder bats clamps, including cutting pipes, making threads, fitting, fixing etc. fitted including cost of materials, jointing materials, cutting pipes, making threads, cutting trench up to 1.5 metre below surface of all sort of soil and refilling the same as directed complete in all respect. (Payment will be made on the centre line measurements of total pipe line including all specials. No separate payment will be made for accessories, specials. Payment for painting will be made separately)				
	PVC PIPES				
	15 mm	metre	RO	117.00	
	40 mm	metre	RO	311.00	
	50 mm	metre	26	403.00	10,478.00
	65 mm	metre	70	652.00	45,640.00
	80 mm	metre	RO	795.00	
38	Supplying & Laying double wall corrugated (with external annular corrugation and smooth internal wall) high density polyethylene pipes confirming to IS 16098 (Part-II), 2013 having stiffness class of SN-8 with ring stiffness not less than 8.00 KN/Sqm. And impact resistance TIR value not more than 10% including necessary jointing materials for non pressure under ground drainage, sewage and cross drainage application.				
	150 mm	metre	60	420.00	25,200.00
	200 mm	metre	20	604.00	12,080.00
	250 mm	metre	RO	1011.00	
	300 mm	metre	RO	1349.00	

39	Supplying, fitting and fixing PVC pipes of approved make of schedule -80 (medium duty) confirm to ASTM D - 1785 and threaded to match with GI pipe as per IS: 1239 (Part-I) with all necessary accessories, specials viz. socket, bend, tee, union, cross, elbo, nipple, long screw, reducing socket, reducing tee, short piece etc. fitted with holder bats clamps, including cutting pipes, making threads, fitting, fixing etc. complete in all respect including cost of all necessary fittings as required, jointing materials and two coats of painting with approved paint in any position above ground. (Payment will be made on the centre line measurements of total pipe line including all specials. No separate payment will be made for accessories, specials. Payment for painting will be made separately). [NOTE: THIS ITEM & QTY FOR PUMP ROOM ONLY]				
	<b>(A) For Exposed Work PVC PIPES</b>				
	50 mm	metre	18	384.00	6,912.00
	65 mm	metre	12	599.00	7,188.00
	80 mm	metre	24	768.00	18,432.00
	100 mm	metre	12	1134.00	13,608.00
	Supplying, fitting and fixing check valve (vertical) G.M. tested to 21 kg per sq. cm. [NOTE: THIS ITEM & QTY FOR PUMP ROOM ONLY]				
	(vi) 50 mm	each	2	1447.00	2,894.00
	<b>EXTERNAL WORKS:</b>				
40	Constructing Inspection pit of inside measurement 600mm X 600mm X upto 600mm (depth) with 250 mm thick 1st. class brick work in cement mortar (1:4) on all sides, bottom of the pit consisting of 100 mm thick cement concrete (1:3:6) with stone chips over a layer of jhama brick flat soling, 15 mm thick (1:4) cement plaster to inside walls and out-side walls upto G.L. and 20 mm. thick (1:4) plaster to bottom of the pit, providing necessary invert with cement concrete (1:3:6) with stone chips as per direction, neat cement finishing to entire internal surfaces, top of the pit covered with 100 mm thick R.C.C. slab (1:1.5:3) with stone chips and necessary reinforcements upto 1% and shuttering including 6 mm thick cement plaster (1:4) in all external surfaces of the slab and one 560 mm dia. R.C.C. manhole cover of approved make supplied, fitted and fixed in the slab with necessary fittings, necessary earthwork in excavation in all sorts of soil, filling sides of the pit with earth and removing spoils after work complete in all respect with all costs of labour and materials.				
	ii) With PAKUR Varitey	Each	10	7303.00	73,030.00
	iii) Extra for each additional depth of 150 mm or part thereof beyond initial 600 mm depth.	Each	1	1515.00	1,515.00

41	Constructing of Inspection pit to a depth of 1.5 metre (inside), 250 mm thick 1st class brick work (1:4) in all sides over a layer of jhama brick soling and 150 mm thick cement concrete with stone chips (1:3:6) including necessary earth work, fitting and fixing approved type S.W. master trap, constructing masonry invert with cement concrete (1:1.5:3) with stone chips, plastering inside and outside (outside upto 300 mm below G.L.) with 20 mm thick cement plastering (1:4) and neat cement punning, including supplying, fitting and fixing one 560 mm. dia R.C.C. manhole cover of approved make with R.C.C. slab of 100 mm thick with cement concrete (1:1.5:3) with stone chips including necessary reinforcement (upto 1%) and shuttering and necessary corbelling brickwork (1:4) so that the R.C.C. cover slab rests 150 mm above adjacent G.L., cement plaster (1:4) 10 mm thick on all external surfaces of the top slab as directed complete in all respect and removal of surplus earth with all costs of labour and materials. (Excluding the cost of Master trap only)				
	(i) 900 mm X 750 mm (inside) chamber including fitting and fixing S.W. master trap of 150 mm dia. of approved make A) With Pakur variety. (SAIL/TATA/RINL)	Each	RO	11859.00	
42	Construction of septic tank of different capacities as per approved drawing with 1st class brick work in cement mortar (1:4) including two 560 mm dia. R.C.C. manhole cover (heavy type) of approved make supplied, fitted and fixed in the 100mm thick R.C.C (1:1.5:3) top slab with necessary fittings, 20mm thick cement plaster (4 : 1) with neat cement finish to the internal surfaces and 15 mm thick cement plaster (4 : 1) to outside wall upto 200 mm below G.L floor finished with 25 mm thick grey artificial stone over 100 mm thick R.C.C(1:1.5:3) bottom slab including supplying, fitting and fixing all necessary specials, fittings, S.W. tees, C.I. foot rest etc. including excavation earth in all sorts of soil, shoring, bailing out and pumping out water as necessary, ramming, dressing the bed and refilling the sides of the tanks with earth, removing spoils, filling up the chamber with clear water, removing foreign materials from the chamber and including constructing attached inspection pit as per approved drawing and connecting all necessary pipes, joints etc. with internal plaster work and artificial stone flooring is to be done with admixture of water proofing compound @ 0.5% by weight of cement with all costs of labour and materials.				
	(v) For 100 users	Each	RO	113132.00	
	A) With Pakur variety. (SAIL/TATA/RINL)				
	(vi) For 200 users	Each	RO	177928.00	
	A) With Pakur variety. (SAIL/TATA/RINL)				

43	Construction of circular soak well 2.5 metre deep in all types of sandy soils with dry brick work upto 1.6 metre from the bottom having 150 mm intermediate cement brick work (1:4) band all round and cement brick work (1:4) upto 0.90 metre from top with 20mm thick cement plastering (1:4) to inside face upto the depth of cement brick work, 15mm thick cement plaster (1:4) on outer face from top of the well upto G.L. and 6 mm thick cement plaster (1:4) on top of the R.C.C. cover slab including filling bottom 1.00 metre of inside of the well with brick metal (50 mm to 63 mm size) including R.C.C. cover slab of 100 mm thick with cement conc (1:1.5:3) with stone chips with necessary reinforcement and shuttering including one 560 mm dia. R.C.C. manhole cover (heavy type) of approved make supplied, fitted and fixed in the cover slab with necessary fittings, making necessary arrangements for pipe connections, excavation of well including shoring, dewatering and removing the excess earth from the premises as per direction complete in all respect with all costs of labour and materials. With 250 mm thick dry brick work and 250 mm thick cement brick work (1:6) and 1.00m inside dia.	Each	RO	16577.00	
44	Providing, fixing, testing and commissioning of hand drier with nuts and washer of approved brand including cutting and making good the walls wherever required as directed by Engineering Incharge.	each	16	7500.00	1,20,000.00
45	Supply, fixing, testing and commissioning of tissue paper holder of approved brand with relevant accessories including cutting and making good the walls wherever required as directed by engineering Incharge.	each	16	4500.00	72,000.00
46	Supplying, fitting and fixing bevelled edged mirror 5.5 mm thick silver red as per I.S. 3438 / 1965 together with brass C.P. hinges.				
a)	MIRROR (1925x600) MM	each	11	2000.00	22,000.00
b)	MIRROR (2750x600) MM	each	6	2500.00	15,000.00
47	Providing and fixing pressure reducing station comprising of 2 Nos Gun Metal wheel valves on inlet & outlet & 1 no. GM wheel valve for by-pass 1 No pressure reducing valve with flanged/ screwed connection, 1 No. 'Y' strainer, 2 Nos Pressure gauge on inlet & outlet. The complete system is tested to a pressure not less than 15 Kg/Sq.cm and suitable to reduce the pressure upto 2 Kg/Sq.cm) Including i.e. flanges/ unions, nuts, bolts and washers complete as required. (Note : necessary pipe & fittings will be measured separately).				
	50 mm dia	Each	1	10000.00	10,000.00

48	Supply, installation, testing & commissioning of vertical MSEP filter with adequate dirt holding capacity (suitable for 3 Kg/Sqcm working pressure). Fabricated from MS sheet as per manufacturer's specifications complete with initial charge filter media including painting inside with two coats of non toxic epoxy and with one coat of zinc chromate two coats of synthetic enamel paint outside. Including concrete foundation with cement plaster complete as required. The filter shall also be provided with set of internals for raw water inlet and bottom collecting system. Complete with frontal piping (heavy) and butterfly valves designed on 1.50 m / sec velocity.				
	a. Dual Media Filter	Set	1	250000.00	2,50,000.00
	Filtration Rate	5 CUM/HOUR			
	Working pressure	3Kg/Sq.cm			
	DOS	800MM			
	HOS	1800MM			
	Shell Thickness	6 mm			
	Dish Thickness	8 mm			
	Filter media	As per technical design data			
	Frontal piping with valve and other accessories	65/50 NB (1 Lot)			
49	Supplying, installing, testing and commissioning of dosing system (for domestic water treatment plant) consisting of one HDPE tank of 200 litres capacity with a positive displacement diaphragm dosing pump having variable flowrate of 0-6 lph. The motor shall be suitable for operation at 240 V/single phase/50 Hz. Supply. The pump shall be supplied complete with necessary polypropylene piping, valves, strainers, low level switch and injection fittings. The pump shall be speed & stroke control Asia LMI / equivalent make.	Set	1	45000.00	45,000.00
50	Providing, fixing, testing & commissioning of MS water softening plant (suitable for 3Kg/Sqcm working pressure) complete with initial charge with T-40 NA Resin, multiport valve with built in ejector for controlling all operations), regeneration system, pressure gauge at inlet, outlet and back wash (each with isolation cock), valves, fittings and water hardness testing kit & associated works. Softener shall be suitable for the following duty:	No.	1	300000.00	3,00,000.00
	Inlet Hardness	400 Mg/L			
	between two generators (OBR)	08 Itrs.			

	Filteration Rate	5 CUM/HOUR			
	Working pressure	3Kg/Sq.cm			
	DOS	800MM			
	HOS	1800MM			
	Shell Thickness	6 mm			
	Dish Thickness	8 mm			
	Filter media	As per technical design data			
	Frontal piping with valve and other accessories	50 NB (1 Lot)			
51	Providing and fixing automatic brine preparation system with HDPE salt mixing tank of capacity 1000 ltrs. for 2 regenerations with chemical and concrete foundation as directed by the Engineer.	Set	1	40000.00	40,000.00
52	Supply, installation, testing and commissioning KIRLOSKAR /GRUNDFOSS / WILO make Pump motor set (located in underground Pump house) for lifting / forcing water from water chamber of U.G. Reservoir to WTP to Soft water under ground chamber of required drive (Motor HP), having discharge capacity and pumping head as described below with support clamp/lifting device separate or common base frame with all electrical accessories, with over load protection relay power cable and control cable from MCC to respective motors, earthing including other accessories (recommended by manufacturer) etc., such as 100 mm dia. pressure gauge (range 0-15 Kg./Sq.cm.) with control cock fitted on delivery line.				
	(a) Lift Pump : (Filter Feed Pump)				
	(i) A set of two nos of Mano Block Pump Motor set (1 operating, 1 standby) : Duty Condition of each pump 5cum./Hr. @ of 30 m head	Set of 2	1	150000.00	1,50,000.00
53	Hydropneumatic Pump with Single VFD:				
	( 1 Working & 1 Standby) (preferable make <u>Wilo/Grundfos/Xylem</u> )				
	Providing and fixing hydropneumatic system with Single VFD comprising of following items :				
	2 nos. vertical in-line pumps complete in SS coupled with TEFC motor.				
	Pump Capacity - 10 cum/hr each				
	Head - 40 M				
	1 No. x 500 litre vessel (As required as vendor design) with interchangeable butyl rubber membrane.				



	Electric control panel with change over switch, relays, electrical wiring, cabling from panel to pumps, level controller complete with all accessories as per manufacturer specification.				
	Accessories like NRV's valves, headers, pressure switch, pressure gauge, base frame and concrete foundation complete as required.				
	Hydropneumatic system as described above.				
	Hydropneumatic System:				
	Supply, Installation, Testing And Commissioning Of Compact Self Contained Skid Mounted Hydropneumatic System As Follows:				
	In-Line, Multisage, centrifugal pumps with SS-304 casing and impeller and SS-316 shaft, CI base & head TEFC motor (with mechanical seal)				
	(Vendor to submit performance curves and technical catalog of the proposed model for review & information)				
	The pump shall be selected for performance at best efficiency point. However, the pump selection shall be suitable for performance with set point @ $\pm 20\%$ of the rated head.				
	Nos. of Pumps :	Set of 2	1	700000.00	7,00,000.00
	Water Flow Rate : 10 cum/hr				
	Head : 40 M				
	RPM : 2900				
	Sump pumps (Non-clogging type) in Basement level:				
54	Supply, installation, testing and commissioning GRUNDFOSS/ WILO/XYLEM make Submersible type non-clogging Pump motor set (2 nos. of Pumps located in each sump in underground pump house) of required drive (Motor HP), having discharge capacity and pumping head as described below with all electrical accessories viz.main switch and starter, auto on/off system with float arm (with fixed or flexible arm), over load protection relay, power cable and control cable from main switch and starter with auto on-off with dry running protection to respective motors, earthing having required M.S. galvanised supporting stay/ clamp etc. complete operational.				
	i) A set of two nos Sump pumps (Non-clogging type) having discharge capacity of each pump approx.5 cum/hr at 10 m. pumping head (1 working, 1 standby) Suction from sumps at underground pump house, delivery to surface drain at ground level. Including MCC and allied works (FOR PHE & FIRE PUMP ROOM)	Set of 2	1	170000.00	1,70,000.00

55	Supply, installation, testing and commissioning KIRLOSKAR / GRUNDFOSS / WILO make Pump motor set (located underground Pump house) for lifting / forcing water from soft water under ground Reservoir to Elevated Storage Tank placed on building roof, of required drive (Motor HP), having discharge capacity and pumping head as described below with support clamp/lifting device separate or common base frame with all electrical accessories, with over load protection relay power cable and control cable from MCC to respective motors, earthing including other accessories (recommended by manufacturer) etc., such as 100 mm dia. pressure gauge (range 0-15 Kg./Sq.cm.) with control cock fitted on delivery line, coupling of required size on suction and flexible removable type (Flanged) coupling on delivery end of pump, required M.S. galvanised supporting frame complete operational.				
	(a) Lift Pump : (Domestic)				
	(i) A set of two nos of centrifugal manoblock transfer Pump Motor set (1 operating, 1 standby) : Duty Condition of each pump 10 Kl./Hr. @ of 40 m Pumping head from UGR to Soft water over head tank	Set of 2 (1W + 1SB)	1	250000.00	2,50,000.00
56	Providing and fixing cast iron"Y" strainer with flange ends with pressure rating of PN-1.0 of approved quality as per IS				
	65 mm dia	Metre	1	14000.00	14,000.00
	80 mm dia	Metre	2	18500.00	37,000.00
57	Providing and fixing cast iron dual plate wafer type vertical non-return valve with flange ends with pressure rating of PN-1.0 of approved quality as per IS: 5312				
	65 mm dia	Each	4	5500.00	22,000.00
	80 mm dia	Each	2	6570.00	13,140.00
58	Providing & fixing male/ female screwed end full way lever operated forged brass ball valve of brass body with forged brass hard chromeplated ball & teflon seat tested to a pressure 15 Kg / sqcm with (threaded joints) complete as required.				
	15 mm dia.	Each	0	1000.00	
	40 mm dia.	Each	0	1860.00	
59	Supply,Providing & fixing Butterfly valve conforming to IS-13095, PN 1.6 (Body : Grey Cast Iron, Shaft : SS, Disc : SG Iron (Rilson coated), Liner : HT - EPDM) (upto 150mm dia with hand lever operation & above with gear box operation). Tested to a pressure not less than 15 Kg/Sq.cm. Including rubber gasket, flanges, nuts, bolts, washers & painting complete as required.				
	50 mm dia.	Each	5	3500.00	17,500.00
	65 mm dia.	Each	7	4300.00	30,100.00
	80 mm dia	Each	8	5000.00	40,000.00
	100 mm dia	Each	0	6780.00	

60	Providing & fixing dial type Pressure gauge of (0-16kg/cm <sup>2</sup> ) range with gun metal shut off cock etc. duly calibrated before installation in MKS and FPS units and fixing the same where required as directed including all fittings, short piece, nipples, elbows testing the joints etc.all complete. (Quantity of this item will be payable only where it has not been included in the relevant composite items).	Each	7	1500.00	10,500.00
61	Providing and fixing enclosed type water meter (bulk type) conforming to IS : 2373 and tested by Municipal Board complete with bolts, nuts, rubber insertions etc. (The tail pieces if required will be paid separately). 32mm dia	Each	1	4000.00	4,000.00
62	Supplying, fitting and fixing in RCC walls or floors etc. Puddle collar assembly/sleeves consisting of MS pipes(Heavy type) conforming to IS : 1239 and IS : 3589 having required shell thickness, both ends flanged drilled to IS specification and one end matching blank flange(welded to pipe) with nuts, bolts, washers etc.and MS collar of minimum 6 mm thickness of specified size welded all round the pipe complete including three coats of bituminous paint on concealed portion and a coat of zinc oxide primer and two coats of synthetic enamel paint of approved shade on the exposed portion of the puddle collars as per direction of Engineer-in-charge.				
	a) 200 mm puddle flange	Each	2	4500.00	9,000.00
	b) 150 mm puddle flange	Each	6	4300.00	25,800.00
	c) 100 mm Puddle Flange	Each	6	3850.00	23,100.00
	d) 80 mm Puddle Flange	Each	8	3450.00	27,600.00
	e) 65 mm Puddle Flange	Each	2	2850.00	5,700.00
	f) 50 mm Puddle Flange	Each	6	2500.00	15,000.00
	g) 25 mm Puddle Flange	Each	4	2000.00	8,000.00
63	Providing and fixing Water Level Monitor (Water Gauge) for installing on the side wall of Water Reservoir consisting of calibrated bore transparent tube with back ground board, floating indicator, drainout valve etc.complete operational.(Water level difference upto 4 m.) - <b>For Under ground Reservoir.</b>	Each	2	5500.00	11,000.00
	<b>Chairman / Vice Chairman Toilets</b>				
64	Supplying, fitting and fixing full set of Automated E.W.C. with remote in white glazed vitreous chinaware of approved make complete in position with necessary bolts, nuts & other relevant accessories etc.				
	APPROVED MODEL NO. F777240110, Star White, F-AUTOMODE WC with remote. HIND WARE / EQUIVALENT MAKE	Each	2	199990.00	3,99,980.00
65	Supplying, fitting and fixing Concealed cistern as per manufacturing specification along with relevant accessories				

	Model No. Q867450300, Concealed cistern ZETA NEO. HIND WARE / EQUIVALENT MAKE	Each	2	9750.00	19,500.00
66	Supplying, fitting and fixing Flash plate for Concealed cistern as per manufacturing specification along with relevant accessories				
	Model No. Q507455120, Flush plate sisma. HIND WARE / EQUIVALENT MAKE	Each	2	2120.00	4,240.00
67	Health Faucet Brass (with angle valve incl bracket and hose pipe), Model - F503191920. HIND WARE / EQUIVALENT MAKE	Each	2	5550.00	11,100.00
68	Supplying, fitting and fixing Zelos toilet paper holder of approved make with wooden spindle as necessary.				
	Model - Q363194120, Zelos. HIND WARE / EQUIVALENT MAKE	Each	2	2595.00	5,190.00
69	Supply, fitting and fixing of cp zelos robe hook. Model - Q363196120. HIND WARE / EQUIVALENT MAKE	Each	2	855.00	1,710.00
70	Supplying, fitting and fixing Star White vitreous china best quality wall hung basin with built in faucet and cabinet approved make with supporting accessories				
	Q807110110, Star White, F-ASTERIA wall hung basin with built in faucet and cabinet	Each	2	154395.00	3,08,790.00
71	Supplying, fitting and fixing complete Bottle waste trap (Heavy Quality).				
	(a) Chromium plated Bottle trap 32 mm with 190 mm long connecting pipe and wall flange. Model - Q5031918, Add ons. HIND WARE / EQUIVALENT MAKE	Each	2	4015.00	8,030.00
72	Supplying, fitting and fixing complete cp towel rail. Model - Q363195120, Zelos. HIND WARE / EQUIVALENT MAKE	Each	2	6120.00	12,240.00
73	Supplying, fitting and fixing complete Pop up Waste Coupling half thread. Model - Q503191320, Add ons. HIND WARE / EQUIVALENT MAKE	Each	2	1630.00	3,260.00
	<b>HOD TOILETS</b>				
74	Supplying, fitting and fixing Star White E.W.C. white glazed vitreous chinaware of approved make complete in position with necessary bolts, nuts & other relevant accessories etc. Wall mounted WC				
	MODEL NO. Q607240110. HIND WARE / EQUIVALENT MAKE	Each	6	62990.00	3,77,940.00
75	Supplying, fitting and fixing Concealed cistern as per manufacturing specification along with relevant accessories				
	Model No. Q507450100, Concealed cistern Concealed cistern SISMA. HIND WARE / EQUIVALENT MAKE	Each	6	8315.00	49,890.00
76	Supplying, fitting and fixing Flash plate for Concealed cistern as per manufacturing specification along with relevant accessories				
	Model No. Q507455120, Flush plate sisma. HIND WARE / EQUIVALENT MAKE	Each	6	2120.00	12,720.00

77	Health Faucet Brass (with angle valve incl bracket and hose pipe), Model - Q502191120, Add ons. HIND WARE / EQUIVALENT MAKE	Each	6	960.00	5,760.00
78	Supplying, fitting and fixing Zelos toilet paper holder of approved make with wooden spindle as necessary.				
	Model - Q363194120, Zelos. HIND WARE / EQUIVALENT MAKE	Each	6	2595.00	15,570.00
79	Supply, fitting and fixxing of cp zelos robe hook. Model - Q363196120. HIND WARE / EQUIVALENT MAKE	Each	6	855.00	5,130.00
80	Supplying, fitting and fixing Star White vitreous china best quality wash basin approved make with supporting accessories				
	Model - Q607110110, Star White, Table top Wash basin 60x48x16 cm	Each	6	48350.00	2,90,100.00
81	Supplying, fitting and fixing complete Bottle waste trap (Heavy Quality).				
	(a) Chromium plated Bottle trap 32 mm with 190 mm long connecting pipe and wall flange. Model - Q5031918, Add ons. HIND WARE / EQUIVALENT MAKE	Each	6	4015.00	24,090.00
82	Supplying, fitting and fixing complete cp towel rail. Model - Q363195120, Zelos. HIND WARE / EQUIVALENT MAKE	Each	6	6120.00	36,720.00
83	Supplying, fitting and fixing complete Pop up Waste Coupling half thread. Model - Q503191320, Add ons. HIND WARE / EQUIVALENT MAKE	Each	6	1630.00	9,780.00
84	Supplying, fitting and fixing liquid soap container/Tumbler holder.				
	Model - F870001. HIND WARE / EQUIVALENT MAKE	each	6	1500.00	9,000.00
85	Supplying, fitting and fixing complete Piller cock. Model - F360001, Element. HIND WARE / EQUIVALENT MAKE	Each	6	1550.00	9,300.00
86	Supplying, fitting and fixing full set of Handicaped toilet sanitary ware and cp fittings of approved make complete in position with necessary bolts, nuts & other relevant accessories etc.				
	APPROVED MODEL NO. 70002, Star White, MATRIX Set for Disabled in P Trap. HIND WARE / EQUIVALENT MAKE	Each	2	72000.00	1,44,000.00
	<b>DISMANTLING OF THE FOLLOWING LISTED ITEMS</b>				
87	<b>SANITARY WARE &amp; CP FITTINGS WITH NECESSARY ACCESSORIES</b>				
	Water Closset	NO.	51	300.00	15,300.00
	CISTERN	NO.	51	300.00	15,300.00
	URINAL	NO.	20	300.00	6,000.00
	WASH BASIN	NO.	44	300.00	13,200.00
	ANGULAR STOP COCK	NO.	166	100.00	16,600.00
	HEALTH FAUCET	NO.	51	100.00	5,100.00

	BIP COCK	NO.	51	100.00	5,100.00
	PILLER COCK	NO.	44	100.00	4,400.00
	KITCHEN SINK	NO.	2	300.00	600.00
	SINK COCK	NO.	2	100.00	200.00
	FELIBLE BRAIDED PIPE	NO.	166	10.00	1,660.00
88	<b>CI PIPE (SOIL - WASTE &amp; RAIN WATER) WITH NECESSARY FITTINGS &amp; SUPPORT</b>				
	150 MM DIA	RM	482	500.00	2,41,000.00
	100 MM DIA	RM	810	350.00	2,83,500.00
	75 MM DIA	RM	50	275.00	13,750.00
	50 MM DIA	RM	60	200.00	12,000.00
89	<b>GI WATER SUPPLY PIPE LINE WITH NECESSARY FITTINGS &amp; SUPPORT</b>				
	100 MM DIA	RM	230	450.00	1,03,500.00
	80 MM DIA	RM	97	380.00	36,860.00
	65 MM DIA	RM	40	300.00	12,000.00
	50 MM DIA	RM	140	190.00	26,600.00
	40 MM DIA	RM	120	140.00	16,800.00
	32 MM DIA	RM	191	115.00	21,965.00
	25 MM DIA	RM	263	90.00	23,670.00
	20 MM DIA	RM	155	70.00	10,850.00
	15 MM DIA	RM	112	50.00	5,600.00
90	<b>ALL KIND OF VALVE'S, NRV'S, PRV'S, STRAINER'S, FLOAT VALVE'S ETC.</b>				
	100 MM DIA	NO.	4	400.00	1,600.00
	80 MM DIA	NO.	6	300.00	1,800.00
	65 MM DIA	NO.	6	250.00	1,500.00
	50 MM DIA	NO.	15	200.00	3,000.00
	40 MM DIA	NO.	9	150.00	1,350.00
	32 MM DIA	NO.	10	130.00	1,300.00
	25 MM DIA	NO.	15	100.00	1,500.00
	20 MM DIA	NO.	20	100.00	2,000.00
97	PUMPS	NO	2	5000.00	10,000.00
<b>TOTAL OF PART A (SECTION 3)</b>					<b>99,82,911.65</b>

<b>PART A: CIVIL, INTERIOR, SANITARY PLUMBING AND FIRE WORKS FOR REFURBISHMENT OF KōPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA - 700001</b>					
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<b>Section 4: Fire Works (Main &amp; Annexe Building)</b>					
ITEM NO	DESCRIPTION	UNIT	QTY	Rate	Amount Rs. P
<b>1.0</b>	<b>FIRE FIGHTING SYSTEM</b>				
<b>1.1</b>	<b>FIRE PUMPS &amp; ALLIED WORKS</b>				
	<b>Supply, Installation, testing and commissioning of Electrical motor driven Centrifugal pump set for Fire Hydrant &amp; Sprinkler system consisting of the following :</b>	Set	2	430000.00	8,60,000.00
1.1.1	a) Horizontal <b>Centrifugal pump end suction, top discharge</b> with all accessories <b>discharge capacity 2850 lpm at 88 m head</b> with CI casing, standard fitting, CS diffusers, bronze impeller (dynamically balanced) and SS (304) Shaft with mechanical seal. The installation shall be complete with flexible coupling and coupling guard, 150 mm dial pressure gauge of 0-16 kg/cm <sup>2</sup> range with gun metal shut off cock on delivery side as required. (The pump should be tested for bench mark at factory and test certificate shall be submitted).				
	Pump shall be capable of furnishing not less than 150% of rated capacity at a head of not less than 65% of the rated head. The shut off head shall not exceed 120% of rated head.				

	b) Squirrel cage induction motor, TEFC type suitable for operation on 415 volts, $\pm 10\%$ , 3 phase 50 HZ $\pm 3\%$ . A.C supply, for the above pump with speed of (synchronous speed 2900 rpm), conforming to IP 55 protection & class-F insulation. The motor shall conform to IS 325-1978 with flexible coupling and coupling guard, complete as required.				
	c) Common base plate for (a) and (b) made of M.S. Channel of required size.				
	e) Cost of all the items accessories tools and tackles packing etc. required to put pumping system into service.				
1.1.2	<b>Supply, Installation, testing and commissioning of Electrical motor driven Centrifugal stand by pump set for Fire Hydrant &amp; Sprinkler system consisting of the following :</b>	Set	1	430000.00	4,30,000.00
	a) Horizontal <b>Centrifugal pump end suction, top discharge</b> with all accessories <b>discharge capacity 2850 lpm at 88 m head</b> with CI casing, standard fitting, CS diffusers, bronze impeller (dynamically balanced) and SS (304) Shaft with mechanical seal. The installation shall be complete with flexible coupling and coupling guard, 150 mm dial pressure gauge of 0-16 kg/cm <sup>2</sup> range with gun metal shut off cock on delivery side as required. (The pump should be tested for bench mark at factory and test certificate shall be submitted).				
	Pump shall be capable of furnishing not less than 150% of rated capacity at a head of not less than 65% of the rated head. The shut off head shall not exceed 120% of rated head.				



	b) Squirrel cage induction motor, TEFC type suitable for operation on 415 volts, $\pm 10\%$ , 3 phase 50 HZ $\pm 3\%$ . A.C supply, for the above pump with speed of (synchronous speed 2900 rpm), conforming to IP 55 protection & class-F insulation. The motor shall conform to IS 325-1978 with flexible coupling and coupling guard, complete as required.				
	c) Common base plate for (a) and (b) made of M.S. Channel of required size.				
	e) Cost of all the items accessories tools and tackles packing etc. required to put pumping system into service.				
1.1.3	<b>Supply, Installation, testing and commissioning of Jockey pump of capacity 180 lpm at 88 m head for fire fighting system comprising of the following:</b>	Set	1	150000.00	1,50,000.00
	a) Horizontal centrifugal pump, suitable for operation on 415 volts $\pm 10\%$ , 3 phase, 50 HZ $\pm 3\%$ A.C supply. The installation shall be complete with Flexible coupling and coupling guard, complete as required.				
	The pump casing shall be CI, shaft shall be SS & impeller/ shaft sleeve/casing wearing ring shall be bronze. The pump shall be provided with mechanical seal. The system shall be complete with 150 mm dial pressure gauge of 0-16 Kg/m <sup>2</sup> range with gun metal shut off cock on delivery side, as required. (The pump should be tested for bench mark at factory and test certificate shall be submitted).				

	<b>b)</b> Squirrel cage induction motor, TEFC type suitable for operation on 415 volts, $\pm 10\%$ , 3 phase 50 HZ $\pm 3\%$ . A.C supply, for the above pump with speed of 2900 rpm (synchronous speed 3000 rpm), conforming to IP 55 protection & class-F insulation. The motor shall conform to IS 325-1978 with flexible coupling and coupling guard, complete as required.				
	<b>c)</b> Common base plate for (a) and (b) from M.S. channel of required size.				
	<b>d)</b> Cost of all the items accessories tools and tackles packing etc. required to put pumping system into service.				
	For pump defined above & of duty as follows :				
	<b>Flow : 180 lpm</b>				
	<b>Head : 88 mts</b>				

1.1.4	<p><b>Supply, Fabricating, fixing, testing and commissioning of air cushion tank</b> (material <b>IS 2062/2002</b>) with SS air-release valve of approved quality with S.S isolation valve, GM drain valve, gate valve, provision for pressure switches, pressure gauge etc. inside the pump house including making inlet and outlet connection with MS pipe of required length from discharge header to air cushion tank, fixing properly and securing the same to the base etc. complete in all respect having painting including two coats of approved paint over a coat of primer. The tank shall be fabricated out of 8mm thick MS sheet shall be of cylindrical shape <b>with 300mm dia and 1.5m height</b>. The tank shall be installed on suitable vertical legs having M.S. plate of size 75mm x 75mm x 5mm at the bottom. The legs shall be grouted in Cement concrete foundation. Flange connection shall be provided for connection with discharge header. The tank shall be tested at 25 kg/sq.cm before installation.</p>	Set	1	18000.00	18,000.00
1.1.5	<p><b>Supply, Providing &amp; fixing</b> 150 mm dial type <b>Pressure gauge</b> of (0-16kg/cm<sup>2</sup>) range with gun metal shut off cock etc. duly calibrated before installation in MKS and FPS units and fixing the same where required as directed including all fittings, short piece, nipples, elbows testing the joints etc. all complete. (Quantity of this item will be payable only where it has not been included in the relevant composite items).</p>	Each	7	2000.00	14,000.00

1.1.6	<b>Supply,Providing &amp; fixing Pressure Switch</b> the most commonly used fluid control components of Aluminum encloser with storage temprature 40 to 180°F (-40 to 82°C) along with ambient temprature 0 to 160°F (-18 to 71°C),set point shifts less than 1% of range for a 50°F (28°C) ambient temperature change. Unit will operate down to -40°F (-40°C) but with reduced repeatability. Maximum media temperature 200°F (93°C), Shock Set point repeats after 50 G, 10 millisecond duration. Switch output One SPDT including seven electrical terminations; Refer to 'How to Order' and vibration set point repeats after 10 G, 5-500 CPS.	Each	4	5500.00	22,000.00
1.1.7	Providing and fixing CI double flanges suction strainer (PN 1.0) “Y” type including, nuts, bolts and 3mm thick rubber insertion complete. (Suction Side)			0.00	
	200mm dia	Nos	2	37000.00	74,000.00
1.1.8	Providing and fixing butterfly valves, wafer end type class PN 1.6 as per IS: 13095-1991 or BS: 5155, including necessary nuts, bolts, gaskets etc. complete (without gear box) (Discharge Side)				
	a) 200mm dia	Nos	2	19179.20	38,358.40
	b) 150mm dia	Nos	10	9906.40	99,064.00
	c) 100mm dia	Nos	1	5806.60	5,806.60
	d) 80mm dia	Nos	RO	4492.40	
	e) 65 mm dia	Nos	RO	4007.00	
	e) 50mm dia	Nos	3	3602.40	10,807.20
1.1.9	Providing & Fixing of CI gate Valve as per IS : 14846 (PN 1.0 Rating for suction side of the pumps ) and rising sprindle type with falnges , bolts , nuts , washers , gaskets etc.				

	a) 200 mm dia	Nos	5	43872.20	2,19,361.00
	b) 65 mm dia	Nos	1	10228.00	10,228.00
	c) 80 mm dia tank drain out	Nos	2	12712.60	25,425.20
1.1.10	Supply, installation, testing and commissioning of Cast Iron Non-Return Valves including making flanged joints by providing necessary nuts, bolts, gaskets etc. .(Discharge Side)				
	a) 200 mm dia	Nos	1	46519.60	46,519.60
	b) 150 mm dia	Nos	3	34064.60	1,02,193.80
	c) 50 mm dia	Nos	1	6785.00	6,785.00
1.1.11	Supply, installation, testing & commissioning heavy class <b>MS suction &amp; delivery headers</b> of required length conforming to IS: 1239 up to 150 mm dia pipes and IS:3589 with 6.35 mm thick with welded joints standard MS Fittings and with end flange connections having inlet & outlet flanged connections including supports from wall, floors & ceiling complete as required. Cost should be inclusive of all supports / clamps / brackets, anchor fastner, flexible expansion bellows etc. as required. <b>NOTE: FITTINGS UP TO 50 MM DIA MUST BE MS FORCED HEAVY DUTY SOCKET WELDED. ABOVE 50 MM DIA MUST BE HEAVY DUTY BUT WELDED FITTINGS.</b>				
	a) 25 mm dia	Mtrs	6	402.00	2,412.00
	b) 50 mm dia	Mtrs	6	819.40	4,916.40
	c) 65 mm dia	Mtrs	6	1117.80	6,706.80
	d) 80 mm dia	Mtrs	RO	1316.20	
	e) 150 mm dia	Mtrs	42	2636.00	1,10,712.00
	f) 200 mm dia	Mtrs	12	3847.60	46,171.20
	g) 250 mm dia	Mtrs	12	4830.20	57,962.40

1.1.12	Painting with two coats of Synthetic enamel paint of approved shade and brand over two coats of Red oxide zink chromate primer. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. Including painting of legends and direction completed as per the approval of the Engineer- in- charge.				
	a) 25 mm dia	Mtrs	6	25.00	150.00
	b) 50 mm dia	Mtrs	6	30.00	180.00
	c) 65 mm dia	Mtrs	6	35.00	210.00
	d) 80 mm dia	Mtrs	RO	42.00	
	e) 150 mm dia	Mtrs	42	47.00	1,974.00
	f) 200 mm dia	Mtrs	12	55.00	660.00
	g) 250 mm dia	Mtrs	12	60.00	720.00
1.1.13	Providing & fixing double flanged flexicon rubber expansion (bellows) joint with unit control of standard length as per manufacturers specifications suitable for working pressure of 15Kg/Sqcm including rubber gaskets, flanges, nuts, bolts and washers complete as required for suction and delivery of pumps.				
	a) 200 NB	No	3	4750.00	14,250.00
	b) 150 NB	No	3	4300.00	12,900.00
	c) 65 NB	No	1	3900.00	3,900.00
	d) 50 NB	No	1	3400.00	3,400.00
1.1.14	Providing and installation of GM Ball Valve, IS-318 LTB-2 SS Stem AISI 410, Ball SS 304/CF8, teflon gland packing, screwed female threads to IS-554,				
	a) 25 NB	No	2	2300.00	4,600.00

1.1.15	Providing and Installation of vibration elimination pads for pumps.				
	a) Type A (for Jockey pumps)	No	4	4000.00	16,000.00
	b) Type B ( Main fire pumps)	No	18	4700.00	84,600.00
1.1.16	Supply, installation, testing and commissioning of Fire Brigade inlet connection with provision for Four female instantaneous coupling fabricated out of 150 mm dia. approved make heavy class MS pipe with one no. dual plate (Wafer Type) non-return valve, one no. Butter Fly valve (Bafer Type) for fire fighting system including making connection by providing necessary piping & fittings fire fighting wet riser, painting the same with 2 coats of enamel paint over a coat of Zinc Chromate primer all complete as per drawings, specifications.				
	150 mm four way with Butterfly valve & NRV	Nos	1	27407.40	27,407.40
1.1.18	Gun-metal Fire brigade suction hose coupling (Draw-out Connection) with nut for female coupling as per IS:902-1974 complete with one no. dual plate (wafer Type) non-return valve, one no. Butter Fly valve (Wafer Type) and 100 mm dia. MS suction pipe and 100 mm dia. 2 Nos. CI foot valve with flanged for two nos of Fire Tank (to be connected to static water tank).	Nos	1	20133.80	20,133.80
1.1.19	<b>MCC cum control panel</b>				
	<b>V- FIRE PANEL &amp; ACESSORIES:</b>				
1.1.19.1	SITC of Composite Pump Controller for sequential start/stop of above main fire pumps and jockey pump,Diesel Driven Pump,complete in all respect.(The prices are inclusive of all taxes).The composite parts should be of L&T/SIMENCE/HAVELS/ANCHOR	Set	1	325000.00	3,25,000.00

1.1.19.2	<b>L.T.Cables</b>				
	Supply, installation, testing and commissioning of following sizes of PVC sheathed XLPE insulated Aluminium Copper conductor/ power/control armoured cables of 1100V grade on surface of wall or in existing cable trays with fixing hardware etc. as required.				
	Aluminium Conductor armoured cables:				
	3.5 x 110 Sq mm	RM	90	600.00	54,000.00
	3.5 x 60 Sq mm	RM	65	550.00	35,750.00
	3.5 C x 6 Sq.mm	RM	50	400.00	20,000.00
	4 C x 4 Sq.mm	RM	100	500.00	50,000.00
	4 C x 2.5 Sq.mm	RM	70	450.00	31,500.00
1.1.19.3	<b>Cable Termination :</b>				
	Supply & making end termination with brass Double compression glands for the following XLPE insulated PVC sheathed 1100 V grade cable including cost of crimping lugs/ ferrules, compression glands, solder, cable sockets, insulation tape etc. complete as reqd.				
	Suitable for aluminium conductor armoured cables:				
	3.5 x 110 Sq mm	Set	2	600.00	1,200.00
	3.5 x 60Sq mm	Set	6	550.00	3,300.00
	3.5 C x 6 Sq.mm	Set	2	400.00	800.00
	3.5 C x 4 Sq.mm	Set	5	500.00	2,500.00
	3.5 C x 2.5 Sq.mm	Set	2	450.00	900.00
1.1.19.4	<b>EARTHING</b>				



	Supply, installation, testing & commissioning of following size G.I. Strip/G.I. wire clamped to existing cable tray, wall for system/equipment earthing complete as required including interconnection etc.				
	25mm G.I Strip	RM	50	900.00	45,000.00
	8 SWG . G.I wire	RM	100	675.00	67,500.00
<b>1.2</b>	<b>INTERNAL HYDRANT PIPING WITH ACCESSORIES</b>				
1.2.1	<p>Supply,<b>Providing, laying, jointing, testing</b> (duly tested to 1.5 times of working pressure) and commissioning of following sizes of</p> <p><b><u>OVERGROUND PIPES</u></b></p> <p>conforming to IS-1239 upto 150 mm dia pipes and IS-3589 for pipes above 150 mm dia and 6.35 mm wall thickness with all accessories like all fittings (standard MS fitting with welded joint shall be used on the pipes in general, and flanged joints shall be used at connections with fire-fighting appurtenances, valves etc. and at junctions for maintenance purpose) including tees, elbows, headers, reducers, union, flanges, rubber gaskets, GI nuts bolts, washer including supporting/fixing the pipe on floor / wall /ceiling with galvanised clamps,hangers (using anchor fastners) as per specification.GI/MS pipe sleeve of suitable higher size shall be provided wherever the pipes are crossing the walls/floors and sealing the sleeves with glass wool in between &amp; fire sealent compound at either end all as per Employer's / Consultants requirements including cutting holes and chases in brick, RCC work and making good the same to original conditions complete in all respects.</p>				

	All hangers, clamps, brackets etc. shall be of galvanized iron unless specified otherwise and then supply of the same shall also be included for rates under this head. (Welding of any kind on the galvanized support / hanger shall not be permitted) completed as per the approval of the Engineer- in- charge. <b>NOTE: FITTINGS UP TO 50 MM DIA MUST BE MS FORCED HEAVY DUTY SOCKET WELDED. ABOVE 50 MM DIA MUST BE HEAVY DUTY BUT WELDED FITTINGS.</b>				
	For Wet riser System				
	a) 25 mm dia - MS `C' Heavy class pipe.	Metre	12	402.00	4,824.00
	b) 80 mm dia - MS `C' Heavy class pipe.	Metre	6	1266.20	7,597.20
	c) 100 mm dia -MS `C' Heavy class pipe.	Metre	RO	1787.20	
	d) 150 mm dia -MS `C' Heavy class pipe.	Metre	48	2636.00	1,26,528.00
1.2.2	Painting with two coats of Synthetic enamel paint of approved shade and brand over a coat of Red oxide zink chromate primer. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. Including painting of legends and direction completed as per the approval of the Engineer- in- charge.				
	a) 25 mm dia	Metre	12	25.00	300.00
	b) 80 mm dia	Metre	6	41.00	246.00
	c) 100 mm dia	Metre	RO	44.00	
	d) 150 mm dia	Metre	48	48.00	2,304.00

1.2.3	Supply, installation, testing and commissioning of Gun metal single headed hydrant valve as per IS: 5290 consisting of 63NB. single outlet flanged oblique type hydrants valve with instantaneous female plunger type coupling, chained blank cap including making flanged joints by providing necessary nuts, bolts, gaskets all complete as per specifications (as required Internal)	Nos	12	7100.00	85,200.00
1.2.4	Supply, installation, testing and commissioning of Providing & fixing swinging type First Aid hose reel in red colour drum with 36 mts long and 20 mm dia heavy duty rubber water hose, 20 mm dia globe valve stop cock, terminating with G.M. coupling & triple purpose nozzle of 6mm outlet with shut off valve conforming to IS 8090 - 1976 complete with MS socket for tap-off, drum and brackets (including painting) for fixing on wall with anchor fastener, bolts & nuts conforming to IS:884-1969 complete as required.	Nos	10	8100.00	81,000.00
1.2.5	Providing and placing in proper position Non-percolating flexible hose (RRL type-'A') ISI marked (IS:636) 63 mm dia x 15 M long complete with instantaneous type SSI 63 mm dia. IS marked male and female couplings (IS:903) bound and riveted to hose pipe with copper rivets and 1.5 mm copper wire.	Nos	24	6600.00	1,58,400.00
1.2.6	Providing and placing in proper position SS 63mm dia short size branch pipes with 20 mm dia nozzles with 63mm instantaneous coupling ISI marked (IS: 903).	Nos	12	3700.00	44,400.00

1.2.7	Weather proof hose cabinets for internal hydrant fabricated from 16 g MS sheet with full glass door and locking arrangement, suitable to accommodate one hydrant valve, 2 nos.15m long hose, 1 No branch pipe. The cabinet shall be painted with one coat of primer and finished stove enamelled "Fire Red", "Fire Hose" written on front including suitably mounted on a raised masonry platform as required. (Approx 0.6mx0.6 mx 0.45 m).	Nos	12	5600.00	67,200.00
1.2.8	Supply, installation, testing and commissioning of Fire Brigade inlet connection with provision for Four female instantaneous coupling fabricated out of 150 mm dia. approved make heavy class MS pipe with one no. dual plate (Wafer Type) non-return valve, one no. Butter Fly valve (Bafer Type) for fire fighting system including making connection by providing necessary piping & fittings fire fighting wet riser, painting the same with 2 coats of enamel paint over a coat of Zinc Chromate primer all complete as per drawings, specifications.				
	150 mm four way with Butterfly valve & NRV	Nos	2	28157.40	56,314.80
1.2.9	Providing & fixing dial type (100 mm dia) <b>pressure gauge</b> with isolation ball valve suitable for working pressure of 250 PSI. Cost shall be inclusive of providing any short pieces, nipples, elbows etc as required. (For Ground and Terrace floor)	Nos	4	1800.00	7,200.00

1.2.10	Air release valve complete with 25 mm dia. brass air valve (ball valve, pressure gauge type), 25 mm dia brass stop cock, nipple, tees, B46 elbow, pipe and all accessories as required including fixing brackets.	Nos	2	2300.00	4,600.00
1.2.11	Providing and fixing butterfly valves, wafer end type class PN 1.6 as per IS: 13095-1991 or BS: 5155, including necessary nuts, bolts, gaskets etc. complete (without gear box) (Discharge Side)				
	150 mm dia	Nos	6	9956.40	59,738.40
1.2.12	Providing & Fixing of Dual plate (Wafer Type) Non return valves as per IS : 5312 (PN 1.6) swing check type with required flanges , nuts , bolts and gaskets etc. complete				
	150 mm dia four way for fire wet riser	Nos	4	10501.00	42,004.00
1.3	<b>FIRE EXTINGUISHERS</b>				
1.3.1	Providing & fixing Water based Carbon-di-oxide 9 ltrs. fire extinguishers as per IS specification consisting of welded MS cylindrical body ,squeeze lever discharge valve fitted with internal discharge tube ,30 cm long high pressure discharge hose ,discharge nozzle,suspension brackets,finished exteranally with red enemel paint and fixed to wall with brackets with rawl plug/dash fastners complete with initial charging.	Nos	16	3200.00	51,200.00
1.3.2	Providing & fixing <b>ABC type (Dry powder type ) extinguishers.</b> Including all accessories as per IS specification (IS :15683) Consisting of welded MS cylindrical body with discharge hose ,discharge valve ,suspension brackets,initial filling etc. complete as required., initial filling etc complete as required. Capacity - 6	Nos	16	3200.00	51,200.00

	kg				
1.3.3	Providing & fixing Mechanical Foam Type Extinguishers as IS specification	Nos	2	3200.00	6,400.00
1.4	<b>External Piping (Hyd + Spk) - Underground / above ground Pipes</b>				
	-				
1.4.1	Supply, installation, testing & commissioning of MS pipe (IS:1239/IS:3589) heavy class including cutting, screwing, welding etc. complete with fitting viz. tees elbow, bends, flanges, reducers etc. including providing anti-corrosive treatment (coating and wrapping) with 4 mm thick tape and holiday test check as per IS:10221, 50mm sand filling around the pipe complete as required. All sub soil piping shall be treated as per IS code and refilling shall only be carried out after inspection and permission of the Engineer-in-Charge. <b>FOR UNDER GROUND PIPING . NOTE: FITTINGS UP TO 50 MM DIA MUST BE MS FORCED HEAVY DUTY SOCKET WELDED. ABOVE 50 MM DIA MUST BE HEAVY DUTY BUT WELDED FITTINGS.</b>				
	150 mm dia	Mtrs	50	2736.00	1,36,800.00
	100 mm dia	Mtrs	RO	1887.20	
	80 mm dia	Mtrs	RO	1366.20	

1.4.2	Supply, installation, testing & commissioning of MS pipe (IS:1239/IS:3589) heavy class including cutting, screwing, welding etc. complete with fitting viz. tees elbow, bends, flanges, reducers etc. After inspection and permission of the Engineer-in-Charge. <b>FOR ABOVE GROUND PIPING. NOTE: FITTINGS UP TO 50 MM DIA MUST BE MS FORCED HEAVY DUTY SOCKET WELDED. ABOVE 50 MM DIA MUST BE HEAVY DUTY BUT WELDED FITTINGS.</b>				
	150 mm dia	Mtrs	300	2636.00	7,90,800.00
	80 mm dia	Mtrs	12	1266.20	15,194.40
1.4.3	Painting with two coats of Synthetic enamel paint of approved shade and brand over a coat of Red oxide zink chromate primer. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. Including painting of legends and direction completed as per the approval of the Engineer- in-charge.				
	150 mm dia	Mtrs	300	50.00	15,000.00
	80 mm dia	Mtrs	12	42.00	504.00
1.4.4	Supply, installation, testing and commissioning of courtyard SS single headed hydrant valve as per IS: 5290 consisting of 63NB. single outlet flanged oblique type hydrants valve with instantaneous female plunger type coupling, chained blank cap including making flanged joints by providing necessary nuts, bolts, gaskets all complete as per specifications suitable for 80 NB stand post. (as required External)	Nos	8	7100.00	56,800.00

1.4.5	Providing and placing in proper position Non-percolating flexible hose (RRL type-'A') ISI marked (IS:636) 63 mm dia x 15 M long complete with instantaneous type gunmetal 63 mm dia. IS marked male and female couplings (IS:903) bound and riveted to hose pipe with copper rivets and 1.5 mm copper wire.	Nos	16	7700.00	1,23,200.00
1.4.6	Providing and placing in proper position SS 63mm dia short size branch pipes with 20 mm dia nozzles with 63mm instantaneous coupling ISI marked (IS: 903).	Nos	8	3200.00	25,600.00
1.4.7	Weather proof hose cabinets for external yard hydrant fabricated from 16 g MS sheet with full glass door and locking arrangement, suitable to accommodate one hydrant valve, 2 nos.15m long hose, 1 No branch pipe. The cabinet shall be painted with one coat of primer and finished stove enamelled "Fire Red", "Fire Hose" written on front including suitably mounted on a raised masonry platform as required. (Approx 0.6mx0.6 mx 0.45 m).	Nos	8	5600.00	44,800.00
1.4.8	Providing and fixing butterfly valves, wafer end type class PN 1.6 as per IS: 13095-1991 or BS: 5155, including necessary nuts, bolts, gaskets etc. complete (without gear box) (Discharge Side)				
	150 mm dia FOR RING MAIN	Nos	3	10706.40	32,119.20
	80 mm dia	Nos	8	6406.60	51,252.80
1.4.9	Providing & Fixing of Dual plate (Wafer Type) Non return valves as per IS : 5312 (PN 1.6) swing check type with required flanges , nuts , bolts and gaskets etc. complete				
	150 mm dia	Nos	0	11251.00	
	100 mm dia	Nos	0	8477.20	



1.4.10	Providing and fixing RCC Hume Pipe NP 3 as per IS: 458 (For Road Crossing)				
	300 mm dia	Mtrs	20	3100.00	62,000.00
1.4.11	Supply, installation, testing and commissioning of Fire Brigade inlet connection with provision for Four female instantaneous coupling fabricated out of 150 mm dia. approved make heavy class MS pipe with one no. dual plate (Wafer Type) non-return valve, one no. Butter Fly valve (Bafer Type) for fire fighting system including making connection by providing necessary piping & fittings fire fighting wet riser, painting the same with 2 coats of enamel paint over a coat of Zinc Chromate primer all complete as per drawings, specifications.	Nos	2	28157.40	56,314.80
	150 mm four way with Butterfly valve & NRV				
<b>1.5</b>	<b>SPRINKLER &amp; PIPING WITH ACCESSORIES</b>				

1.5.1	<p><b>Supply, Providing, fixing, jointing and testing</b> in position for sprinkler system following medium class <b>MS pipes</b> conforming to <b>IS:1239</b> cut to required lengths including all necessary fittings (All fittings shall confirm to <b>IS:1879</b> (part 1 to 10) and specials such as bends, tees, unions, Reducers, flanges &amp; plugs etc. fixing at wall / ceiling level supported by clamps, hangers (using anchor fasteners) etc, as per specification. Threading, jointing, and making proper connections, cutting hole in wall / floor / slab and making good the same. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Consultant / Employers' requirement. All hangers, clamps, brackets etc. shall be of galvanized iron unless specified otherwise and the supply of the same shall also be included in rates under this head.</p>				
	<p><b><i>Welding of any kind on the galvanised support / hanger shall not be permitted. NOTE: FITTINGS UP TO 50 MM DIA MUST BE MS FORCED HEAVY DUTY SOCKET WELDED. ABOVE 50 MM DIA MUST BE HEAVY DUTY BUT WELDED FITTINGS.</i></b></p>				
	a) 25 mm dia	Metre	1,338	402.00	5,37,876.00
	b) 32 mm dia	Metre	64	512.20	32,780.80
	c) 40 mm dia	Metre	326	621.00	2,02,446.00
	d) 50 mm dia	Metre	314	819.40	2,57,291.60
	e) 65 mm dia	Metre	162	1017.80	1,64,883.60
	f) 80 mm dia	Metre	226	1266.20	2,86,161.20
	g) 100 mm dia	Metre	104	1787.20	1,85,868.80
	h) 150 mm dia	Metre	166	2636.00	4,37,576.00

1.5.2	<b>Painting</b> with two coats of <b>Synthetic enamel paint</b> of approved shade and brand over a coat of <b>Red oxide zink chromate primer</b> . Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. Including painting of legends and direction completed as per the approval of the Engineer- in- charge .				
	a) 25 mm dia	Metre	1,338	25.00	33,450.00
	b) 32 mm dia	Metre	64	30.00	1,920.00
	c) 40 mm dia	Metre	326	30.00	9,780.00
	d) 50 mm dia	Metre	314	37.00	11,618.00
	e) 65 mm dia	Metre	162	37.00	5,994.00
	f) 80 mm dia	Metre	226	42.00	9,492.00
	g) 100 mm dia	Metre	104	47.00	4,888.00
	h) 150 mm dia	Metre	166	50.00	8,300.00
1.5.3	Providing and fixing butterfly valves, wafer end type class PN 1.6 as per IS: 13095-1991 or BS: 5155, including necessary nuts, bolts, gaskets etc. complete (without gear box) (Discharge Side)				
	a) 150 mm dia	Each	9	9956.40	89,607.60
	b) 100 mm dia	Each	2	5856.60	11,713.20
	c) 80 mm dia	Each	5	4442.40	22,212.00
	d) 50 mm dia	Each	10	3552.40	35,524.00
1.5.4	Providing & Fixing of Dual plate (Wafer Type) Non return valves as per IS : 5312 (PN 1.6) swing check type with required flanges , nuts , bolts and gaskets etc. complete				
	a) 150 mm dia	Each	7	10501.00	73,507.00
	b) 100 mm dia	Each	2	7927.20	15,854.40
	c) 80 mm dia	Each	5	6286.20	31,431.00

1.5.5	Supply, Providing, fixing, testing & commissioning of SS spring loaded air relief valve for pressure of 16 kg/sqm of approved quality with gm isolation valve, tapers, G.I. pipes and specials etc. including making necessary screwed/ flanged joints by providing all jointing materials including painting and testing the joints to hydraulic pressures specified for pipes all complete as per drawings and as directed by the Engineer-in-Charge.				
	a) 25 mm dia	Each	2	2300.00	4,600.00
1.5.6	<b>Supply, Providing and fixing</b> electrically operated water <b>flow switches</b> (Vane type) including tamper switch and accessories, complete with tap off socket arrangement as required, with 2 Nos. NO/ NC potential free contact.				
	a) 150 mm dia	Each	3	5100.00	15,300.00
	b) 100 mm dia	Each	2	4500.00	9,000.00
	c) 80 mm dia	Each	5	4300.00	21,500.00
1.5.7	<b>Supply, Providing &amp; Fixing</b> of Installation <b>Control Valve</b> with turbine type automatic Alarm (Water motor Gong) to be connected with control valve, drain & test valve and all other necessary components as per manufacturer's specifications complete as required and shall be suitable for test pressure 21 Kg/ cm <sup>2</sup> .				
	a) 150 mm dia	Metre	1	55000.00	55,000.00
1.5.8	<b>Providing &amp; fixing brass quartzoid sprinklers (UL, FM approved) of 20 mm dia size, suitable for sustaining the 175 psi pressure on the seat &amp; water hammer effect. The type &amp; temperature rating shall be as follows :</b>				
	a) i) <b>Pendent type (68 deg.C) quick response sprinkler, K-80</b>	Each	672	650.00	4,36,800.00

	<b>ii) Pendent type (79 deg.C) quick response sprinkler for kitchen area, K-80</b>	Each	0	650.00	
	<b>b) Upright type (68 deg.C) quick response sprinkler, K-80</b>	Each	368	650.00	2,39,200.00
	<b>c) Side wall type (68 deg.C) quick response sprinkler, K-80</b>	Each	0	950.00	
1.5.9	<b>SS Flexible braided pipe for below false ceiling sprinkler (ul / fm approved) 800/1000 MM LENGTH (OPTIONAL)</b>	Each	672	1500.00	10,08,000.00
1.5.10	Providing & fixing dial type (100 mm dia) <b>pressure gauge</b> with isolation ball valve suitable for working pressure of 250 PSI. Cost shall be inclusive of providing any short pieces, nipples, elbows etc as required. (For Ground and Terrace floor)	Nos	4	1700.00	6,800.00
1.4 12	Supply, installation, testing and commissioning of Fire Brigade inlet connection with provision for Four female instantaneous coupling fabricated out of 150 mm dia. approved make heavy class MS pipe with one no. dual plate (Wafer Type) non-return valve, one no. Butter Fly valve (Bafer Type) for fire fighting system including making connection by providing necessary piping & fittings fire fighting wet riser, painting the same with 2 coats of enamel paint over a coat of Zinc Chromate primer all complete as per drawings, specifications.				
	150 mm four way with Butterfly valve & NRV	Nos	2	28157.40	56,314.80
1.4 13	<b>Supply, Providing, cutting, fabricating, welding, erecting &amp; fixing in position of M.S. support</b> for Fire fighting pipes & installations including painting with two coats of synthetic enamel paint of approved make & shade over a coat of approved steel primer and as instructed by E.I.C. Material shall conform to IS-2062.	Kg	1000	110.00	1,10,000.00
<b>TOTAL OF PART A (SECTION 4)</b>					<b>98,89,696.40</b>

**PART A: CIVIL, INTERIOR, SANITARY PLUMBING AND FIRE WORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001**

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**Section 5: Exterior Upgradation of Head Office Campus**

ITEM NO	DESCRIPTION	UNIT	QTY	Rate	Amount Rs. P
<b>1</b>	<b>SURFACE DRESSING</b>				
	Surface Dressing of the ground in any kind of soil including removing vegetation inequalities not exceeding 15 cm depth and disposal of the rubbish within a lead upto 75 m as directed.	Sq.M.	1200	10	12,000.00
<b>2</b>	<b>EXCAVATION OF EARTH</b>				
	Earth work in excavation of foundation trenches or drains, in all sorts of soil (including mixed soil but excluding laterite or sandstone) including removing, spreading or stacking the spoils within a lead of 75 m. as directed. The item includes necessary trimming the sides of trenches, levelling, dressing and ramming the bottom, bailing out water as required complete.				
	Depth of excavation not exceeding 1,500 mm.	%CUM	200	11927	23,854.00
	Depth of excavation for additional depth beyond 1,500 mm. and upto 3,000 mm. but not requiring shoring.	%CUM	200	19238	38,476.00
	Depth of excavation for additional depth beyond 3000 mm. upto 4000mm. excluding cost of shoring as necessary.	%CUM	50	23470	11,735.00
<b>3</b>	<b>EARTHWORK IN FILLING</b>				

	Earth work in filling in compound, tank, low land, ditches etc. with good earth, in layers not exceeding 150 mm. including breaking clods and consolidating the same by ramming and dressing complete. (Payment will be made on profile measurement before and after the work)				
	With earth obtained by fresh excavation upto 1800 mm. depth (including the cost of excavation from land arranged by the Deptt. within a lead of 100 m.)	%CUM	1.5	17218	25,827.00
	(iii) With carried earth arranged by the contractor within a radius exceeding 5 km. but not exceeding 10 km. including cost of carried earth.	%CUM	1.5	51236	76,854.00
<b>4</b>	<b>BAILING OUT WATER FROM TRENCHES</b>				
	Bailing or pumping out water from foundation trenches.	%CUM	500	2088	10,440.00
	This item should be executed on the specific direction of the Engineer-in-charges when he is satisfied in his absolute discretion, that this has not been necessitated due to any fault on the part of the contractor				
	(Payment, if permitted, will be made on the quantity of water calculated on the basis of initial and final water level measured before starting and completion of each days work which necessitates a bailing / pumping of water from the trench. The final level of water to be measured, will depend on the level at which the day's work will be taken up. The rate includes any seepage water that may percolate in the trench during pumping)				
<b>5</b>	<b>PUMMPING OUT WATER</b>				
	Pumping out water from ponds or tanks	%CUM	200	1044	2,088.00
	(Payment if permitted will be made on the quantity of water calculated on the basis of initial water level and final level on consideration being made for any water that may have been added through percolation or otherwise)				

<b>6</b>	<b>DISMANTLING MASONRY</b>				
	Dismantling all types of masonry excepting cement concrete plain or reinforced, stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m.				
	In ground floor including roof	CUM	100	447	44,700.00
<b>7</b>	<b>REMOVING SEMI LIQUID MUD</b>				
	Extra over the corresponding item of earth work for removing semi liquid mud or slushy earth by iron pans, buckets etc.	%CUM	300	2658	7,974.00
<b>8</b>	<b>DISMANTLING PLAIN CEMENT CONCRETE</b>				
	Dismantling all types of plain cement concrete works, stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m.				
	In ground floor including roof				
	upto 150 mm. thick	CUM	35	939	32,865.00
	above 150 mm. thick	CUM	25	1417	35,425.00
<b>9</b>	<b>DISMANTLING R.C.C. WORKS</b>				
	Dismantling R.C. floor, roof, beams etc. including cutting rods and removing rubbish as directed within a lead of 75 m. including stacking of steel bars.				
	In ground floor including roof	CUM	50	1956	97,800.00
<b>10</b>	<b>DISMANTLING TERRACED ROOF</b>				
	Dismantling terraced roof in ground floor roof (including floor finish, if any.) taking out carefully tiles with beams, joists, tees or burgahs covering floor below, sorting and stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m.	Sq.M.	120	230	27,600.00
<b>11</b>	<b>DISMANTLING LIME TERRACED ROOF</b>				



	Dismantling carefully terraced floor only (including floor finish if any) or lime terracing in ground floor roof and removing rubbish as directed within a lead of 75 m	CUM	50	739	36,950.00
<b>12</b>	<b>DISMANTLING ARTIFICIAL STONE FLOOR</b>				
	Dismantling artificial stone flooring upto 50 mm. thick by carefully chiselling without damaging the base and removing rubbish as directed within a lead of 75 m.				
	In ground floor including roof.	SQM	350	50	17,500.00
<b>13</b>	<b>TAKING OUT C.I./G.C.I SHEETS</b>				
	Taking out carefully G.C.I. or C.I. or asbestos sheets (including ridges etc.) from roof or wall after unscrewing bolts, nuts, screws etc.and stacking the material at site as directed.	SQM	420	41	17,220.00
	(Payment to be made on measurement of portion of roof or wall removed.)				
<b>14</b>	<b>REMOVAL OF RUBBISH</b>				
	Removal of rubbish,earth etc. from the working site and disposal of the same beyond the compound, in conformity with the Municipal / Corporation Rules for such disposal, loading into truck and cleaning the site in all respect as per direction of Engineer in charge	CUM	450	166	74,700.00
<b>15</b>	<b>LABOUR FOR BREAKING BRICKS</b>				
	Labour for breaking 1/2 Bricks or Full Bricks (Old / New) into metal / Khoa / chips as per specific size and stacking the same at site or stackyard with due allowance of sinkage / shrinkage as per direction of the Engineer in charge.				
	Metal Size 50 mm to 65 mm	CUM	35	250	8,750.00
	Khoa Size 32 mm to 25 mm	CUM	25	288	7,200.00
	Chips Size 20 mm to 10 mm	CUM	20	519	10,380.00

<b>16</b>	<b>DISMANTLING WOODEN WALLING AND FLOORING</b>				
	Dismantling carefully wooden walling, flooring and ceiling and stacking dismantled materials as directed.	SQM	1500	14	21,000.00
<b>17</b>	<b>LABOUR FOR SCRAPING AND PICKING OLD DILAPIDATED MORTAR</b>				
	Labour for scrapping and picking up old dilapidated mortar / plaster (Cement / Surki / Lime mortar) from the surface of old Brick faces including cleaning the frog without damaging the Brick and stacking the Bricks at Site / Stacking yard as per direction of Engineer-in-charge including removing all debris rubbish from site complete.	1000 nos	20	950	19,000.00
<b>18</b>	<b>DIMSNTLING WOOD WORK IN POST, PLATES</b>				
	Dismantling carefully wood work in posts, postplates, rafters, partition etc., sorting and stacking servicable materials at site and removing rubbish as directed.	CUM	15	278	4,170.00
<b>19</b>	<b>SINGLE BRICK FLAT SOLING</b>				
	Single Brick Flat Soling of picked jhama bricks including ramming and dressing bed to proper level and filling joints with local sand.	SQM	250	358	89,500.00
<b>20</b>	<b>LABOUR FOR LAYING BRICK FLAT SOLING</b>				
	Labour for laying single brick flat soling including ramming and dressing bed to proper level and filling joints with powdered earth.	SQM	250	40	10,000.00
<b>21</b>	<b>LAYING BRICK KHOA</b>				
	Supplying and laying brick Khoa of ordinary bats of size (38 mmx 63 mm)of approved quality in 100 mm layer (loose) filling in gaps with small ones rammed and compact as directed true to level and grade.	SQM	200	159	31,800.00

<b>23</b>	<b>250 MM THICK BRICKWORK</b>				
	Brick work with 1st class bricks in cement mortar (1:4)				
	In foundation and plinth	CUM	30	5682	1,70,460.00
	(b) In superstructure, ground floor	CUM	20	5905	1,18,100.00
<b>24</b>	<b>LABOUR FOR BRICK STRING COURSE</b>				
	Extra Labour for brick for string course and set square brick work, brackets and similar other projection brick works to be paid in respective item.	CUM	60	251	15,060.00
<b>25</b>	<b>125 MM THICK BRICKWORK</b>				
	125 mm. thick brick work with 1st class bricks in cement mortar (1:4) in ground floor.	SQM	300	724	2,17,200.00
<b>26</b>	<b>75 MM THICK BRICKWORK</b>				
	(a) 75 mm. thick brick work with 1st class bricks set in cement, sand mortar (1:4) in ground floor including H.B. netting in every alternate layers.	SQM	50	497	24,850.00
<b>27</b>	<b>BONDING NEW AND OLD COURSE OF BRICK WORK</b>				
	Bonding new brick work with old at every 4th course including cutting chase and mending damages in cement mortar (1:4) and curing. [Mode of measurement: The actual bonded area shall be considered for payment]	SQM	180	265	47,700.00
<b>28</b>	<b>MAKING SCAFFOLDING</b>				
	Making one set of scaffolding only for replacing glass panels, painting, uprooting plant and another repairing works of building and S&P works for external works only with 10 cm. dia bamboo as main posts at the rate of 1 metre centre to centre and 7.5 cm. dia bamboo ties @ 0.75 metre apart fitting and fixing with necessary coir, nails etc. as per direction of the Engineer-in-charge.				

	(This item should be executed only after prior approval of the Engineer-incharge). Firstly, one number to be paid and then labour rate for shifting up to further nineteenth (19) times @ 10% each time to be considered. If necessary further after twenty times of total use, another one number new and labour rate for shifting to be considered accordingly.				
	3.90 metre height	EACH	50	279	13,950.00
	Extra for additional 3.6 height or part thereof	EACH	30	245	7,350.00
<b>29</b>	<b>ORDINARY CEMENT CONCRETE WITH 20MM STONE CHIPS</b>				
	Ordinary Cement concrete (mix 1:2:4) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement,if any, in ground floor as per relevant IS codes.				
	a) Pakur Variety	CUM	45	5450	2,45,250.00
<b>30</b>	<b>CONTROLLED CEMENT CONCRETE WITH 20MM STONE CHIPS OF M20 GRADE</b>				
	Controlled Cement concrete with well graded stone chips (20 mm graded nominal size) excluding shuttering and reinforcement with complete design of concrete as per IS : 456 and relevant special publications, submission of job mix formula after preliminary mix design after testing of concrete cubes as per direction of Engineer-in charge. Consumption of cement will not be less than 300 Kg of cement with Super plasticiser per cubic meter of controlled concrete but actual consumption will be determined on the basis of preliminary test and job mix founmula. In ground floor and foundation.[using concrete mixture]M 20 Grade				
	(i) Pakur Variety	CUM	30	6160	1,84,800.00
<b>31</b>	<b>CONTROLLED CEMENT CONCRETE WITH 20MM STONE CHIPS OF M25 GRADE</b>				

	Controlled Cement concrete with well graded stone chips (20 mm nominal size) excluding shuttering and reinforcement with complete design of concrete as per IS : 456 and relevant special publications, submission of job mix formula after preliminary mix design after testing of concrete cubes as per direction of Engineer-in charge. Consumption of cement will not be less than 300 Kg of cement with Super plasticiser per cubic meter of controlled concrete but actual consumption will be determined on the basis of preliminary test and job mix formula. In ground floor and foundation.[using concrete mixture] M 25 Grade				
	(i) Pakur Variety	CUM	80	6499	5,19,920.00
<b>32</b>	<b>R.C.C PRECAST THIN LINTEL</b>				
	Supplying,hoisting,fitting and fixing R.C.C. precast thin lintels, 75 mm. thick (1:1.5:3) conforming to the specification laid down in C.B.R.I. data sheet No.1 with stone chips, sand, cement and reinforcement (both main and distribution) bars upto 1.00 percent as per drawing and specification including placing in situ and supporting arrangement for taking the load of super-imposed brick work and striking of the same when directed.				
	I. SAIL/ TATA/RINL	CUM	1	11090	11,090.00
<b>33</b>	<b>HIRE AND LABOUR CHARGES FOR CENTERING, SHUTTERINNG</b>				
	Hire and labour charges for shuttering with centering and necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor)				

	(When the height of a particular floor is more than 4 m the equivalent floor height shall be taken as 4 m and extra for works beyond the initial 4 m ht. shall be allowed under 12 (e) for every 4 m or part thereof)				
	(a) 25 mm to 30 mm thick wooden shuttering as per decision & direction of Engineer-In-Charge.	SQM	300	335	1,00,500.00
	<b>Notes:- For shuttering in shell roof, grid roof with vertical faces folded plate, arched roof the rate in 36 (a), 36 (b) &amp; 37 (c) of subhead B above to be increased by 100 % . For grid roof with splayed faces, rate is to be increased by 150%.</b>				
<b>34</b>	<b>REINFORCEMENT FOR R.C.C</b>				
	Reinforcement for reinforced concrete work in all sorts of structures including distribution bars, stirrups, binders etc initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape, placing in proper position and binding with 16 gauge black annealed wire at every intersection, complete as per drawing and direction.				
	(a) For works in foundation and upto roof of ground floor/upto 4 m				
	(i) Tor steel/Mild Steel				
	I. SAIL/ TATA/RINL	MT	22	71416	15,71,152.00
	(b)Add extra over the rate of ground floor/initial 4 m for each basement floor and each additional floor below/ above ground floor				
	(i) Upto 4 th floor roof in each addl. Floor	QNTL	100	48	4,800.00
<b>35</b>	<b>BONDING AGENT</b>				
	a) Applying 2 coats of bonding agent with synthetic multi functional rubber emulsion having adhesive and water proofing properties by mixing with water in proportion (1 bonding agent : 4 water : 6 cement) as per Manufacturer's specification	SQM	580	88	51,040.00

<b>36</b>	<b>WATER PROOFING AND PLASTICISING ADMIXTURE</b>				
	Extra rate for using water proofing and plasticising admixture @ 0.2% by weight of cement (or at manufacturer's specified rate) for concrete of various grades.	kg	350	119	41,650.00
<b>37</b>	<b>ZINC ALLOY COATED STEEL SHEET</b>				
	Supplying, fitting & fixing Zn-Al alloy (55% Al & 45% Zn) coating of 150 grams per sq. metre (followed by colour coated on both side) steel sheet work having minimum yield strength of 550 Mpa of trapizoidal profile of approved make (excluding the supporting frame work) fitted and fixed with 55 mm & 25 mm self tapping screw, EPDM Washer 16 mm dia & 3 mm th. washer etc. complete with 150 mm end lap and one corrugation minimum side lap. (Payment to be made on area of finished work).				
	(i) In Roof:-	SQM	120	787	94,440.00
	a) With 0.5 mm thick sheet				
<b>38</b>	<b>M.S. STRUCTURAL WORKS WITH JOIST SECTIONS</b>				

	M.S. structural works in columns, beams etc. with simple rolled structural members (e.g. joists, angle, channel sections conforming to IS: 226, IS: 808 & SP (6)- 1964 connected to one another with bracket, gussets, cleats as per design, direction of Engineer-incharge complete including cutting to requisite shape and length, fabrication with necessary bolting, metal arc welding conforming to IS: 816- 1969 & IS: 1995 using electrodes of approved make and brand conforming to IS:814-2004, haulage, hoisting and erection all complete. The rate includes the cost of rolled steel section, consumables such as electrodes, gas and hire charge of all tools and plants and labour required for the work including all incidental charges such as electricity charges, labour insurance charges etc.				
	Payment to be made on the basis of calculated weight of structural members only in finished work as per IS specified weight. Payment for gusset, bracket, cleat, rivets, bolts and nuts may be made by adding the actual weight of such items with the weight of finished structural members or 7% of weight for finished structural members weighing not less than 22.5 Kg. / m. or 15 % of weight for finished structural members weighing less than 22.5 Kg. / m. may be increased allow for bracket, cleat, rivet, bolts and nuts etc. and no separate payment being made for these items, as per direction of Engineer In Charge. The rates are considered for a height of erection 8m. / 2nd floor level from the ground. Add 1.5% extra over the rate for each additional floor or 4m. beyond initial 8m. or part thereof.				
	I) For structural members of specified sections weighing less than 22.5 Kg./m	MT	3	72603	2,17,809.00
<b>39</b>	<b>COLLAPSIBLE GATE</b>				



	Collapsible gate with 40mm x 40mm x 6mm Tee as top and bottom guide rail, 20mm x 10mm x 2mm vertical channels 100mm apart in fully stretched position 20mm x 5mm M.S. flats as collapsible bracings properly rivetted and washered including 38mm steel rollers including locking arrangements, fitted and fixed in position with lugs set in cement concrete and including cutting necessary holes, chasing etc. in walls, floors etc. and making good damages complete.				
	In ground floor.	SQM	20	4330	86,600.00
	(Payment will be made on the area of the gate covered by two guard rails and two extreme channels)				
	Extra over the corresponding item of collapsible gate for top hung	SQM	20	181	3,620.00
<b>40</b>	<b>WELDING</b>				
	Welding in M.S. structural work with gas or electric:				
	Tack weld	Point	2000	9	18,000.00
	Continuous weld.	cm run	1000	9	9,000.00
<b>41</b>	<b>WOOD WORK IN POST, POST PLATES</b>				
	(A) Wood work in posts, post plates, rafters, battens, truss members, purlins etc. fitted and fixed complete (excluding the cost of bolts, paints, but including the cost of nails, screws etc.) (The quantum should be corrected upto three decimals)				
	(i) Sal : Siliguri.	CUM	1	102873	1,02,873.00
<b>42</b>	<b>PLASTER</b>				
	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints including throating, nosing and drip course, scaffolding/staging where necessary (Ground floor).[Excluding cost of chipping over concrete surface]				
	(ii) With 1:4 cement mortar				

	(a) 20 mm thick plaster	SQM	100	194	19,400.00
<b>43</b>	<b>NEAT CEMENT PUNNING</b>				
	Neat cement punning about 1.5mm thick in wall, dado, window sill, floor etc.NOTE:Cement 0.152 cu.m per100 sq.m.	SQM	100	34	3,400.00
<b>44</b>	<b>LABOUR FOR CHIPPING CONCRETE SURFACE</b>				
	Labour for Chipping of concrete surface before taking up Plastering work.	SQM	500	21	10,500.00
<b>45</b>	<b>EXTERIOR GRADE ACRYLIC PRIMER</b>				
	Applying Exterior grade Acrylic primer of approved quality and brand on plastered or concrete surface old or new surface to receive decorative textured (matt finish) or smooth finish acrylic exterior emulsion paint including scraping and preparing the surface thoroughly, complete as per manufacturer's specification and as per direction of the EIC.				
	In Ground Floor:				
	(b) Two Coats	%SQM	1500	4510	67,650.00
	[This item to be done under specific instruction of the Superintending Engineer]				
	N.B.: -Extra for each additional floor in external walls refer item 1 of subhead C				
	<b>B. MISCELLANEOUS ITEMS</b>				
<b>46</b>	<b>WATER PROOF WALL PUTTY</b>				
	Rendering the Surface of walls and ceiling with White Cement base WATER PROOF wall putty of approved make & brand.(1.5 mm thick)	SQM	150	122	18,300.00
	<b>A. ORIGINAL WORKS</b>				
<b>47</b>	<b>PRIMING ON STEEL</b>				
	(a) Priming one coat on steel or other metal surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand papering etc.	SQM	120	29	3,480.00

<b>48</b>	<b>PRIMING ON TIMBER/PLASTERED SURFACE</b>				
	(b) Priming one coat on timber or plastered surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand papering etc.	SQM	280	38	10,640.00
	(This item is applicable to new work or old work when the original surface has been exposed by removal of old paint.)				
<b>49</b>	<b>PAINTING WITH BEST QUALITY SYNTHETIC ENAMEL PAINT</b>				
	(A) Painting with best quality synthetic enamel paint of approved make and brand including smoothening surface by sand papering etc. including using of approved putty etc. on the surface, if necessary :				
	(a) On timber or plastered surface :				
	With super gloss (hi-gloss) -				
	(iv) Two coats (with any shade except white)	SQM	100	81	8,100.00
	(b) On steel or other metal surface :				
	With super gloss (hi-gloss) -				
	(iv) Two coats (with any shade except white)	SQM	150	79	11,850.00
<b>50</b>	<b>ACRYLIC EMULSION PAINT</b>				
	Applying Acrylic Emulsion Paint of approved make and brand on walls and ceiling including sand papering in intermediate coats including putty (to be done under specific instruction of Superintending Engineer) : (Two coats)				
	i) Standard Quality	SQM	850	62	52,700.00
<b>51</b>	<b>BRICK SOLING WITH JHAMA BRICKS</b>				

	Brick soling with picked jhama bricks including preparation of bed as necessary with brick joints properly filled in and packed with powdered earth and including necessary cushion of similar material below the soling (and in between layers when more than one layer is used) completes as per direction.				
	(a) Single brick flat soling (thickness 75 mm.)	SQM	20	339	6,780.00
	(g) Extra rate for sand	SQM	20	13	260.00
<b>52</b>	<b>SINGLE FLAT BRICK SOLING</b>				
	Labour for laying soiling with departmental bricks including carriage of departmental bricks within a lead of 150 metres preparation of bed as necessary with brick joints properly filled in and packed with brick joints properly filled in and packed with local sand or powdered earth and including necessary cushion of similar materials below the soling (and in between layers when more than one layer is used)				
	(a) Single brick flat soling (thickness 75 mm)	%SQM	1200	3584	43,008.00
<b>53</b>	<b>BRICK ON EDGING</b>				
	Labour for laying brick edging (75 mm wide) with departmental brick laid true to line and level including carriage of departmental bricks within a lead of 150 metres cutting necessary trench in soil or in hard metalled surface laying the bricks and repacking the trench (on both sides of the edging) with spoils and ramming the same thoroughly				
	(a) Brick-on-edge edging (125 mm) depth.	%METRE	500	752	3,760.00
<b>54</b>	<b>PRECAST CEMENT CONCRETE KERBS</b>				

	Providing and fixing at or near ground level precast cement concrete in kerbs (size: 450 mm x 350 mm x width 150 mm at bottom with bevelled nosing at top) of cement concrete M20 Grade without reinforcement, fixing as per approved pattern and setting in position at site after preparing the bed grade and slopes by laying Cement concrete with jhama khoa (1:4:8) as per specification and direction of Engineer-in- Charge including filling of joints with 10 mm thick cement mortar (3:1) and back filling the vertical piece properly with earth duly compacted and curing the mortar joints for atleast 3 days including cost and carriage of all materials complete.	METRE	60	636	38,160.00
<b>55</b>	<b>LABOUR FOR TAKING OUT BRICK ON END EDGING</b>				
	Labour for taking out old brick-on-edge edging including removing debris to flank or berm sorting out serviceable materials and stacking.	%SQM	1500	635	9,525.00
<b>56</b>	<b>TAKING OUT EXISTING BRICK EDGING</b>				
	Taking out carefully existing (75 mm. wide) brick edging and relaying the edging in the same trench after rectifying line and level as required and repacking the trench thoroughly on both sides of the edging.				
	NB. -- This rate only for Northern Circle, NBCC-I & NBCC-II				
<b>57</b>	<b>LABOUR FOR TAKING OUT OLD SOLING EDGING</b>				
	Labour for taking out old soling edging including removing debris				
	(a) Single flat soling	%SQM	1000	981	9,810.00
	(b) Double flat soling	%SQM	1500	1443	21,645.00
<b>58</b>	<b>LABOUR FOR TAKING OUT BRICK ON END EDGING</b>				

	Labour for taking out brick-on-end edging including removing debris to flank or berm sorting out serviceable materials and stacking.	%METRE	300	664	1,992.00
<b>59</b>	<b>LABOUR FOR TAKING OUT STONE EDGING</b>				
	Labour for taking out carefully existing stone edging, relaying edging in the same trench after rectifying line and level as required with all old materials or with partly old and partly new departmental materials (including carriage of new materials within a lead of 120m) and repacking the trench thoroughly on both sides of the edging.				
	(a) 100 mm. wide and 125 mm. deep edging with stone sets laid-on-edge.	%METRE	300	1876	5,628.00
<b>60</b>	<b>PREPARATION OF BEDS FOR HEDGING</b>				
	Preparation of beds for hedging and shrubbery by excavating 60cm deep and trenching the excavated base to a further depth of 30cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 ( 8 parts of stacked volume of earth after reduction by 20%, one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary watering and finally fine dressing, levelling etc., including stacking and disposal of materials declared unserviceable and surplus earth by spreading and levelling as directed, within a lead of 50m lift upto 1.5m complete.This includes supply of labour, tools & plants including materials.Planting hedge plants in two rows at 30cm apart	%SQM	500	3530	17,650.00
<b>61</b>	<b>MAINTAINANCE OF HEDGE FOR ONE YEAR</b>				

	Maintenance of hedge for one year including application of necessary pesticide, farm yard manure, replacement of damaged hedge plant by new one complete in all respect as per instruction of Engineer-in-charge. This includes supply of labour, tools & plants including materials.	%SQM	2000	11770	2,35,400.00
<b>62</b>	<b>PLANTING OF AVENUE PLANTS</b>				
	Planting of trees ( Avenue plants) in 0.60m dia holea, 1m deep dug in the ground, mixing the soil with decayed farm yard/sludge manure. This includes supply of labour, tools & plants including materials but excluding cost of tree.	EACH	5	117	585.00
<b>63</b>	<b>MAINTAINANCE OF TREES FOR ONE YEAR</b>				
	Maintanance of trees for one year (Avenue Plants) including watering, trimming, manuring, spraying insecticide and guarding as required. This includes supply of labour, tools & plants including materials.	EACH PER YEAR	5	477	2,385.00
<b>64</b>	<b>SUPPLYING AND PLANTING DIFFERENT TREES</b>				
	Supplying and Planting of different plant / trees ( Supplying well grown plants bushy and healthy, minimum height as specified i.e. exposed height including all leads & lift, carriage, handling, manuring, applying presticide and fertilizer etc.				
	i) Furcaria veriegated 10-12 leaves in height 20-30cm in earthen pots of size 25cm.	EACH	30	162	4,860.00
	ii) Rangon chineese of size not less than 20cm	EACH	30	12	360.00
	iii) Rangon chineese polythene pack	EACH	30	8	240.00
	iv) Rangon hi-breed healthy plant.	EACH	30	23	690.00
	v) Duranta goldianna of size not less than 20cm	EACH	30	15	450.00
	vi) Duranta healthy plant of big size	EACH	30	25	750.00
	vii) Duranta poly pack	EACH	30	6	180.00

	viii) China palm of leaves 4-5 in earthen pots size 25cm	EACH	30	73	2,190.00
	ix) Ficus bengalensis (variegated) of height 60-75cm in earthen pots size 30cm	EACH	30	185	5,550.00
	x) Ficus blakii (F. Vivicon) well branched (Bushy) of height 120cm - 135 cm in earthen pot of size 30cm.	EACH	30	187	5,610.00
	xi) Ficus elastica Decora ( Rubber plant ) of height 90cm- 60cm in each earthen pot of size 25cm.	EACH	30	69	2,070.00
	xii) Ficus infectoria (Pilikhan) of height 135cm-150cm in big polybag of size 25cm-30cm	EACH	30	61	1,830.00
	xiii) Ficus regnold well branched (bushy) of height 120cm- 135cm in cement pots of size 35cm.	EACH	30	142	4,260.00
	xiv) Acalypha species ( Red/Green) of height 30cm-90cm in earthen pots of size 25cm.	EACH	30	78	2,340.00
	xv) Acalypha species (Red/Green) of height 30cm-90cm in earthen pots of size 20 cm.	EACH	30	52	1,560.00
	xvi) Adenium obesum of height 90cm-60cm in earthen pots of size 25cm.	EACH	30	207	6,210.00
	xvii) Bougainvillea (mix variety) of height 30cm-90cm in polybag of size 10cm-15cm.	EACH	30	39	1,170.00
	xviii) Bougainvillea (mix variety) of height 30cm-90cm in earthen pots of size 20cm.	EACH	30	8	240.00
	xix) Bougainvillea (name variety, bushy plants, full bloom) of height 90cm-60cm in cement pots of size 30cm.	EACH	30	103	3,090.00
	xx) Croton (broad leaves) 3-5 branches of height 90cm- 120cm in cement pots of size 30cm.	EACH	30	148	4,440.00
	xxi) Croton different varieties of height 30 cm to 90 cm in earthen pots of size 25cm.	EACH	30	110	3,300.00
	xxii) Croton different varieties of height 30 cm to 90 cm in earthen pots of size 20 cm.	EACH	30	64	1,920.00
	xxiii) Hibiscus Rosa Sinensis of height 90 cm to 60 cm in earthen pots of size 20 cm.	EACH	30	40	1,200.00
	xxiv) Hibiscus Rosa Sinensis of height 60 cm to 75 cm in earthen pots of size 35 cm.	EACH	30	53	1,590.00
	xxv) Hibiscus Variegated of height 60 cm to 75 cm in earthen pots of size 25 cm.	EACH	30	65	1,950.00



	xxvi) Areca Palm 4 - 5 suckers of height 90 cm to 105 cm in earthen pots of size 25 cm.	EACH	30	127	3,810.00
	xxvii) Areca Palm 4 - 5 suckers of height 120 cm to 135 cm in earthen pots of size 25 cm.	EACH	30	163	4,890.00
	xxviii) Dracaena (Mahatma) of height 30 cm to 90 cm in earthen pots of size 20 cm.	EACH	30	51	1,530.00
	xxix) Dracaena (Song of India) of height 30 cm to 90 cm in earthen pots of size 20 cm.	EACH	30	51	1,530.00
	xxx) Dracaena Fragrance of height 90 cm to 60 cm in earthen pots of size 35 cm.	EACH	30	75	2,250.00
	xxxi) Dracaena Green of height 30 cm to 90 cm in earthen pots of size 20 cm.	EACH	30	34	1,020.00
	xxxii) Dracaena Marginata of height 30 cm to 90 cm in earthen pots of size 20 cm.	EACH	30	49	1,470.00
	xxxiii) Dracaena Reflexa of height 30 cm to 90 cm in earthen pots of size 20 cm.	EACH	30	44	1,320.00
	xxxiv) Dracaena Rosea of height 30 cm to 90 cm in earthen pots of size 20 cm.	EACH	30	64	1,920.00
	xxxv) Dracaena Victoria of height 30 cm to 90 cm in earthen pots of size 25 cm.	EACH	30	83	2,490.00
	xxxvi) Dracaena Wameckal of height 30 cm to 90 cm in earthen pots of size 20 cm.	EACH	30	46	1,380.00
	xxxvii) Eranthemum Species of height 30 cm to 90 cm in earthen pots of size 20 cm.	EACH	30	51	1,530.00
	xxxviii) Hibiscus Rosa sinensis of height 90 cm to 60 cm in earthen pots of size 20 cm.	EACH	30	42	1,260.00
<b>65</b>	<b>REPAIRING CRACK IN WALL BY CEMENT GROUTING</b>				
	Repairing crack in wall by cement grouting (1 : 2) including widening the crack on the surface (into V section) cleaning and packing the same with cement mortar (1 : 2) and finishing off to match with adjacent surface. (Cement-69 Kg/100 m)	%MTR	1000	1392	13,920.00
<b>66</b>	<b>STITCHING CRACK IN BRICK WALL BY CUTTING OUT FACE BRICK 125.MM DEEP</b>				

	(A) Stitching crack in brick wall by carefully cutting out face brick 125 mm. deep into the wall, cleaning the gap and filling up the same with precast cement concrete blockcarefully set in cement mortar (1:3) including mending good damages and finishing the surface to match with adjacent areas complete as per direction.				
	(i) With plain cement concrete blocks(1:1½:3) with stone chips.				
	(a) Block size 250 x 125 x 75 mm.	EACH	35	87	3,045.00
	(Cement-1.85 Kg/No.)				
	(b) Block size 250 x 125 x 150 mm.	EACH	40	100	4,000.00
	(Cement-2.5 Kg/No.)				
<b>67</b>	<b>STITCHING CRACK IN BRICK WALL BY CUTTING OUT FACE BRICK 250MM DEEP</b>				
	(B) Stitching crack in brick wall by carefully cutting out face brick 250 mm. long, 75 mm. thick and 125 mm deep into the wall,cleaning the gap and filling up the same with sound new brick, carefully set in cement mortar (1:3) including mending good damages and finishing the surface to match with adjacent areas complete as per direction.	EACH	160	42	6,720.00
<b>68</b>	<b>RENEWING WEATHERED FACE BRICK</b>				
	(C) Renewing weathered face brick including taking out the old brick completely and setting the head brick carefully in cement mortar (1:3) complete,including making good all damages.				
	(i) In stretcher course. ( Cement-0.75 Kg/No.)	EACH	150	37	5,550.00
	(ii) In header course- ( Cement-1.0 Kg/No.)	EACH	500	38	19,000.00
	(iii) In header course with the new brick projecting 62 mm. to 225 mm. from the wall surface (Cement- 0.5Kg/No.)	EACH	130	33	4,290.00
<b>69</b>	<b>UPROOTING AND REMOVING PLANTS</b>				

	Uprooting and removing plants from the surface of walls parapet etc and making good damages. (Repairing of damages to be paid separately).				
	(a) Small plant of girth of exposed stem upto 75 mm. lift upto 6 mtr.	EACH	30	50	1,500.00
	(b) Medium size plant of girth of exposed stem above 75 mm. but not exceeding 150 mm. lift upto 6 mtr.	EACH	20	60	1,200.00
	(c) Large plant of girth of exposed stem above 150 mm. but not exceeding 225 mm. lift upto 6 mtr.	EACH	20	187	3,740.00
	Note : For lift beyond initial 6 mtr. the rate will be increased @ 20% for each additional lift if 6 mtr. or part thereof				
<b>70</b>	<b>REMOVING SCUM FROM BOTTOM OF FLOOR</b>				
	Removing scum form the bottom floor of service latrine washing the floor thoroughly and treating the same with liberal sprinkling of bleaching powder (including cost of bleaching power)	SQM	350	32	11,200.00
	(Payment to be made on affected area of floor)				
<b>71</b>	<b>CLEANING AND REMOVING GARBAGE</b>				
	Cleaning and removing conservancy garbage mixed with rubbish & other filthy materials from the road side flank, drain and compound including cutting, loading, unloading to and from truck or cart by Mathor labour & removing the same to any distance.	%CUM	300	5662	16,986.00
<b>72</b>	<b>DESIGNER PAVER BLOCKS</b>				

	Providing and laying factory made chamfered edge Cement Concrete paver blocks in footpath, parks, lawns, drive ways or light traffic parking etc, of required strength, thickness & size/ shape, made by table vibratory method using PU mould, laid in required colour & pattern over 50mm thick compacted bed of sand, compacting and proper embedding/laying of inter locking paver blocks into the sand bedding layer through vibratory compaction by using plate vibrator, filling the joints with sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand. complete all as per direction of Engineer-in-Charge.				
	80 mm thick C.C. paver block of M-30 grade with approved color design and pattern.	SQM	1020	953	9,72,060.00
<b>TOTAL OF PART A (SECTION 5)</b>					<b>64,23,291.00</b>

**PART A: CIVIL, INTERIOR, SANITARY PLUMBING AND FIRE WORKS FOR REFURBISHMENT OF KOPPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001.**

<b>Section 6: Facade Upgradation of Main Building</b>					
<b>ITEM NO</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QTY</b>	<b>Rate</b>	<b>Amount Rs. P</b>
<b>1</b>	<b>DISMANTLING ALL TYPES OF MASONRY</b>				
	Dismantling all types of masonry excepting cement concrete plain or reinforced, stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m.				
	In ground floor including roof	CUM	2	447	894.00
	Extra rate for each addl. Floor over the rate of ground floor	CUM	1	50	50.00
	Extra rate for careful dismantling and recovering at least 150 no of useable bricks per cum.	CUM	1	57	57.00

<b>2</b>	<b>DISMANTLING ALL TYPES OF P.C.C</b>				
	Dismantling all types of plain cement concrete works, stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m.				
	In ground floor including roof				
	upto 150 mm. thick	CUM	2	939	1,878.00
	above 150 mm. thick	CUM	2	1417	2,834.00
	Extra rate for each addl floor over the rate of ground floor.	CUM	2	50	100.00
<b>3</b>	<b>DISMANTLING R.C.C</b>				
	Dismantling R.C. floor, roof, beams etc. including cutting rods and removing rubbish as directed within a lead of 75 m. including stacking of steel bars.				
	In ground floor including roof	CUM	1	1956	1,956.00
	Extra rate for each addl floor over the rate of ground floor.	CUM	1	50	50.00
<b>4</b>	<b>TAKING OUT G.C.I / C.I. SHEETS</b>				
	Taking out carefully G.C.I. or C.I. or asbestos sheets (including ridges etc.) from roof or wall after unscrewing bolts, nuts, screws etc.and stacking the material at site as directed.	SQM	5	41	205.00
	(Payment to be made on measurement of portion of roof or wall removed.)				
<b>5</b>	<b>STRIPPING OFF PLASTER</b>				
	Stripping off worn out plaster and raking out joints of walls, celings etc. upto any height and in any floor including removing rubbish within a lead of 75m as directed.	SQM	1200	19	22,800.00
<b>6</b>	<b>CUTTING CHASE AND MENDING DAMAGES</b>				
	Cutting chase upto 125 x 150 mm. and subsequent mending of damages.				
	in brick wall [lime]	Mtr	100	120	12,000.00
	in concrete wall [lime]	Mtr	5	135	675.00
<b>7</b>	<b>CUTTING HOLES AND MENDING DAMAGES</b>				

	Cutting holes and subsequent mending good damages.				
	Diameter upto 150 mm.				
	In brick work [Lime]	Mtr	35	133	4,655.00
	In concrete work (plain or R.C.) [Lime]	Mtr	12	165	1,980.00
	Diameter exceeding 150 mm. but not exceeding 300 mm.				
	In brick work [Lime]	Mtr	10	182	1,820.00
	In concrete work (plain or R.C.) [Lime]	Mtr	2	303	606.00
	Diameter exceeding 300 mm. but not exceeding 450 mm.				
	In brick work [lime]	Mtr	2	275	550.00
	In concrete work (plain or R.C.) [lime]	Mtr	2	410	820.00
<b>8</b>	<b>REMOVAL OF RUBBISH FROM SITE</b>				
	Removal of rubbish,earth etc. from the working site and disposal of the same beyond the compound, in conformity with the Municipal / Corporation Rules for such disposal, loading into truck and cleaning the site in all respect as per direction of Engineer in charge	CUM	50	166	8,300.00
<b>9</b>	<b>LABOUR FOR SCRAPPING MORTAR</b>				
	Labour for scrapping and picking up old dilapidated mortar / plaster (Cement / Surki / Lime mortar) from the surface of old Brick faces including cleaning the frog without damaging the Brick and stacking the Bricks at Site / Stacking yard as per direction of Engineer-in-charge including removing all debris rubbish from site complete.	1000 nos	10	950	9,500.00
<b>10</b>	<b>DISMANTLING WOOD WORK IN POST, PLATES</b>				
	Dismantling carefully wood work in posts, postplates, rafters, partition etc., sorting and stacking servicable materials at site and removing rubbish as directed.	CUM	5	278	1,390.00
<b>11</b>	<b>LABOUR FOR BRICKWORK IN STRING COURSE AND SET SQUARE BRICKWORK</b>				
	Extra Labour for brick for string course and set square brick work, brackets and similar other projection brick works to be paid in respective	CUM	10	251	2,510.00

	item.				
<b>12</b>	<b>PROJECTION OF INDIVIDUAL BRICK</b>				
	Projection of individual brick 12.5 cm x 7.5 cm x 6.5 cm to 12.5 cm projection from wall surface. (The rate covers the projection only, the embedded portion being including in the measurement of the wall against appropriate item)	EACH	20	13	260.00
<b>13</b>	<b>MAKING SCAFFOLDING</b>				
	Making one set of scaffolding only for replacing glass panels, painting, uprooting plant and another repairing works of building and S&P works for external works only with 10 cm. dia bamboo as main posts at the rate of 1 metre centre to centre and 7.5 cm. dia bamboo ties @ 0.75 metre apart fitting and fixing with necessary coir, nails etc. as per direction of the Engineer-incharge.				
	(This item should be executed only after prior approval of the Engineer-incharge). Firstly, one number to be paid and then labour rate for shifting up to further nineteenth (19) times @ 10% each time to be considered. If necessary further after twenty times of total use, another one number new and labour rate for shifting to be considered accordingly.				
	a) 3.90 metre height	EACH	40	279	11,160.00
	b) Extra for additional 3.6 height or part thereof	EACH	30	245	7,350.00
<b>14</b>	<b>CLEANING CONCRETE SURFACE</b>				
	Cleaning the concrete surface by removing dirt and debris, marking defective locations and removing loose concrete by careful stripping untill hard surface is exposed, cutting the concrete to regular shape, wire brushing the exposed surface and removing debris from site complete as per direction of the Engineer - in - Charge	SQM	15	90	1,350.00
<b>15</b>	<b>CLEANING EXPOSED REINFORCEMENT</b>				

	Cleaning the exposed reinforcement preferably upto full diameter by wire brush, applying two coats of polymer based rust removing compound left for 24 hours, removing the coating and then applying two (2) coats of polymer modified anti corrosive protective coating formulated to inhibit the corrosion of reinforcement as per manufacturer's specification][Mode of measurement:The affected surface area of reinforcement shall be considered for payment]	SQM	2	782	1,564.00
<b>16</b>	<b>EPOXY BASED REACTIVE JOINING AGENT</b>				
	Applying epoxy based reactive joining agent for joining the old concrete with fresh concrete to be applied within manufacturer's specified time as per manufacturers specification. (0.4 Kg / m <sup>2</sup> of concrete surface).	SQM	5	309	1,545.00
	Note: Applicable only when the full diameter of reinforcement steel is exposed.				
<b>17</b>	<b>BONDING AGENT</b>				
	(a) Applying 2 coats of bonding agent with synthetic multi functional rubber emulsion having adhesive and water proofing properties by mixing with water in proportion (1 bonding agent : 4 water : 6 cement) as per Manufacturer's specification [Cement to be supplied by the Department]	SQM	5	88	440.00
<b>18</b>	<b>NON TOXIC ACRYLIC POLYMER MODIFIED PAINT</b>				
	(b) Applying 2 coats of Non-Toxic Acrylic Polymer modified Paint having adhesive & waterproofing properties by mixing in proportion (1 liquid: 4 cementitious material) or as per manufacturer's specification for water proofing layer in water tank etc. (No Departmental Cement is required)	SQM	10	258	2,580.00
<b>19</b>	<b>WATERPROOFING AND PLASTICISING ADMIXTURE</b>				



	Extra rate for using water proofing and plasticising admixture @ 0.2% by weight of cement (or at manufacturer's specified rate) for concrete of various grades.	kg	2	119	238.00
<b>20</b>	<b>REMOVING AND REPLACING CORRODED PORTION OF REINFORCEMENT</b>				
	Removing corroded worn out portion of reinforcement (when the area of bar is damaged by more than 25%) by cutting and replacing the same by a new plain round bar of requisite diameter by binding with required lap / welding with old bar, including cost of reinforcement, complete in all respect including removing unserviceable materials from site as per direction of the Engineer - in - charge. Note : Payment on weight (Kg.) of new reinforcement.	kg	50	87	4,350.00
<b>21</b>	<b>BAND MOULDING</b>				
	Band moulding (horizontal or vertical) rectangular section, made with lime plaster (1:1.5:0.5) complete.				
	(i) Projection upto 40 mm.				
	(a) Depth or width (upt 150 mm) (Lime)	METRE	540	35	18,900.00
<b>22</b>	<b>MULTIPLE BAND MOULDING</b>				
	Multiple-band moulding (horizontal or vertical) made with 15mm lime plaster(1:1.5:0.5) complete.				
	(ii) Projection 40 mm				
	(b) Depth or width (upto 150 mm) (Lime)	METRE	110	70	7,700.00
<b>23</b>	<b>BAND MOULDING WEITH 15 MM THICK LIME PALSTER</b>				
	Band moulding (horizontal or vertical) of rectangular section made with 15 mm thick lime plaster (1:1.5:0.5) on brick projection or concrete projection. In ground floor.				
	(ii) Projection (upto 150 mm)				
	(a) Depth or width (75 mm to 150 mm) (Lime)	METRE	180	88	15,840.00

<b>24</b>	<b>FINISHING WITH LIME PLASTER</b>				
	Finishing of 75 mm. or 125 mm. thick wall with 15 mm. thick lime plaster (1:2) and moulding (30 mm deep and 6 mm. or 10 mm. projection) on side, including neat cement punning complete. (Payment to be made on length of wall)	METRE	150	91	13,650.00
<b>25</b>	<b>STRING COURSE</b>				
	String course up to 75 mm projection and upto 150 mm depth 15 mm thick plasterd (1:3) (including stripping off old surface where necessary) complete. (lime)	METRE	120	132	15,840.00
<b>26</b>	<b>RENEWING PLASTER OF CORNICE</b>				
	Renewing plaster of cornice (with moulding but without floral or similar intricate patterns)including petty repairs to masonry with 15 mm thick Lime plaster (1:2) (Payment to be made on length of cornice):				
	(v) Projection (400 to 450) mm				
	(c) Depth (325 to 400) mm (lime)	METRE	95	841	79,895.00
<b>27</b>	<b>PLASTERING WITH CEMENT MORTAR</b>				
	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints including throating, nosing and drip course, scaffolding/staging where necessary (Ground floor).[Excluding cost of chipping over concrete surface]				
	(iii) With 1:3 cement mortar				
	(a) 20 mm thick plaster	SQM	10	206	2,060.00
	(b) 15 mm thick plaster	SQM	10	174	1,740.00
	(c) 10 mm thick plaster	SQM	10	135	1,350.00
<b>28</b>	<b>PLASTERING WITH LIME AND SURKI MORTAR</b>				
	Plaster with lime and surki mortar including rounding off or chamfering corners as directed and raking out joints (Ground floor).				
	(i) With lime & surki mortar (1:2)				
	(a) 20 mm. thick plaster	SQM	450	168	75,600.00
	(b) 15 mm. thick plaster	SQM	90	146	13,140.00

	(ii) With lime & surki mortar (1:3)				
	(a) 25 mm thick plaster	SQM	950	171	1,62,450.00
	(b) 19 mm thick plaster	SQM	85	153	13,005.00
	(c) 12.5 mm thick plaster	SQM	55	120	6,600.00
<b>29</b>	<b>SAND AND LIME PLASTER</b>				
	Sand and lime plaster including rounding off or chamfering corners as directed and raking out joints where necessary.				
	(i) (1:2) with Lime & Sand mortar				
	(a) 19 mm thick plaster	SQM	45	144	6,480.00
	(b) 12 mm thick plaster	SQM	35	107	3,745.00
	(ii) (1:3) with Lime & Sand mortar				
	(a) 25 mm thick plaster	SQM	75	150	11,250.00
	(b) 19 mm thick plaster	SQM	65	125	8,125.00
	(c) 12.5 mm thick plaster	SQM	55	104	5,720.00
	(iii) (1:4) with Lime & Sand mortar				
	(a) 25 mm thick plaster	SQM	95	137	13,015.00
	(b) 19 mm thick plaster	SQM	60	113	6,780.00
	(c) 12.5 mm thick plaster	SQM	70	93	6,510.00
<b>30</b>	<b>RULE POINTING TO BRICKWORK</b>				
	Rule pointing to brick work with ruled joints in lime and surki 1:2 mortar including raking out joints and top finishing (1 lime paste/ putty : 2 surki ).	SQM	130	55	7,150.00
<b>31</b>	<b>NEAT CEMENT PUNNING</b>				
	Neat cement punning about 1.5mm thick in wall, dado, window sill, floor etc. NOTE:Cement 0.152 cu.m per100 sq.m.	SQM	50	34	1,700.00
<b>32</b>	<b>LIME PUNNING</b>				
	Lime punning about 3 mm. thick with stone lime and shell lime (1:2)	SQM	1200	81	97,200.00
<b>33</b>	<b>LABOUR FOR CHIPPING OF CONCRETE SURFACE</b>				
	Labour for Chipping of concrete surface before taking up Plastering work.	SQM	150	21	3,150.00
<b>34</b>	<b>SAND RUBBING</b>				

	Sand rubbing including preparing and smoothening surface with admixture of pigment if necessary as directed :				
	(a) Ground floor	SQM	325	54	17,550.00
	(b) Extra for each additional floor	SQM	150	4	600.00
<b>35</b>	<b>MAKING V GROOVE LINE</b>				
	Making V-groove line ( 12 mm wide,12 mm deep) in plastered surface.	%METRE	7	580	4,060.00
	<b>C. ADDITIONAL RATE</b>				
	Extra for each additional floor over the rate for ground floor items 1 to 3 of subhead A :				
	(i) External plaster				
	(a) Upto 4th floor	SQM	1620	4	6,480.00
<b>36</b>	<b>RUSTICATED PLASTER</b>				
	Extra for Rusticated plaster (over rate of corresponding item of plaster)				
	(a) With sand plus lime)	SQM	2300	13	29,900.00
<b>37</b>	<b>FLUTED PLASTER</b>				
	Extra for fluted, corrugated or ribbed plaster (over rate of corresponding rate of plaster). (Lime)	SQM	690	40	27,600.00
<b>38</b>	<b>RED OXIDE WASH</b>				
	Red oxide wash of approved shade including cleaning and smoothening surface thoroughly (without specific permission from the Engineer-incharge this item of work must not be done on an old painted surface which has not received such red oxide wash before) :				
	External surface (Ground floor)				
	(a) One coat	%SQM	500	2425	12,125.00
	(b) Two coats (on new works only).	%SQM	300	3311	9,933.00
	N.B. : Extra for each additional floor in external walls refer item 1 of subhead C				
<b>39</b>	<b>EXTERIOR GRADE ACRYLIC PRIMER</b>				

	Applying Exterior grade Acrylic primer of approved quality and brand on plastered or concrete surface old or new surface to receive decorative textured (matt finish) or smooth finish acrylic exterior emulsion paint including scraping and preparing the surface thoroughly, complete as per manufacturer's specification and as per direction of the EIC.				
	In Ground Floor:				
	(b) Two Coats	%SQM	2600	4510	1,17,260.00
	[This item to be done under specific instruction of the Superintending Engineer]				
	N.B.: -Extra for each additional floor in external walls refer item 1 of subhead C				
<b>40</b>	<b>TEXTURED EXTERIOR HIGH CLASS MATT FINISH PAINT</b>				
	Protective and Decorative Textured exterior high class matt finish paint of approved quality, composed of special Thermoplastic Resin containing fine crystalline additives derive from Granite as per manufacturer's specification and as per direction of EIC to be applied over acrylic primer as required. The rate includes cost of material, labour, scaffolding and all incidental charges but excluding the cost of primer.				
	In Ground floor				
	Two Coat	SQM	2250	101	2,27,250.00
	N.B. This item is to be selected only with written permission of Superintending Engineer for very restricted and small areas of a building.				
<b>41</b>	<b>DECORATIVE EXTERIOR ACRYLIC EMULSION PAINT</b>				
	Protective and Decorative Acrylic exterior emulsion paint of approved quality, as per manufacturer's specification and as per direction of Engineer-in-Charge to be applied over acrylic primer as required. The rate includes cost of material, labour, scaffolding and all incidental charges but excluding the cost of primer.				
	In Ground floor (Two Coat)				
	b) Premium 100% Acrylic Emulsion	SQM	125	84	10,500.00
	c) Super Protective 100% Acrylic Emulsion.	SQM	150	97	14,550.00

<b>42</b>	<b>SCRAPING MOSS, BLISTER FROM EXTERIOR WALL SURFACE</b>				
	Scraping of moss, blisters etc.thoroughly from exterior surface of walls necessitating the use of scraper, wire brush etc.(Payment against this item will be made only when this has been done on the specific direction of the Engineer-in-charge)	SQM	2320	7	16,240.00
<b>43</b>	<b>SCRAPING GREASY SOOT FROM WALLS</b>				
	Scraping and removing greasy soot from walls or ceiling of kitchen or similar smoke affected rooms and preparing the surface.	SQM	2025	11	22,275.00
<b>44</b>	<b>ROUNDING CORNERS WITH CEMENT MORTAR</b>				
	Rounding corners with cement mortar (1:3) for crack repairs.	METRE	265	14	3,710.00
<b>45</b>	<b>WHITE CEMENT BASED WATER PROOF WALL PUTTY</b>				
	Rendering the Surface of walls and ceiling with White Cement base WATER PROOF wall putty of approved make & brand.(1.5 mm thick)	SQM	150	122	18,300.00
	Add extra for each additional floor over the rate for ground floor for the above item when used on External Surface				
	(i) Upto 4th floor	%SQM	15	72	1,080.00
<b>46</b>	<b>PRIMING ONE COAT ON STEEL</b>				
	(a) Priming one coat on steel or other metal surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand papering etc.	SQM	300	29	8,700.00
<b>47</b>	<b>PRIMING ONE COAT ON TIMBER OR PLASTERED SURFACE</b>				
	(b) Priming one coat on timber or plastered surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand papering etc.	SQM	350	38	13,300.00

	(This item is applicable to new work or old work when the original surface has been exposed by removal of old paint.)				
<b>48</b>	<b>SYNTHETIC ENAMEL PAINT</b>				
	(A) Painting with best quality synthetic enamel paint of approved make and brand including smoothening surface by sand papering etc. including using of approved putty etc. on the surface, if necessary :				
	(a) On timber or plastered surface :				
	With super gloss (hi-gloss) -				
	(iv) Two coats (with any shade except white)	SQM	250	81	20,250.00
	With other than hi-gloss of approved quality-				
	(iii) One coat (with any shade except white)	SQM	100	75	7,500.00
	(b) On steel or other metal surface :				
	With super gloss (hi-gloss) -				
	(iv) Two coats (with any shade except white)	SQM	200	79	15,800.00
	With other than hi-gloss of approved quality-				
	(iv) Two coats (with any shade except white)	SQM	100	72	7,200.00
<b>49</b>	<b>OIL TYPE WOOD PRESERVATIVE</b>				
	Painting with oil type wood preservative of approved brand & make.				
	(b) Two coats	SQM	300	40	12,000.00
<b>50</b>	<b>READY MIXED RED LEAD PAINT</b>				
	Painting with ready mixed red lead paint of approved make and brand :				
	(b) Two coats	SQM	85	55	4,675.00
<b>51</b>	<b>FRENCH POLISHING TO WOOD WORK</b>				
	French polishing to wood work including preparing surface (high gloss)				
	(a) On new wood work	SQM	100	701	70,100.00
	(b) On old French polished surface including complete removal of the old polish.	SQM	200	807	1,61,400.00
<b>52</b>	<b>POLYURETHANE POLISHING TO WOODWORK</b>				

	Polyurethane Polishing to woodwork with required colour as approved by Engineer-in-Charge with preparing surface including scaffolding and hire charges of compressor machine including cost of filler and hardener material such as P. U. Sealing, P. U. Top coat (Matt/Glossy), Thinner, Spirit etc. and inclusive of all operation, material and labour complete as per direction of Engineer-in- Charge.	SQM	50	837	41,850.00
<b>53</b>	<b>MELAMINE FINISH COATING</b>				
	Melamine finish coating over polished wooden surface after preparing the surface as per decision and direction of Engineer-in-Charge.	SQM	350	75	26,250.00
<b>54</b>	<b>REMOVING LOOSE SCALES, BLISTERS FROM OLD PAINTED SURFACE</b>				
	Removing loose scales, blisters etc. from old painted surface and thoroughly smoothening the surface to make the same suitable for receiving fresh coat of paint.	SQM	2500	21	52,500.00
<b>55</b>	<b>REMOVING OLD PAINT FROM BLISTERED PAINTED SURFACE WITH SODA, SAJIMATI</b>				
	Removing old paint from blistered painted surface with application of soda, sajimati or any approved chemical paint remover and exposing the original surface including cleaning and thorough washing to remove all traces of the removing agent including taking out shutters and refixing the same where necessary.	SQM	2500	39	97,500.00
<b>56</b>	<b>REMOVING OLD PAINT FROM BLISTERED PAINTED SURFACE OF STEEL</b>				
	Removing old paint from blistered painted surface of steel or other metal by chipping including scraping and cleaning and exposing the original surface.	SQM	150	47	7,050.00
<b>57</b>	<b>REMOVING THICK LAYERS OF PAINT FROM BLISTERED PAINTED SURFACE</b>				



	Removing thick layers of paint from heavily cracked and blistered painted surface of timber by careful burning with blow lamp including smoothening exposed surface of timber with pumice stone or glass and preparing the same for fresh treatment.	SQM	150	52	7,800.00
<b>58</b>	<b>CLEANING OLD PAINTED SURFACE WITH LINSEED OIL</b>				
	Cleaning old painted surface and oiling with linseed oil with admixture of paint (25% of linseed oil by volume.)	SQM	120	11	1,320.00
<b>59</b>	<b>FROSTING GLASS PANES</b>				
	Frosting glass panes by dabbing white paint	SQM	300	37	11,100.00
<b>TOTAL OF PART A (SECTION 6)</b>					<b>18,10,770.00</b>

**PART A: CIVIL, INTERIOR, SANITARY PLUMBING AND FIRE WORKS FOR  
REFURBISHMENT OF K&PT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -  
700001**

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## Section 7: Facade Upgradation of Annexe Building

ITEM NO	DESCRIPTION	UNIT	QTY	Rate	Amount Rs. P
<b>1</b>	<b>DISMANTLING ALL TYPES OF MASONRY</b>				
	Dismantling all types of masonry excepting cement concrete plain or reinforced, stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m.				
	In ground floor including roof	CUM	2	447	894.00
	Extra rate for each addl. Floor over the rate of ground floor	CUM	1	50	50.00
	Extra rate for careful dismantling and recovering at least 150 no of useable bricks per cum.	CUM	1	57	57.00
<b>2</b>	<b>DISMANTLING ALL TYPES OF P.C.C</b>				
	Dismantling all types of plain cement concrete works, stacking serviceable materials at site and removing rubbish as directed within a lead of 75				

	m.				
	In ground floor including roof				
	upto 150 mm. thick	CUM	2	939	1,878.00
	above 150 mm. thick	CUM	2	1417	2,834.00
	Extra rate for each addl floor over the rate of ground floor.	CUM	2	50	100.00
<b>3</b>	<b>DISMANTLING R.C.C</b>				
	Dismantling R.C. floor, roof, beams etc. including cutting rods and removing rubbish as directed within a lead of 75 m. including stacking of steel bars.				
	In ground floor including roof	CUM	1	1956	1,956.00
	Extra rate for each addl floor over the rate of ground floor.	CUM	1	50	50.00
<b>4</b>	<b>TAKING OUT G.C.I / C.I. SHEETS</b>				
	Taking out carefully G.C.I. or C.I. or asbestos sheets (including ridges etc.) from roof or wall after unscrewing bolts, nuts, screws etc. and stacking the material at site as directed.	SQM	5	41	205.00
	(Payment to be made on measurement of portion of roof or wall removed.)				
<b>5</b>	<b>STRIPPING OFF PLASTER</b>				
	Stripping off worn out plaster and raking out joints of walls, celings etc. upto any height and in any floor including removing rubbish within a lead of 75m as directed.	SQM	2000	19	38,000.00
<b>6</b>	<b>CUTTING CHASE AND MENDING DAMAGES</b>				
	Cutting chase upto 125 x 150 mm. and subsequent mending of damages.				
	in brick wall [Cement-3.6 Kg/Mtr]	Mtr	150	93	13,950.00
	in concrete wall [Cement-3.6 Kg/Mtr]	Mtr	12	112	1,344.00
<b>7</b>	<b>CUTTING HOLES AND MENDING DAMAGES</b>				
	Cutting holes and subsequent mending good damages.				
	Diameter upto 150 mm.				

	In brick work [Cement-4.0 Kg/Mtr]	Mtr	25	111	2,775.00
	In concrete work (plain or R.C.) [Cement- 3.0 Kg/Mtr]	Mtr	8	137	1,096.00
	Diameter exceeding 150 mm. but not exceeding 300 mm.				
	In brick work [Cement-6.0 Kg/Mtr]	Mtr	10	162	1,620.00
	In concrete work (plain or R.C.) [Cement-4.6 Kg/Mtr]	Mtr	2	288	576.00
	Diameter exceeding 300 mm. but not exceeding 450 mm.				
	In brick work [Cement-10.0 Kg/Mtr]	Mtr	2	249	498.00
	In concrete work (plain or R.C.) [Cement-7.5 Kg/Mtr]	Mtr	2	390	780.00
<b>8</b>	<b>REMOVAL OF RUBBISH FROM SITE</b>				
	Removal of rubbish,earth etc. from the working site and disposal of the same beyond the compound, in conformity with the Municipal / Corporation Rules for such disposal, loading into truck and cleaning the site in all respect as per direction of Engineer in charge	CUM	70	166	11,620.00
<b>9</b>	<b>LABOUR FOR SCRAPPING MORTAR</b>				
	Labour for scrapping and picking up old dilapidated mortar / plaster (Cement / Surki / Lime mortar) from the surface of old Brick faces including cleaning the frog without damaging the Brick and stacking the Bricks at Site / Stacking yard as per direction of Engineer-in-charge including removing all debris rubbish from site complete.	1000 nos	8	950	7,600.00
<b>10</b>	<b>DISMANTLING WOOD WORK IN POST, PLATES</b>				
	Dismantling carefully wood work in posts, postplates, rafters, partition etc., sorting and stacking servicable materials at site and removing rubbish as directed.	CUM	6	278	1,668.00
<b>11</b>	<b>LABOUR FOR BRICKWORK IN STRING COURSE AND SET SQUARE BRICKWORK</b>				
	Extra Labour for brick for string course and set square brick work, brackets and similar other projection brick works to be paid in respective	CUM	7	251	1,757.00

	item.				
<b>12</b>	<b>PROJECTION OF INDIVIDUAL BRICK</b>				
	Projection of individual brick 12.5 cm x 7.5 cm x 6.5 cm to 12.5 cm projection from wall surface. (The rate covers the projection only, the embedded portion being including in the measurement of the wall against appropriate item)	EACH	140	13	1,820.00
<b>13</b>	<b>MAKING SCAFFOLDING</b>				
	Making one set of scaffolding only for replacing glass panels, painting, uprooting plant and another repairing works of building and S&P works for external works only with 10 cm. dia bamboo as main posts at the rate of 1 metre centre to centre and 7.5 cm. dia bamboo ties @ 0.75 metre apart fitting and fixing with necessary coir, nails etc. as per direction of the Engineer-incharge.				
	(This item should be executed only after prior approval of the Engineer-incharge). Firstly, one number to be paid and then labour rate for shifting up to further nineteenth (19) times @ 10% each time to be considered. If necessary further after twenty times of total use, another one number new and labour rate for shifting to be considered accordingly.				
	a) 3.90 metre height	EACH	25	279	6,975.00
	b) Extra for additional 3.6 height or part thereof	EACH	20	245	4,900.00
	<b>C. REPAIR AND REHABILITATION WORKS</b>				
<b>14</b>	<b>CLEANING CONCRETE SURFACE</b>				
	Cleaning the concrete surface by removing dirt and debris, marking defective locations and removing loose concrete by careful stripping untill hard surface is exposed, cutting the concrete to regular shape, wire brushing the exposed surface and removing debris from site complete as per direction of the Engineer - in - Charge	SQM	25	90	2,250.00
<b>15</b>	<b>CLEANING EXPOSED REINFORCEMENT</b>				

	Cleaning the exposed reinforcement preferably upto full diameter by wire brush, applying two coats of polymer based rust removing compound left for 24 hours, removing the coating and then applying two (2) coats of polymer modified anti corrosive protective coating formulated to inhibit the corrosion of reinforcement as per manufacturer's specification][Mode of measurement:The affected surface area of reinforcement shall be considered for payment]	SQM	5	782	3,910.00
<b>16</b>	<b>EPOXY BASED REACTIVE JOINING AGENT</b>				
	Applying epoxy based reactive joining agent for joining the old concrete with fresh concrete to be applied within manufacturer's specified time as per manufacturers specification. (0.4 Kg / m <sup>2</sup> of concrete surface).	SQM	12	309	3,708.00
	Note: Applicable only when the full diameter of reinforcement steel is exposed.				
<b>17</b>	<b>BONDING AGENT</b>				
	(a) Applying 2 coats of bonding agent with synthetic multi functional rubber emulsion having adhesive and water proofing properties by mixing with water in proportion (1 bonding agent : 4 water : 6 cement) as per Manufacturer's specification [Cement to be supplied by the Department]	SQM	1500	88	1,32,000.00
<b>18</b>	<b>NON TOXIC ACRYLIC POLYMER MODIFIED PAINT</b>				
	(b) Applying 2 coats of Non-Toxic Acrylic Polymer modified Paint having adhesive & waterproofing properties by mixing in proportion (1 liquid: 4 cementitious material) or as per manufacturer's specification for water proofing layer in water tank etc. (No Departmental Cement is required)	SQM	15	258	3,870.00
<b>19</b>	<b>WATERPROOFING AND PLASTICISING ADMIXTURE</b>				

	Extra rate for using water proofing and plasticising admixture @ 0.2% by weight of cement (or at manufacturer's specified rate) for concrete of various grades.	kg	8	119	952.00
<b>20</b>	<b>REMOVING AND REPLACING CORRODED PORTION OF REINFORCEMENT</b>				
	Removing corroded worn out portion of reinforcement (when the area of bar is damaged by more than 25%) by cutting and replacing the same by a new plain round bar of requisite diameter by binding with required lap / welding with old bar, including cost of reinforcement, complete in all respect including removing unserviceable materials from site as per direction of the Engineer - in - charge. Note : Payment on weight (Kg.) of new reinforcement.	kg	115	87	10,005.00
	(F) Structural Steel Works, Grills, Gates etc.				
	A. Original Works				
<b>21</b>	<b>M.S. STRUCTURAL WORKS WITH HOLLOW SECTIONS</b>				
	M.S. structural works with hollow sections (square or rectangular shape) conforming to IS: 806-1968 & IS:1161-1998) connected to one another with bracket, gusset, cleat as per design, drawing & direction of Engineer-in-Charge complete including cutting to requisite shape & size, fabrication including metal arc welding conforming to IS: 816-1969 & IS: 9595 using electrodes of approved make and brand conforming to IS:814- 2004, haulage, hoisting and erection all complete. The rate includes the cost of all M.S. Hollow section, all consumables such as electrodes, gas and hire charges of all tools and plants and labour required for execution and all incidental chages (such as electricity, labour insurance) etc. complete.				

	Payment to be made on the basis of calculated weight of structural members of MS Hollow Section as specified in relevant IS code in finished work. Payment for gusset, bracket, cleat may be made by adding the actual weight of such items with weight of finished structural members. The rates are considered for a height of erection 8 m. / 2nd floor level from the ground. Add 1.5 % extra over the rate for each additional floor or 4m. beyond the initial 8 m. or part thereof.				
	ii) For other Structural works like galleries etc.	MT	10	61285	6,12,850.00
	<b>(I) Plastering, Pointing etc.</b>				
	A. ORIGINAL WORKS				
	B. MAINTENANCE WORKS				
<b>22</b>	<b>RENEWING PLASTER OF CORNICE</b>				
	Renewing plaster of cornice (with moulding but without floral or similar intricate patterns) including petty repairs to masonry with 15 mm thick cement plaster (1:4) (Payment to be made on length of cornice): In ground floor.				
	(v) Projection (400 to 450) mm				
	(a) Depth (150 to 200) mm (Cement 7.0Kg/Mtr.)	METRE	145	224	32,480.00
	(b) Depth (225 to 300) mm (Cement 8.0Kg/Mtr.)	METRE	115	262	30,130.00
	(c) Depth (325 to 400) mm (Cement 9.0Kg/Mtr.)	METRE	90	303	27,270.00
	<b>(I) Plastering, Pointing etc.</b>				
	A. ORIGINAL WORKS				
<b>23</b>	<b>PLASTERING WITH CEMENT MORTAR</b>				
	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints including throating, nosing and drip course, scaffolding/staging where necessary (Ground floor). [Excluding cost of chipping over concrete surface]				
	(ii) With 1:4 cement mortar				
	(a) 20 mm thick plaster	SQM	650	186	1,20,900.00
	(iii) With 1:3 cement mortar				
	(a) 20 mm thick plaster	SQM	850	206	1,75,100.00
<b>24</b>	<b>RULE POINTING TO BRICKWORK</b>				

	Rule pointing to brick work with ruled joints in lime and surki 1:2 mortar including raking out joints and top finishing (1 lime paste/ putty : 2 surki ).	SQM	110	55	6,050.00
<b>25</b>	<b>LIME PUNNING</b>				
	Lime punning about 3 mm. thick with stone lime and shell lime (1:2)	SQM	20	81	1,620.00
	B. MISCELLANEOUS ITEMS				
<b>26</b>	<b>LABOUR FOR CHIPPING CONCRETE SURFACE</b>				
	Labour for Chipping of concrete surface before taking up Plastering work.	SQM	265	21	5,565.00
<b>27</b>	<b>SAND RUBBING</b>				
	Sand rubbing including preparing and smoothening surface with admixture of pigment if necessary as directed :				
	(a) Ground floor	SQM	3000	54	1,62,000.00
	(b) Extra for each additional floor	SQM	6000	4	24,000.00
<b>28</b>	<b>RUSTICATED PLASTER</b>				
	Extra for Rusticated plaster (over rate of corresponding item of plaster)				
	(a) With sand plus cement (Cement 0.053 Cu.m/100Sq.m)	SQM	45	13	585.00
<b>29</b>	<b>FLUTED, CORRUGATED OR RIBBED PLASTER</b>				
	Extra for fluted, corrugated or ribbed plaster (over rate of corresponding rate of plaster). (Cement 0.135 Cu.m/100Sq.m)	SQM	65	40	2,600.00
	A. ORIGINAL WORKS				
<b>30</b>	<b>EXTERIOR GRADE ACRYLIC PRIMER</b>				
	Applying Exterior grade Acrylic primer of approved quality and brand on plastered or concrete surface old or new surface to receive decorative textured (matt finish) or smooth finish acrylic exterior emulsion paint including scraping and preparing the surface thoroughly, complete as per manufacturer's specification and as per direction of the EIC.				



	In Ground Floor:				
	(b) Two Coats	%SQM	2500	4510	1,12,750.00
	[This item to be done under specific instruction of the Superintending Engineer]				
	N.B.: -Extra for each additional floor in external walls refer item 1 of subhead C				
<b>31</b>	<b>TEXTURED EXTERIOR HIGH CLASS MATT FINISH PAINT</b>				
	Protective and Decorative Textured exterior high class matt finish paint of approved quality, composed of special Thermoplastic Resin containing fine crystalline additives derive from Granite as per manufacturer's specification and as per direction of EIC to be applied over acrylic primer as required. The rate includes cost of material, labour, scaffolding and all incidental charges but excluding the cost of primer.				
	In Ground floor				
	Two Coat	SQM	1450	101	1,46,450.00
	N.B. This item is to be selected only with written permission of Superintending Engineer for very restricted and small areas of a building.				
<b>32</b>	<b>DECORATIVE EXTERIOR ACRYLIC EMULSION PAINT</b>				
	Protective and Decorative Acrylic exterior emulsion paint of approved quality, as per manufacturer's specification and as per direction of Engineer-in-Charge to be applied over acrylic primer as required. The rate includes cost of material, labour, scaffolding and all incidental charges but excluding the cost of primer.				
	In Ground floor (Two Coat)				
	a) Normal Acrylic Emulsion	SQM	350	67	23,450.00
	b) Premium 100% Acrylic Emulsion	SQM	200	84	16,800.00
	c) Super Protective 100% Acrylic Emulsion.	SQM	200	97	19,400.00
<b>33</b>	<b>SCRAPING MOSS, BLISTER FROM EXTERIOR WALL SURFACE</b>				

	Scraping of moss, blisters etc.thoroughly from exterior surface of walls necessitating the use of scraper, wire brush etc.(Payment against this item will be made only when this has been done on the specific direction of the Engineer-in-charge)	SQM	2320	7	16,240.00
<b>34</b>	<b>SCRAPING GREASY SOOT FROM WALLS</b>				
	Scraping and removing greasy soot from walls or ceiling of kitchen or similar smoke affected rooms and preparing the surface.	SQM	2025	11	22,275.00
<b>35</b>	<b>ROUNDING CORNERS WITH CEMENT MORTAR</b>				
	Rounding corners with cement mortar (1:3) for crack repairs.	METRE	265	14	3,710.00
<b>36</b>	<b>WHITE CEMENT BASED WATER PROOF WALL PUTTY</b>				
	Rendering the Surface of walls and ceiling with White Cement base WATER PROOF wall putty of approved make & brand.(1.5 mm thick)	SQM	150	122	18,300.00
	Add extra for each additional floor over the rate for ground floor for the above item when used on External Surface				
	(i) Upto 4th floor	%SQM	1500	72	1,080.00
	(ii) Above 4th floor	%SQM	1000	83	830.00
	<b>C. ADDITIONAL RATE</b>				
	Add extra for each additional floor over the rate for ground floor on items (3 to 6) and item (8), (15 to17) of subhead A				
	External surface				
	(i) Upto 4th floor	%SQM	500	71	355.00
	(ii) Above 4th floor	%SQM	400	82	328.00
	NOTE: For all structures the ground floor equivalent height shall be taken as 4 meters. Every 4 meters or part thereof above 4 meters shall be taken as each additional floor for purpose of item (3 to 6) and (8), (15 to17) of subhead A.				
<b>37</b>	<b>PRIMING ONE COAT ON STEEL</b>				

	(a) Priming one coat on steel or other metal surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand papering etc.	SQM	300	29	8,700.00
<b>38</b>	<b>PRIMING ONE COAT ON TIMBER OR PLASTERED SURFACE</b>				
	(b) Priming one coat on timber or plastered surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand papering etc.	SQM	350	38	13,300.00
	(This item is applicable to new work or old work when the original surface has been exposed by removal of old paint.)				
<b>39</b>	<b>SYNTHETIC ENAMEL PAINT</b>				
	(A) Painting with best quality synthetic enamel paint of approved make and brand including smoothening surface by sand papering etc. including using of approved putty etc. on the surface, if necessary :				
	(a) On timber or plastered surface :				
	With super gloss (hi-gloss) -				
	(iv) Two coats (with any shade except white)	SQM	225	81	18,225.00
	(b) On steel or other metal surface :				
	With super gloss (hi-gloss) -				
	(iv) Two coats (with any shade except white)	SQM	245	79	19,355.00
<b>40</b>	<b>OIL TYPE WOOD PRESERVATIVE</b>				
	Painting with oil type wood preservative of approved brand & make.				
	(b) Two coats	SQM	345	40	13,800.00
<b>41</b>	<b>READY MIXED RED LEAD PAINT</b>				
	Painting with ready mixed red lead paint of approved make and brand :				
	(b) Two coats	SQM	95	55	5,225.00
<b>42</b>	<b>FRENCH POLISHING TO WOOD WORK</b>				
	French polishing to wood work including preparing surface (ordinary gloss)				
	(a) On new wood work	SQM	115	467	53,705.00
	(b) On old French polished surface including complete removal of the old polish.	SQM	200	538	1,07,600.00

	NOTE : For high gloss polish the rate shall be increased by 50% over the rate for ordinary gloss. This work should not be executed without specific permission of Superintending Engineer.				
<b>43</b>	<b>POLYURETHANE POLISHING TO WOOD WORK</b>				
	Polyurethane Polishing to woodwork with required colour as approved by Engineer-in-Charge with preparing surface including scaffolding and hire charges of compressor machine including cost of filler and hardener material such as P. U. Sealing, P. U. Top coat (Matt/Glossy), Thinner, Spirit etc. and inclusive of all operation, material and labour complete as per direction of Engineer-in- Charge.	SQM	65	837	54,405.00
<b>44</b>	<b>MELAMINE FINISH COATING OVER WOODEN SURFACE</b>				
	Melamine finish coating over polished wooden surface after preparing the surface as per decision and direction of Engineer-in-Charge.	SQM	385	75	28,875.00
<b>45</b>	<b>REMOVING LOOSE SCALES, BLISTERS FROM OLD PAINTED SURFACE</b>				
	Removing loose scales, blisters etc. from old painted surface and thoroughly smoothening the surface to make the same suitable for receiving fresh coat of paint.	SQM	2520	21	52,920.00
<b>46</b>	<b>REMOVING OLD PAINT FROM BLISTERED PAINTED SURFACCE</b>				
	Removing old paint from blistered painted surface with application of soda, sajimati or any approved chemical paint remover and exposing the original surface including cleaning and thorough washing to remove all traces of the removing agent including taking out shutters and refixing the same where necessary.	SQM	2520	39	98,280.00
<b>47</b>	<b>REMOVING OLD PAINT FROM BLISTERED PAINTED SURFACE OF STEEL</b>				

	Removing old paint from blistered painted surface of steel or other metal by chipping including scraping and cleaning and exposing the original surface.	SQM	150	47	7,050.00
<b>48</b>	<b>REMOVING THICK LAYERS OF PAINT FROM HEAVILY CRACKED PAINTED SURFACE</b>				
	Removing thick layers of paint from heavily cracked and blistered painted surface of timber by careful burning with blow lamp including smoothening exposed surface of timber with pumice stone or glass and preparing the same for fresh treatment.	SQM	165	52	8,580.00
	N.B.:(Payment against item (1, 2, 3, 4) of subhead B will be made only when done at specific direction of the Engineer- in-charge. Cost of taking out shutter etc.for this item and rehanging the same or changing glass panes cracked or broken in the operation will be deemed to be covered by the rate of this item and no seperate payment therefore shall be made.)				
<b>49</b>	<b>WASHING AND CLEANING OLD PAINTED SURFACE</b>				
	Washing and cleaning old painted surface and oiling with linseed oil.	SQM	2520	7	17,640.00
<b>50</b>	<b>CLEANING OIL PAINTED SUREFACE WITH LINSEED OIL</b>				
	Cleaning old painted surface and oiling with linseed oil with admixture of paint (25% of linseed oil by volume.)	SQM	120	11	1,320.00
<b>51</b>	<b>FROSTING GLASS PANES</b>				
	Frosting glass panes by dabbing white paint	SQM	300	37	11,100.00
<b>52</b>	<b>INDIAN SHEET GLASS</b>				
	Supplying best Indian Sheet glass 5 mm thick including cutting to required sizes,setting on putty bases and fitted and fixed with teak glazing beads (19 mm x 12 mm) including putty and nails as necessary complete. (In all floors for internal wall & upto 6 m height for external wall)	SQM	340	948	3,22,320.00

<b>53</b>	<b>FRP MEMBERS</b>				
	Providing and Fixing Structural FRP members composition that shall consist of a glass fiber reinforced polyester or vinyl ester resin matrix, approximately 50% glass by weight. Continuous strand glass mats or stitched reinforcements shall be used internally for transverse strength. The FRP wall panels shall be used to make designed wall panels of approved designs and shade. The designs shall be made by methods of die- cast moulding. The section of the FRP Panels shall not be less than 100mm thick. The panels shall be fixed with the wall by means of M.S. Structural members or other necessary fixing arrangements.	SQM	510	17900	91,29,000.00
<b>TOTAL OF PART A (SECTION 7)</b>					<b>1,18,16,216.00</b>

#### Summary of Works

Sl. No.	Description of Items	Amount (Rs. P.)
	<b>PART A : CIVIL, INTERIOR, SANITARY PLUMBING AND FIRE WORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001</b>	
1	Section 1: Interior Beautification (Main Building)	<b>11,72,87,818.00</b>
2	Section 2: Interior Beautification (Annexe Building)	<b>7,11,55,428.00</b>
3	Section 3: Plumbing and Sanitary Works of Main and Annexe Building	<b>99,82,911.65</b>
4	Section 4: Fire Works (Main & Annexe Building)	<b>98,89,696.40</b>
5	Section 5: Exterior Upgradation of Head Office Campus	<b>64,23,291.00</b>
6	Section 6: Facade Upgradation of Main Building	<b>18,10,770.00</b>
7	Section 7: Facade Upgradation of Annexe Building	<b>1,18,16,216.00</b>
	<b>Total of Part A</b>	<b>Rs. 22,83,66,131.05</b>

**PART B: ELECTRICALWORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT  
15, STRAND ROAD KOLKATA -700001**

**Section 1: Internal Electrical Works for Main and Annexe Building**

Sl. No.	Description	Unit	Quantity	Unit Rate	Amount Rs. P
A.	<b><u>CIRCUIT CUM POINT WIRING:</u></b>				
1.0	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed in MS conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc as required.				
1.1	Single switch control Light point/Exhaust fan /Ceilling Fan point/Call bell with 3x1.5 sqmm. Wire.	Point	50	937.00	46,850.00
2.0	Wiring for light/ power plug with 2 X 4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit along with 1 No 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	Meter	150	265.00	39,750.00
3.0	Wiring for light/ power plug with 4 X 4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit along with 2 Nos 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	Meter	200	392.00	78,400.00
4.0	Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed steel conduit as required				
4.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	100	208.00	20,800.00
4.2	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	Meter	60	229.00	13,740.00
4.3	2 X 4 sq. mm + 1 X 4 sq. mm earth wire	Meter	80	263.00	21,040.00
4.4	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	Meter	50	356.00	17,800.00
4.5	2 X 10 sq. mm + 1 X 6 sq. mm earth wire	Meter	60	426.00	25,560.00
4.6	2 X 16 sq. mm + 1 X 6 sq. mm earth wire	Meter	10	555.00	5,550.00

4.7	4 X 2.5 sq. mm + 2 X 2.5 sq. mm earth wire	Meter	60	339.00	20,340.00
4.8	4 X 4 sq. mm + 2 X 4 sq. mm earth wire	Meter	70	406.00	28,420.00
4.9	4 X 6 sq. mm + 2 X 6 sq. mm earth wire	Meter	10	529.00	5,290.00
5.0	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.				
5.1	Single switch control Light point/Exhaust fan /Ceilling Fan point/Call bell with 3x1.5 sqmm. Wire.	Point	800	783.00	6,26,400.00
6.0	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	Meter	350	200.00	70,000.00
7.0	Wiring for light/ power plug with 4 X 4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 2 Nos 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	Meter	300	308.00	92,400.00
8.0	Wiring for circuit/submain/light point to light point/Switch board to switch board loop wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit/ as required.				
8.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	6000	146.00	8,76,000.00
8.2	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	Meter	4000	167.00	6,68,000.00
8.3	2 X 4 sq. mm + 1 X 4 sq. mm earth wire	Meter	300	200.00	60,000.00
8.4	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	Meter	100	249.00	24,900.00
8.5	2 X 10 sq. mm + 1 X 6 sq. mm earth wire	Meter	15	328.00	4,920.00
8.6	2 X 16 sq. mm + 1 X 6 sq. mm earth wire	Meter	10	419.00	4,190.00



8.7	4 X 2.5 sq. mm + 2 X 2.5 sq. mm earth wire	Meter	200	233.00	46,600.00
8.8	4 X 4 sq. mm + 2 X 4 sq. mm earth wire	Meter	110	308.00	33,880.00
8.9	4 X 6 sq. mm + 2 X 6 sq. mm earth wire	Meter	50	394.00	19,700.00
8.10	2 X 1.5 sq. mm sq. mm	Meter	2000	41.00	82,000.00
9.0	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.				
9.1	20 mm	Meter	150	146.00	21,900.00
9.2	25 mm	Meter	250	165.00	41,250.00
10.0	Supplying and fixing of following sizes of medium class PVC conduit/ Flexible conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.				
10.1	20 mm	Meter	200	84.00	16,800.00
10.2	25 mm	Meter	150	90.00	13,500.00
10.3	32 mm	Meter	100	92.00	9,200.00
10.1	20 mm flexible	Meter	200	20.00	4,000.00
10.2	25 mm flexible	Meter	150	32.00	4,800.00
10.3	32 mm flexible	Meter	100	46.00	4,600.00
11.0	Supplying and drawing following sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface/ recessed steel / PVC conduit as required.				
11.1	3 x 1.5 sq. mm	Meter	150	54.00	8,100.00
11.2	2 x 1.5 sq. mm	Meter	300	41.00	12,300.00
11.3	3 x 2.5 sq. mm	Meter	150	75.00	11,250.00
11.4	3 x 4.0 sq. mm	Meter	80	117.00	9,360.00

12.0	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. As required.				
12.1	1 or 2 Module (75 mmX75 mm)	Each	50	243.00	12,150.00
12.2	3 Module (100mmX75mm)	Each	1000	267.00	2,67,000.00
12.3	4 Module (125mmX75mm)	Each	200	287.00	57,400.00
12.4	6 Module (200mmX75mm)	Each	30	333.00	9,990.00
12.5	8 Module (125mmX125mm)	Each	100	383.00	38,300.00
12.6	12 Module (200mmX150mm)	Each	10	343.00	3,430.00
13.0	Supplying and fixing 20 amps, 240 volts, SPN industrial type, socket outlet, with 2 pole and earth, metal enclosed plug top alongwith 20 amps "C" curve, SP MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket out let and complete with connections, testing and commissioning etc. as required.	Each	5	1,232.00	6,160.00
14.0	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				
14.1	5/6 amps switch	Each	1200	85.00	1,02,000.00
14.2	15/16 amp switch	Each	350	132.00	46,200.00
14.3	3 pin 5/6 amp socket outlet	Each	1200	111.00	1,33,200.00
14.4	6 pin 15/16 amp socket outlet	Each	350	175.00	61,250.00
15.0	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	120	24.00	2,880.00
16.0	6 A two way Switch	Each	150	110.00	16,500.00
17	Inspection, testing, integration and commissioning of project site electrical work and dismantling of lighting fixture,cabiling/wiring,DB'S/Panel connection with proper connection checking work and give a survey report before of execution work for both building	LOT	2	50,000.00	1,00,000.00
<b>B.</b>	<b><u>CABLE TRAYS/ UNDERFLOOR RACEWAY &amp; JUNCT ION BOXES</u></b>				

1.00	Supplying and installing following size of perforated pre-painted M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.				
1.10	900 mm width X 75 mm depth X 2.0 mm thickness	Metre	60.00	1,184.00	71,040.00
1.20	750 mm width X 75 mm depth X 2.0 mm thickness	Metre	60.00	1,078.00	64,680.00
1.30	600 mm width X 75 mm depth X 2.0 mm thickness	Metre	60.00	765.00	45,900.00
1.40	450 mm width X 62.5 mm depth X 2.0 mm thickness	Metre	90.00	700.00	63,000.00
1.50	300 mm width X 50 mm depth X 1.6 mm thickness	Metre	60.00	621.00	37,260.00
1.60	150 mm width X 50 mm depth X 1.6 mm thickness	Metre	20.00	531.00	10,620.00
1.70	100 mm width X 50 mm depth X 1.6 mm thickness	Metre	20.00	476.00	9,520.00
2.00	Supplying and installing following size of perforated pre-painted M.S. cable trays bends with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.				
2.10	900 mm width X 75 mm depth X 2.0 mm thickness	Each	6.00	3,927.00	23,562.00
2.20	750 mm width X 75 mm depth X 2.0 mm thickness	Each	14.00	3,327.00	46,578.00
2.30	600 mm width X 75 mm depth X 2.0 mm thickness	Each	14.00	2,582.00	36,148.00
2.40	450 mm width X 62.5 mm depth X 2.0 mm thickness	Each	2.00	2,089.00	4,178.00
2.50	300 mm width X 50 mm depth X 1.6 mm thickness	Each	8.00	1,340.00	10,720.00
2.60	150 mm width X 50 mm depth X 1.6 mm thickness	Each	10.00	947.00	9,470.00
2.70	100 mm width X 50 mm depth X 1.6 mm thickness	Each	6.00	808.00	4,848.00
3.00	Supplying and installing following size of perforated pre-painted M.S. cable trays Tee's with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.				
3.10	900 mm width X 75 mm depth X 2.0 mm thickness	Each	2.00	4,596.00	9,192.00

3.20	750 mm width X 75 mm depth X 2.0 mm thickness	Each	2.00	3,945.00	7,890.00
4.00	Supplying and installing following size of perforated pre-painted M.S. cable trays cross members with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.				
4.10	900 mm width X 75 mm depth X 2.0 mm thickness	Each	2.00	4,596.00	9,192.00
4.20	750 mm width X 75 mm depth X 2.0 mm thickness	Each	2.00	3,945.00	7,890.00
5.00	Providing, laying and fixing following dia RCC pipe NP2 class (light duty) in ground complete with RCC collars, jointing with cement mortar 1:2 (1 cement : 2 fine sand) including trenching (75 cm deep) and refilling etc as required.				
5.10	300 mm dia ID	Metre	15.00	854.00	12,810.00
5.20	250 mm dia ID	Metre	10.00	701.00	7,010.00
5.30	150 mm dia ID	Metre	10.00	598.00	5,980.00
6.00	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc..direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.				
6.10	90 mm dia (OD-90 mm & ID-76 mm nominal)	Metre	5.00	109.00	545.00
6.20	120 mm dia (OD-120 mm & ID-103 mm nominal)	Metre	10.00	240.00	2,400.00
7.00	Supplying & Fixing sheet metal inspection box (16 SWG) of the following sizes flushed in wall by housing the same after cutting brick wall incl. making earthing attachment, painting and mending good damages to building works.				
7.10	200 mm X 150 mm X 60 mm	Each	50.00	261.00	13,050.00
7.20	150 mm X 100 mm X 60 mm	Each	60.00	165.00	9,900.00
7.30	100 mm X 100 mm X 60 mm	Each	100.00	160.00	16,000.00

8.00	Supply & Fixing bakelite / perspex top cover on existing switch board by Brass screws after making housing for switch by cutting bakelite / perspex cover and making necessary connections as required.				
8.10	240 mm X 200 mm X 65 mm	Each	6.00	80.00	480.00
8.20	175 mm X 100 mm X 65 mm	Each	10.00	47.00	470.00
8.30	150 mm X 100 mm X 65 mm	Each	12.00	42.00	504.00
9.00	Supply and fixing of factory fabricated GI ladder type cable trays, with radial bends, suspenders and supports as per specification and of the following sizes.				
9.10	1200 mm wide	RM	90.00	2,542.00	2,28,780.00
9.20	1000 mm wide	RM	100.00	2,185.00	2,18,500.00
9.30	750 mm wide	RM	300.00	1,844.00	5,53,200.00
<b>10.00</b>	<b>GI Raceway &amp; Junction boxes</b>				
	Providing and fixing of race way made from minimum 1.6 mm thick pregalvenised steel sheet, factory fabricated, with internal partition of the following sizes including providing removable double folded cover of 1.6mm thick up to 150mm wide raceway and 2mm thick above 150mm wide raceway, knock out holes and fixing accessories earthing stud for terminating 8 SWG copper earth wire complete as required including floor supports, bends, access boxes, tap off boxes and cross over as per site requirement. (overhead / wall mounted recovery & function boxes shall be 1.6 mm thick). The pre-galvenised sheet shall be as per IS 277 or BS 2989 having tensile strength of minimum 500 N/sq.m. and minimum zinc coating of 275 GSM.				
10.10	300 mm wide x 40 mm deep raceway with 3 compartments	RM	50.00	3,080.00	1,54,000.00
10.20	200 mm wide x 40 mm deep raceway with 3 compartment	RM	50.00	2,500.00	1,25,000.00
10.30	150 mm wide x 40 mm deep single compartment raceway	RM	300.00	1,750.00	5,25,000.00
10.40	100 mm wide x 40 mm deep single compartment raceway	RM	300.00	1,320.00	3,96,000.00
<b>C</b>	<b>DISTRIBUTION BOARD/PANELS</b>				
	<b>DG DISTRIBUTION PANEL</b>				

	Design, fabrication, assembling, wiring, testing, supply, forwarding to site, unloading, shifting to location, inspection, installation, testing and commissioning of M.V.Distribution Boards suitable for 415V, 3 phase, 4 wire, 50Hz distribution system. The panel shall be fabricated out of 2 MM CRCA sheet steel in cubicle formation, compartmentalized, form 3b construction, free standing, floor mounting, dust and vermin proof with reinforcement of suitable size angle iron, channel, 'T' sections and/ or flats wherever necessary. The panel shall be treated with anti-corrosive process before final powder coating. Separate earth bus shall be provided throughout the length of the panel. The incoming and the outgoing feeder breakers, switch fuse units, change over switches, indicating lamps, meters etc. shall be accommodated in a modular multitier arrangement. A minimum of 400mm clearance shall be given from the floor level to the bottom most termination point. The painting shall be done in conformity with IS code.				
	Adequate size cable alley shall be provided all round the panel and at the back for easy bending and terminations. The outgoing feeders inside the panel shall be connected through solid bus bars. Flexible cable links are not acceptable. Bus bars shall be provided with PVC heat shrinkable sleeves or heat resistant insulated paint. The panels shall be suitable for cable entry from top / bottom. The copper earth strip of adequate size in 2 runs shall run through out the perimeter of the bottom of the panel. The panel shall be fabricated only after the approval of fabrication drawings by the consultant.				
1.00	<b>DG DISTRIBUTION PANEL</b>				
	Incoming Air Circuit Breaker- (From 750 kVA DG SET)				
	1250 amps 4 pole, 50 kA, electrically operated fully draw out type air circuit breaker with microprocessor release unit, for short circuit, over current and earth fault protection with adjustable setting as per specification and with following accessories- <b>1 set</b> :				
<i>i</i>	Digital load manager (conserve – EM 6400 with RS-485 or equivalent) of accuracy class-I with 2 No. 1250/5 amps 15VA CTs.				
<i>ii</i>	Phase indicating lamps protected by 6 amps SP MCB's- <b>3 Set</b>				
<i>iii</i>	Three Phase Under voltage relay MV12 or equivalent (27) - <b>1 Set</b>				
<i>iv</i>	Three Phase Over voltage relay MV 12 or equivalent (59) - <b>1 Set</b>				
<i>v</i>	Breaker ON/ OFF/ TRIP indicating lights with control MCB's- <b>1 Set</b>				

vi	24 V DC Shunt trip coil. - <b>1 Set</b>				
vii	240 V AC under voltage release. - <b>1 Set</b>				
viii	Auto-manual / test selector / switch - <b>1 Set</b>				
ix	Breaker control switch - <b>1 Set</b>				
x	Auxiliary contacts required for necessary interlocking of breakers.				
xi	Three phase Voltage sensor relay shall be protected by 2 amps TP MCB's- 1 Set				
xii	Transient voltage class B surge suppressor (100 kA) (Lines to Neutral) & (Neutral to Earth) suitable for 3 phases - <b>1 Set</b>				
xiii	Digital voltmeter with inbuilt selector switch- 1 set				
	<b>Bus Bar :</b>				
	1500 A, 4 Pole electrolytic grade CU, bus bar, 50 kA for 1 sec. With colour coded heat shrinkable insulation sleeve.				
	<b><u>Outgoings</u></b>				
i.	630 Amps, 36kA, TPN MCCB with microprocessor based release - <b>1 nos.</b>				
ii.	320 Amps, 36kA, TPN MCCB with microprocessor based release - <b>3 nos.</b>				
iii.	250 Amps , 50kA, TPN MCCB with microprocessor based release - <b>2 nos.</b>				
iv.	100 Amps, 50kA, TPN MCCB with microprocessor based release - <b>1 nos.</b>				
	<b>Note on Main DG distribution panel:</b>				
	All outgoing feeders shall have suitable range of followings:				
i.	All breakers shall be electrically interlocked as per schematic diagram.				

ii.	All MCCB's shall be suitable for 36 KA breaking capacity unless otherwise specified.				
iii.	Three phase indicating lamps shall be protected by 6 amps SP MCBs.				
iv.	All outgoing feeders shall be provided with built-in short circuit & earth fault relay module.				
v.	All outgoing shall have Electronic energy meter with RS-485 with required number of CT's.				
vi.	Wiring and supply, installation of space heater, humidistat and control MCB's shall be provided all vertical sections.				
vii.	Suitable danger board shall be provided.				
viii.	All bus bar section/ backside panels shall have pad locking facility and hinged type door.				
ix.	9 W fitting with CFL lamp, switch shall be provided in each vertical section.				
x.	Incoming breakers shall have suitable provision for busduct connection..				
xi.	All Electronic Energy meter shall be pre wired for BMS connection upto central point within the panel with sheilded cable.				
	DG PANEL as described above	Each	1.00	10,80,000.00	10,80,000.00
2.00	<b><u>LIGHTING &amp; POWER DISTRIBUTION PANEL OLD BUILDING :</u></b>				
	FDB comprises				
	Incoming				
	1 No. 320 Amps TPN MCCB with following accessories:				
	VAF digital electronic meter with inbuilt selector switch and 315/5 Amps suitable VA, CL 1 CTs . -1 Set				
	Phase indicating light shall be protected by 6 Amps SP MCB's - 3 Set				
	<u>Bus Bars</u>				
	500 Amps TPN electrolytic grade Coper bus bars, 36 kA with colour coded heat shrinkable insulation sleeve. - 1 Set				



	<u>ATS</u>				
	400 Amps Automatic transfer switch.				
	<u>Outgoing</u>				
i.	63 Amps TPN MCCB - 2 Nos.(For LIFT-1/LIFT-2)				
ii.	400 Amps TPN MCCB - 1 Nos.				
iii.	320 Amps TPN MCCB - 1 Nos.				
iv	125 Amps TPN MCCB - 1 Nos.				
v	100 Amps TPN MCCB - 1 Nos.				
vi	40 Amps TPN MCCB - 2 Nos.				
	<b>Notes:-</b>				
i.	All MCCB's shall be of 36 KA (Ics) breaking capacity.				
ii.	All MCB's shall be of 10 KA breaking capacity.				
iii.	3 nos outgoing feeder shall have dual energy meter with suitable rating CTs.				
iv	All MCCB's shall have adjustable thermal Magnetic release for 100amp and more.				
	Above panel as	SET	1.00	2,25,000.00	2,25,000.00
3.00	<b>FLOOR FEEDER PANEL-1 /2/3(OLD BUILDING - GR . FLOOR/1st FLOOR/2ND FLOOR)</b>				
	FDB comprises				
	Incoming				
	1 No.63 Amps TPN MCCB with following accessories:				
	VAF digital electronic meter with inbuilt selector switch and 63/5 Amps suitable VA, CL 1 CTs . -1 Set				
	Phase indicating light shall be protected by 6 Amps SP MCB's - 3 Set				
	<u>Bus Bars</u>				

	80 Amps TPN electrolytic grade Copper bus bars, 36 kA with colour coded heat shrinkable insulation sleeve. - 1 Set				
	<u>Outgoing</u>				
i.	63 Amps TPN MCB - 2 Nos. (For HVAC DB and Spare)				
ii.	25 Amps TPN MCB - 6 Nos. (For LPDB-1.1,LPDB-1.2,LPDB-1.3,LPDB-1.4,LPDB-1.5 and spare )				
	<b>Notes:-</b>				
i	All MCCB's shall be of 25 KA (Ics) breaking capacity in Panel.				
ii	All MCB's shall be of 10 KA breaking capacity.				
iii	All MCCB's shall has thermal Magnetic release				
	Panel as above	SET	3.00	81,000.00	2,43,000.00
4.00	<b><u>ANNEXE BUILDING LIGHTING POWER DISTRIBUTION PANEL</u></b>				
	<b>Incoming</b>				
	160 Amps TPN MCCB with following accessories:				
i	VAF digital electronic meter with inbuilt selector switch and 160/5 Amps suitable VA, CL 1 CTs . - 1 Set				
ii	Phase indicating light shall be protected by 2 Amps SP MCB's. - 3 Set				
	<b>Bus Bars</b>				
	200 Amps TPN Copper bus bars with heat shrinkable insulation sleeve. - 1 Set				
	<b>ATS</b>				
	160 Amps Automatic transfer switch.				
	<b>Outgoing:</b>				
	63 Amps TPN MCCB - 1 Nos.( For Lift-1)				
	25 Amps TPN MCB - 18 Nos. (For floor distribution db /HVAC db etc.)				

	<b>Notes:-</b>				
i.	All MCCB's shall be of 25 KA (Ics) breaking capacity in Panel.				
ii	All MCB's shall be of 10 KA breaking capacity.				
iii	All MCCB's shall has adjustable thermal Magnetic release for 100amp and more.				
	Panel described as above	Set.	1.00	1,08,000.00	1,08,000.00
<b>5.00</b>	<b>Panel for External Lighting</b>				
	125 Amps TPN MCCB with following accessories:				
i	VAF digital electronic meter with inbuilt selector switch and 125/5Amps 15 VA, CL 1 CTs . - 1 Set				
ii	Phase indicating light shall be protected by 2 Amps SP MCB's. - 3				
<b>B.</b>	<b>Bus Bars</b>				
	150 Amps TPN Copper bus bars with heat shrinkable insulation				
<b>C.</b>	<b>Outgoing</b>				
	Out going : 2 sets each having 6 way TPN DB, 6Nos. 10-16 A SP MCB per phase as outgoing with 3 nos. 40 A DP RCCB of 30 mA leakage current plus 1 No. 40A TP Contactor controlled through 0-24 hour timer and 1 No. 40 A FP isolator as incomer.				
	<b>Note:-</b>				
i.	All MCCB's shall be of 25 KA (Ics) breaking capacity in Panel and thermal magnatic release for 100amp and more.				
	(External Lighting Panel) described as above	Set.	1.00	90,000.00	90,000.00
<b>6.00</b>	<b>UPS OUTPUT PANEL</b>				
	Panel comprises				
1.10	Three(3) - Incomers from Main LT Panel Bus-I and Bus-II respectivelyeach having:				

	Three(3) - 160A, TP+2N, 35kA, MCCB with ON, OFF and TRIP indications, with 2NO+2NC auxiliary contacts, sliding type front operation kit with adjustable magnetic, short circuit and shunt trip release.				
	Three(3) - Phase indicating lamps with MCBs.				
	One (1) - Digital multidata meter with facility to read kilowatthour, Cl. 1.0, flush mounting.				
	Three (3) - 160/5A, 10VA, Cl 1.0, CTs				
	One(1) - Set 3 phase, 300A, 35kA/1sec, copper busbars with heat shrinkable insulation sleeve..				
1.20	<b><u>Bus Coupler (Between Bus -I and Bus-II and bus-III)</u></b>				
	160 amps, 36 kA, TP+2N, 35kA, MCCB - 3 Set.				
	<b>Out going :</b>				
	<b>Bus section:-I</b>				
	63 Amps TPN MCCB - 3 Nos.( For OLD building UPS DB and Spare)				
	40 Amps FP MCB - 4 Nos. (For ELV DB and Server ,spare etc.)				
	<b>Bus section:-II</b>				
	63 Amps TPN MCCB - 2 Nos.( For OLD building UPS DB and Spare)				
	40 Amps FP MCB - 2 Nos. (For ANNEXE Server DB and Spare)				
	25 Amps DP MCB - 9 Nos. (For ANNEXE Building UPS DB etc.)				
	<b>Bus section:-III</b>				
	63 Amps TPN MCCB - 1 Nos.( For Spare)				
	40 Amps DP MCB - 1 Nos. (spare etc.)				
	25 Amps DP MCB - 3 Nos. (spare etc.)				
	<b>Notes:-</b>				

i	All MCCB's shall be of 25 KA (Ics) breaking capacity in Panel and thermal magnetic release for 100amp and more.				
ii	All MCB's shall be of 10 KA breaking capacity.				
	Panel describe as above	Set	1.00	1,80,000.00	1,80,000.00
7.00	<b>UPS FLOOR PANEL OLD BUILDING-1/2/3</b>				
	FDB comprises				
	Incoming				
	1 No.63 Amps TPN MCCB with following accessories:				
	VAF digital electronic meter with inbuilt selector switch and 63/5 Amps suitable VA, CL 1 CTs . -1 Set				
	Phase indicating light shall be protected by 6 Amps SP MCB's - 3 Set				
	<u>Bus Bars</u>				
	100 Amps TPN electrolytic grade Copper bus bars, 36 kA with colour coded heat shrinkable insulation sleeve. - 1 Set				
	<u>Outgoing</u>				
	32 Amps TPN MCB - 2 Nos. (For Server DB and Spare)				
	25 Amps DP MCB - Nos. (For UPS DB and Spare)				
	<b>Notes:-</b>				
	All MCCB's shall be of 25 KA (Ics) breaking capacity in Panel and thermal magnetic release for 100amp and more.				
i	All MCB's shall be of 10 KA breaking capacity.				
ii	Panel as above	SET	3.00	63,000.00	1,89,000.00
	<b><u>UPS INPUT PANEL</u></b>				
	<b>Incoming</b>				
8.00					
	320 Amps TPN MCCB with following accessories:				
	VAF digital electronic meter with inbuilt selector switch and 320/5 Amps suitable VA, CL 1 CTs . - 1 Set				

i	Phase indicating light shall be protected by 2 Amps SP MCB's. - 3 Set				
ii	<b>Bus Bars</b>				
	400 Amps TPN Copper bus bars with heat shrinkable insulation sleeve. - 1 Set				
	<b>Outgoing:</b>				
	160 Amps TPN MCCB - 4 Nos				
	<b>Notes:-</b>				
	<i>All MCCB's shall be of 36 KA (Ics) breaking capacity in Panel and thermal magnetic release for 100amp and more.</i>				
i.	Panel described as above	Set.	1.00	72,000.00	72,000.00
	<b><u>FLOOR DISTRIBUTION DB: 12 WAY TPN DB</u></b>				
9.00	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 volts, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. and mending good all the damages as required.				
	DB comprises				
	Ways- 12 way TPN				
	Incoming - 40 A FP MCB isolator				
	Outgoing - 12 Nos 6A-10A SP MCB with One Nos 25A DP RCCB's (sensitivity-30mA) in each phase .				
	<b>Notes:-</b>				
	All MCB's shall be of 10 KA breaking capacity and "c" Curve.	Set	10.00	13,500.00	1,35,000.00
i	<b><u>FLOOR DISTRIBUTION DB: 16 WAY TPN DB</u></b>				
10.00	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 volts, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. and mending good all the damages as required.				
	DB comprises				

	Ways- 16 way TPN				
	Incoming - 63 A FP MCB isolator				
	Outgoing - 16 Nos 6A-10A SP MCB with One Nos 40A DP RCCB's (sensibility-30mA) in each phase .				
	Notes:-				
	All MCB's shall be of 10 KA breaking capacity and "c" Curve.	Set	35.00	17,100.00	5,98,500.00
	<b><u>FLOOR DISTRIBUTION DB: 16 WAY SPN DB</u></b>				
11.00	Supplying and fixing following way, horizontal type single pole and neutral, sheet steel, MCB distribution board, 230 volts, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. and mending good all the damages as required.				
	DB comprises				
	Ways- 16 way SPN				
	Incoming - 40 A FP MCB isolator				
	Outgoing - 16 Nos 6A-10A SP MCB with One Nos 25A DP RCCB's (sensibility-30mA) in each phase .				
	Notes:-				
	All MCB's shall be of 10 KA breaking capacity and "c" Curve.	Set	35.00	8,100.00	2,83,500.00
	<b><u>STAIRCASE LIGHTING DISTRIBUTION BOARD</u></b>				
	<b><u>(STAIR DB 1, 2 and 3)</u></b>				
12.00					
	DB comprises				
	6 way SPN DB, 6 No.10Amps SP MCB's as outgoing with 1 No. 25 Amps DP ELCB + MCB as incomer with separate neutral link for each phase.				
	Notes:-				
	All MCB's shall be of 10 KA breaking capacity and "c" Curve.	Set	3.00	5,400.00	16,200.00
i	Supply, installation, testing and commissioning of 160 amps 4 Pole MCCB isolator with in sheet steel enclosure of approved make design and painted with approved paint shade. (for UPS )	No.	3.00	15,300.00	45,900.00

13.00	Supply, installation, testing and commissioning of 16 amps 4 Pole Metal clad socket with MCB protection in Polycarbonate enclosure of approved make design and painted with approved paint shade.	No.	2.00	2,070.00	4,140.00
14.00	Supply, installation, testing and commissioning of 32 amps 4 Pole MCB isolator with in sheet steel enclosure of approved make design and painted with approved paint shade.	No.	3.00	1,800.00	5,400.00
.					
D	<b><u>CABLES, MAINS AND SUB MAINS</u></b>				
1.00	laying of following 1100 volt grade XLPE insulated PVC sheathed cable of 1.1 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.				
1.10	Upto 35 sq. mm	Metre	300.00	323.00	96,900.00
1.20	Above 35 sq. mm and upto 95 sq. mm	Metre	300.00	338.00	1,01,400.00
1.30	Above 95 sq. mm and upto 185 sq. mm	Metre	400.00	352.00	1,40,800.00
1.40	Above 185 sq. mm and upto 400 sq. mm	Metre	500.00	396.00	1,98,000.00
2.00	Laying of one number additional XLPE insulated PVC sheathed Alluminium conductor armoured cable of 1.1 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.				
2.10	Upto 35 sq. mm	Metre	150.00	222.00	33,300.00
2.20	Above 35 sq. mm and upto 95 sq. mm	Metre	100.00	236.00	23,600.00
2.30	Above 95 sq. mm and upto 185 sq. mm	Metre	170.00	251.00	42,670.00
2.40	Above 185 sq. mm and upto 400 sq. mm	Metre	90.00	294.00	26,460.00
3.00	laying of following 1100 volt grade XLPE insulated PVC sheathed armoured cable of 1.1 kV grade of following size direct in ground in the same trench in one tier horizontal formation including excavation and refilling the trench etc. as required, but excluding sand cushioning and protective covering.				
3.10	Upto 35 sq. mm	Metre	50.00	167.00	8,350.00
3.20	Above 35 sq. mm and upto 95 sq. mm	Metre	30.00	181.00	5,430.00



3.30	Above 95 sq. mm and upto 185 sq. mm	Metre	25.00	196.00	4,900.00
3.40	Above 185 sq. mm and upto 400 sq. mm	Metre	20.00	239.00	4,780.00
4.00	laying of following 1100 volt grade XLPE insulated PVC sheathed armoured cable of 1.1 kV grade of following size in the existing RCC/ HUME/ METAL pipe as required.				
4.10	Upto 35 sq. mm	Metre	25.00	105.00	2,625.00
4.20	Above 35 sq. mm and upto 95 sq. mm	Metre	30.00	120.00	3,600.00
4.30	Above 95 sq. mm and upto 185 sq. mm	Metre	35.00	134.00	4,690.00
4.40	Above 185 sq. mm and upto 400 sq. mm	Metre	40.00	178.00	7,120.00
5.00	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on wall surface as required.				
5.10	Upto 35 sq. mm	Metre	60.00	39.00	2,340.00
5.20	Above 35 sq. mm and upto 95 sq. mm	Metre	80.00	104.00	8,320.00
6.00	laying of following 1100 volt grade XLPE insulated PVC sheathed armoured cable of 1.1 kV grade of following size in the existing RCC/ HUME/ METAL pipe as required.				
6.10	Upto 35 sq. mm	Metre	30.00	31.00	930.00
6.20	Above 35 sq. mm and upto 95 sq. mm	Metre	50.00	47.00	2,350.00
6.30	Above 95 sq. mm and upto 185 sq. mm	Metre	40.00	64.00	2,560.00
6.40	Above 185 sq. mm and upto 400 sq. mm	Metre	30.00	112.00	3,360.00
7.00	Supplying and making end termination with brass compression gland and aluminium lugs for following size of XLPE insulated PVC sheathed armoured cable of 1.1 KV grade as required.				
7.10	2 X 6 sq.mm (19mm)	Each	10.00	198.00	1,980.00
7.20	2 X 10 sq.mm (19mm)	Each	16.00	198.00	3,168.00
7.30	2 X 16 sq.mm (22mm)	Each	14.00	212.00	2,968.00

7.40	3 X 10 sq.mm (22mm)	Each	20.00	211.00	4,220.00
7.50	3 X 16 sq.mm (25mm)	Each	30.00	222.00	6,660.00
7.60	3½ X 25 sq. mm (28mm)	Each	20.00	250.00	5,000.00
7.70	3½ X 35 sq. mm (32mm)	Each	30.00	300.00	9,000.00
7.80	3½ X 50 sq. mm (35mm)	Each	20.00	329.00	6,580.00
7.90	3½ X 70 sq. mm (38mm)	Each	16.00	368.00	5,888.00
7.10	3½ X 95 sq. mm (45mm)	Each	12.00	473.00	5,676.00
7.11	3½ X 120 sq. mm (45mm)	Each	10.00	489.00	4,890.00
7.12	3½ X 150 sq. mm (50mm)	Each	6.00	555.00	3,330.00
7.13	3½ X 240 sq. mm (62mm)	Each	10.00	809.00	8,090.00
7.14	3½ X 300 sq. mm (70mm)	Each	8.00	936.00	7,488.00
7.15	4 X 10 sq. mm (25mm)	Each	20.00	219.00	4,380.00
7.16	4 X 16 sq. mm (28mm)	Each	30.00	250.00	7,500.00
7.17	4 X 25 sq. mm (28mm)	Each	24.00	250.00	6,000.00
7.18	2 X 2.5 sq.mm (8mm)	Each	20.00	63.00	1,260.00
7.19	2 X 4 sq.mm (12mm)	Each	26.00	68.00	1,768.00
8.00	Supplying and making cable route marker with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size ) of size 60 cm X 60 cm at the bottom and 50 cm X 50 cm at the top with a thickness of 10cm including inscription duly engraved as required.	Each	35.00	530.00	18,550.00
9.00	Supplying and fixing cable route marker with 10 cm X 10 cm X 5 mm thick G.I. plate with inscription there on, bolted /welded to 35 mm X 35 mm X 6 mm angle iron, 60 cm long and fixing the same in ground as required.	Each	30.00	383.00	11,490.00
10.00	Supplying of following 1100 volt grade XLPE insulated PVC sheathed aluminium conductor armoured cables as per specification:				
10.20	3.5 core 300 sq. mm	Metre	500.00	1,796.00	8,98,000.00

10.30	3.5 core 240 sq. mm	Metre	150.00	1,468.00	2,20,200.00
10.40	3.5 core 150 sq. mm	Metre	100.00	940.00	94,000.00
10.60	3.5 core 95 sq. mm	Metre	400.00	636.00	2,54,400.00
10.70	3.5 core 70 sq. mm	Metre	600.00	516.00	3,09,600.00
10.80	3.5 core 50 sq. mm	Metre	150.00	384.00	57,600.00
10.11	3.5 core 35 sq.mm	Metre	600.00	300.00	1,80,000.00
10.12	3.5 core 25 sq.mm	Metre	600.00	244.00	1,46,400.00
12.00	Supplying of following 1100 volt grade XLPE insulated PVC sheathed copper conductor armoured cable as per specification:.				
12.10	4 core 16 sq. mm.	Metre	500.00	900.00	4,50,000.00
12.20	4 core 10 sq.mm	Metre	600.00	628.00	3,76,800.00
12.30	4 core 25 sq.mm	Metre	600.00	800.00	4,80,000.00
12.40	4 core 5 sq.mm	Metre	1,000.00	300.00	3,00,000.00
12.50	3 core 10 sq.mm	Metre	150.00	570.00	85,500.00
12.60	3 core 16 sq.mm	Metre	100.00	790.00	79,000.00
E	<b><u>Rising main:</u></b>				
1.00	Supplying, installing on wall, testing 300Amp capacity rising mains made of 1.6mm thick IP 42 sheet commissioning of GI enclosure duly painted with powder coating, wall straps,fully PVC insulated 4 Nos aluminium bus bars having current density of 130 A/ sq cm at nominal current rating in convenient sections and suitable for 415 V, 3 phase, 4 wire, 50 Hz, A.C. supply with extension joints, fire proof barriers, expansion joints, thrust pads including jointing and earthing with 2 runs of galvanised iron strips etc. as required. (Rising mains confirming to IS 8623, TEC 439)				
1.10	300 A (S.C. rating for 1 sec - 20 kA)	RM	20.00	6,342.00	1,26,840.00

2.00	300A End feed Unit fabricated out of 1.6 mm G.I. sheet duly paint with powder Coated, RAL 7032 with provision of 400A MCCB with extended Rotary Handle but without MCCB.	Nos.	1.00	22,348.00	22,348.00
3.00	Supply installation, testing of 100A Plug in box with provision of 100A MCCB with extended Rotary Handle but without MCCB.	Nos.	4.00	15,000.00	60,000.00
<b>F</b>	<b><u>UPS SYSTEM</u></b>				
1.0	Supply, installation, Testing and commissioning of the following UPS SYSTEM as per specifications and complete in all respects.				
1.1	80 KVA ON LINE UPS with 15 min battery backup of 3 phase input & 3 phase output in parallel redundant mode ( N+1 configuration ) .	SET	3	1440000	43,20,000.00
2.0	Site Acceptance Test (SAT) at full load on site complete with loadbank, cabling, tools and tackles etc.	LOT	1	15000	15,000.00
3.0	Supply and fixing in position 1000 mm wide rubber matting of 1100 volts grade as per electricity rules (exact length rubber mats to be worked out as per site requirement). Thickness of rubber mats shall be not less than 6 mm.	RM	10	1800	18,000.00
4.0	Providing and fixing steel structure work for supporting UPS & battery cabinets.	LOT	3	30000	90,000.00
	<b><u>Note:</u></b>				
	Quoted price shall be inclusive of the following:				
	i. Approved rating single core copper conductor cable connecting as batteries.				
	ii. All equipment shall be housed in individual cabinets.				
	iii. UPS Battery backup must be given for full resistive load. Battery should be sealed maintenance free type.				
	iv. BMS Interface required with each UPS.				
	v. Internal earthing of UPS and Battery to be included.				

	vi. All the batteries must be housed in a respective closed cabinet.Open rack not acceptable.				
	vii. Cables and Isolator panels will be the part of electrical tender.				
<b>G</b>	<b>SUPPLY, TESTING AND INSTALLATION OF INTERNAL LIGHTING FIXTURES</b>				
1	Supply ,testing ,installation of LED Recessed Downlighter with a nominal system lumen output of 1200 lumens and a minimum system efficacy of 110 lm/W. The luminaire shall have a rated system lifetime of 50,000 burning hours at L70. The luminaire should have a color temperature of 6500K and CRI>80. The luminaire shall meet IP20 rating with THD<10% and PF > 0.9. The luminaire housing should made of pressure die cast aluminium and the luminaire optics shall have a high efficiency diffuser with more than 85% transmittance. The total power consumption should not exceed 11W (including driver).All test should be done as per IS:10322 (Part 5/Sec 3) & IEC 60598-1,IEC 60529 & Complies IEC 62384, Certification Required: LM 79 & LM 80 . Vendor should provide seperate BIS certifications for luminaire and Driver Separately Provided.	NO	551	2100	11,57,100.00
2	Supply ,testing ,installation of LED Recessed Downlighter with a nominal system lumen output of 1200 lumens and a minimum system efficacy of 110 lm/W. The luminaire shall have a rated system lifetime of 50,000 burning hours at L70. The luminaire should have a color temperature of 6500K and CRI>80. The luminaire shall meet IP20 rating with THD<10% and PF > 0.9. The luminaire housing should made of pressure die cast aluminium and the luminaire optics shall have a high efficiency diffuser with more than 85% transmittance. The total power consumption should not exceed 11W (including driver).All test should be done as per IS:10322 (Part 5/Sec 3) & IEC 60598-1,IEC 60529 & Complies IEC 62384, Certification Required: LM 79 & LM 80 . Vendor should provide seperate BIS certifications for luminaire and Driver Separately	NO	50	2700	1,35,000.00

3	Supply ,testing ,installation of LED Recessed Downlighter with a nominal system lumen output of 1500 lumens and a minimum system efficacy of 110 lm/W. The luminaire shall have a rated system lifetime of 50,000 burning hours at L70. The luminaire should have a color temperature of 6500K and CRI>80. The luminaire shall meet IP20 rating with THD<10% and PF > 0.9. The luminaire housing should made of pressure die cast aluminium and the luminaire optics shall have a high efficiency diffuser with more than 85% transmittance. The total power consumption should not exceed 13.5W (including driver). Vendor should provide seperate BIS certifications for luminaire and Driver Separately.	NO	299	2500	7,47,500.00
4	Supply ,testing ,installation of LED Recessed Downlighter with a nominal system lumen output of 1500 lumens and a minimum system efficacy of 110 lm/W. The luminaire shall have a rated system lifetime of 50,000 burning hours at L70. The luminaire should have a color temperature of 6500K and CRI>80. The luminaire shall meet IP20 rating with THD<10% and PF > 0.9. The luminaire housing should made of pressure die cast aluminium and the luminaire optics shall have a high efficiency diffuser with more than 85% transmittance. The total power consumption should not exceed 13.5W (including driver). Vendor should provide seperate BIS certifications for luminaire and Driver seperately	NO	44	3200	1,40,800.00
5	Supply ,testing ,installation of LED 4ft Batten with a nominal system lumen output of 2000 lumens and a minimum system efficacy of 120 lm/W. The luminaire shall have a rated system lifetime of 50,000 burning hours at L70. The luminaire should have a color temperature of 6500K and CRI>80. The luminaire shall meet IP20 rating with THD < 10% and PF > 0.95. The Batten should be flicker free(Ripple<5%),with high cut-off Voltage at 320V and auto restart. The luminaire shall be capable of withstanding 440V for 8 hrs. It should have a surge protection of 4kV. The luminaire housing should made of CRCA with a PC UV shielding diffuser. The total power consumption should not exceed 16W (including driver). . All test should be done as per IS:10322 (Part 5/Sec 3) & IEC 60598-1,IEC 60529 & Complies IEC 62384, Certification Required: LM 79 & LM 80 . Vendor should provide seperate BIS certifications for luminaire and Driver Separately	NO	2	1950	3,900.00

6	Supply ,testing ,installation of LED 4ft Batten with a nominal system lumen output of 4000 lumens and a minimum system efficacy of 120 lm/W. The luminaire shall have a rated system lifetime of 50,000 burning hours at L70. The luminaire should have a color temperature of 6500K and CRI>80. The luminaire shall meet IP20 rating with THD < 10% and PF > 0.95.The Batten should be flicker free(Ripple<5%),with high cut-off Voltage at 320V and auto restart. The luminaire shall be capable of withstanding 440V for 8 hrs. It should have a surge protection of 4kV. The luminaire housing should made of CRCA with a PC UV shielding diffuser. The total power consumption should not exceed 34W (including driver). . All test should be done as per IS:10322 (Part 5/Sec 3) & IEC 60598-1,IEC 60529 & Complies IEC 62384, Certification Required: LM 79 & LM 80 . Vendor should provide seperate BIS certifications for luminaire and Driver Separately	NO	19	3200	60,800.00
7	Supply ,testing ,installation of 34W (including all losses) 2ft X 2ft LED recess mounted luminaire with CRCA housing and minimum system lumen output of 3400 lumens. It should have completely indirect lighting. The luminaire shall have a rated system lifetime of 50,000 burning hours and CCT of 6500 K. The luminaire shall have CRI of > 80 with Standard deviation color matching (SDCM) < 4. It has IP20 protection and Operating Temperature range shall be 0 to 45 deg C. System power factor shall be > 0.9 and THD < 10%. Luminaire should have Serviceability class B. LM 79 report and Type Test Certificate to be submitted for luminaire and LM 80 report for LED source issued by LED manufacturer.	NO	176	6500	11,44,000.00
8	Supply ,testing ,installation of 34W (including all losses) 2ft X 2ft LED recess mounted luminaire with CRCA housing and minimum system lumen output of 3400 lumens. It should have completely indirect lighting. The luminaire shall have a rated system lifetime of 50,000 burning hours and CCT of 6500 K. The luminaire shall have CRI of > 80 with Standard deviation color matching (SDCM) < 4. It has IP20 protection and Operating Temperature range shall be 0 to 45 deg C. System power factor shall be > 0.9 and THD < 10%. Luminaire should have Serviceability class B. LM 79 report and Type Test Certificate to be submitted for luminaire and LM 80 report for LED source issued by LED manufacturer.	NO	87	7000	6,09,000.00

9	Supply ,testing ,installation of LED indoor surface downlighter suitable for general lighting. Luminaire should have polycarbonate cover with diffused optics. The luminaire should have CRI > 80 and CCT of 6500K. The luminaire shall be compliant with IP20 classification.The fixture should have a minimum system efficacy of 100 lumen/Watt and a minimum system lumen output of 2000 lumens and maximum system wattage of 18 Watts. The luminaire shall be designed so as to ensure lumen depreciation of up to 30% over 30k burning hours @ design ambient temp 45 deg C. The electronic driver used shall have a power factor >0.9. BIS certification to be provided seperately for luminaire and Driver. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters.	NO	19	1950	37,050.00
10	Supply ,testing ,installation of LED based suspended Continuos linear (4ft) Luminaire with extruded aluminium housing,anodized silver finish. System lumen output of 2600 lumens and a minimum system efficacy of 110 lm/W.The luminaire shall have a rated system lifetime of 50,000 burning hours at L70. The luminaire shall have a color temperature of 6500K and CRI>80. The luminaire shall meet IP20 Rating with THD<10% and PF>0.9. THe total Power Consumption should not exceed 23 W (including Driver).Tapered look with 50mm width at top and 60mm at bottom. All test should be done as per IS:10322 (Part 5/Sec 3) & IEC 60598-1,IEC 60529 & Complies IEC 62384, Certification: LM 79 & LM 80 Certificates . Vendor should provide seperate BIS certifications for luminaire and Driver Separately.	NO	226	7000	15,82,000.00
11	Supply ,testing ,installation of LED Recessed Downlighter with a nominal system lumen output of 2000 lumens and a minimum system efficacy of 100 lm/W. The luminaire shall have a rated system lifetime of 50,000 burning hours at L70. The luminaire should have a color temperature of 6500K and CRI>80. The luminaire shall meet IP20 rating with THD<10% and PF > 0.9. The luminaire housing should made of pressure die cast aluminium and the luminaire optics shall have a high efficiency diffuser with more than 85% transmittance. The total power consumption should not exceed 20W (including driver).All test should be done as per IS:10322 (Part 5/Sec 3) & IEC 60598-1,IEC 60529 & Complies IEC 62384, Certification Required: LM 79 & LM 80 . Vendor should provide seperate BIS certifications for luminaire and Driver Separately with all necessary arrangement .	NO	448	3300	14,78,400.00



12	Supply ,testing ,installation of LED Recessed Downlighter with a nominal system lumen output of 2000 lumens and a minimum system efficacy of 100 lm/W. The luminaire shall have a rated system lifetime of 50,000 burning hours at L70. The luminaire should have a color temperature of 6500K and CRI>80. The luminaire shall meet IP20 rating with THD<10% and PF > 0.9. The luminaire housing should made of pressure die cast aluminium and the luminaire optics shall have a high efficiency diffuser with more than 85% transmittance. The total power consumption should not exceed 20W (including driver). All test should be done as per IS:10322 (Part 5/Sec 3) & IEC 60598-1,IEC 60529 & Complies IEC 62384, Certification Required: LM 79 & LM 80 . Vendor should provide seperate BIS certifications for luminaire and Driver Separately	NO	195	5500	10,72,500.00
13	Supply ,testing ,installation of Surface Mounted/Suspended 4ft. Luminaire with a nominal system lumen output of 3900 and a minimum system efficacy of 100 lm/W. The luminaire shall have a rated system lifetime of 50000 burning hours @L70. The luminaire shall have a color temperature of 6500K and CRI>80,. The luminaire should meet IP 20 Rating with THD<20% and PF>0.9. The Total Power consumption should not exceed 39W (including Driver). it should have 50:50 upward downward light ration. Vendor should provide seperate BIS certifications for luminaire and Driver Separately with all necessary arrangement.	NO	33	7000	2,31,000.00
14	Supply ,testing ,installation of Decorative suspension light ,with copper look, Material: metal with adjustable height,similar to Philips Make : Suspension Light - 38439	NO	25	5250	1,31,250.00
15	Supply ,testing ,installation of Decorative wall Light ,with bronze look, Material: metal,Glass	NO	10	2200	22,000.00
16	Supply ,testing ,installation of Floor Lamp light ,with heritage look, Material: wood and fabric ,	NO	16	8200	1,31,200.00
17	Supply ,testing ,installation of Table Lamp light ,with heritage look,Color: nickel and black, Material: Metal and fabric ,	NO	30	7500	2,25,000.00
18	Supply ,testing ,installation of Picture light ,with Bronze look,Maximum Wattage Comsumption:12W, Material: Metal ,	NO	75	2600	1,95,000.00
H	<b>AUTOMATION</b>				
i)	<b>SUPPLY OF THE FOLLOWING MATERIALS FOR AUTOMATION</b>				
1	Modern Series DLP Touch Panel US with Metal Frame, It has 8 touch Buttons which can be programmed separately. Each control button can be displayed with a Icon in LCD, 2 buttons to be used for the page shifting and 4 shortcut buttons for directly going to certain page.	NO	20	30,100.00	6,02,000.00

2	4.3 inch Enviro Touch Screen with Metal Frame4.3 inch Enviro Touch Screen with Metal Frame, The panel can be used to control the lighting, scene, music and floor heating. LCD resolution ratio:480x272	NO	4	45,800.00	1,83,200.00
3	Panel Power Interface US, provides the DC power and communicates with the panel switch signal, it supports different US Type Smart Panel	NO	24	4,400.00	1,05,600.00
4	12CH 10A High Power Switch Actuator, DIN-Rail Mount, 10A per Channel, 16A Magnetic latching relay, With scene and sequence controller.	NO	5	35,400.00	1,77,000.00
5	6 CH 1A Trailing Edge Dimming Actuator	NO	23	49,200.00	11,31,600.00
6	2Ch Motorized Curtain Control Module, DIN-Rail Mount, 2CH and 5A per channel, has a settable curtain running time, inching control, and hardware/ software features that protect the motor and gearing systems.	NO	33	12,000.00	3,96,000.00
7	Smart IR Transmitter, 200 infrared codes can be stored in it. By using the HDL IR learner (another device) to learn the IR codes from the normal remote, and downloaded into this device. The software can program and use the IR codes to control the IR device, such as TV, DVD, AC, Amplifier, etc	NO	26	8,000.00	2,08,000.00
8	1 Port Programming Gateway, enables communication through an Ethernet connection or internet connection; this allows the Buspro system to then act as a remote server connection.	NO	2	14,700.00	29,400.00
9	Logic Automation Module, provides centralised control over a range of targets. The module is capable of accepting 12 logic types, and has in total 960 logic blocks. The logic conditions enable the input of date and timing information, universal switch states, and external inputs.	NO	2	18,100.00	36,200.00
10	2400mA Power Supply Module, 110V/220V AC Input 50-60Hz, DC24/2400mA output, (Overheat, Overload, Surge Protection).	NO	5	20,600.00	1,03,000.00
11	44 Module Distribution Box	NO	14	4,335.00	60,690.00
12	for Output Controller Protection	NO	50	160.00	8,000.00
13	for Output Controller Protection	NO	10	160.00	1,600.00
14	for Output Controller Protection	NO	2	5,000.00	10,000.00
15	for Output Controller Protection	NO	2	9,500.00	19,000.00
16	for Input Control Panel	NO	24	160.00	3,840.00

17	Automation Cable with Aluminum Foil Shielding, 4 cores (red,black,white,yellow), Aluminum foil shielding,ground line, Copper wire diameter:0.8mm, Twisted pair:2 x Twisted pair(red and black,white and yellow), 200meter each reel.	NO	500	150	75,000.00
ii)	Design, Installation & Programming of total automation system with all necessary action.	LS		378016	3,78,016.00
<b>I</b>	<b><u>Supply following items for Sound Mixing /Speaker/Display system</u></b>	-			
1.00					
1.01	Two-way in-ceiling loudspeaker, 6.5" LF & 1" Tweeter, 20 Watts / 100V & 16 $\Omega$ /60 Watts, 60Hz - 20KHz , White	EACH	2	8,148.00	16,296.00
1.02	Mixing amplifier 120W @ 100V / 70V /4 $\Omega$ , 2 mic / line inputs, 4 Music Input, 4-level	EACH	1	47,998.00	47,998.00
1.03	55" OLED DISPLAY - Panel depth 3.6mm / 4K wifi Screen Share	EACH	1	1,95,000.00	1,95,000.00
1.04	Interconnects, Connectors & Speaker Cables etc	EACH	1	17,700.00	17,700.00
2.00					
2.01	Two-way in-ceiling loudspeaker, 6.5" LF & 1" Tweeter, 20 Watts / 100V & 16 $\Omega$ /60 Watts, 60Hz - 20KHz , White	EACH	2	8,148.00	16,296.00
2.02	Mixing amplifier 120W @ 100V / 70V /4 $\Omega$ , 2 mic / line inputs, 4 Music Input, 4-level	EACH	1	47,998.00	47,998.00
2.03	55" OLED DISPLAY - Panel depth 3.6mm / 4K wifi Screen Share	EACH	1	1,95,000.00	1,95,000.00
2.04	Interconnects, Connectors & Speaker Cables etc	EACH	1	17,700.00	17,700.00
3.00					
3.01	Two-way in-ceiling loudspeaker, 6.5" LF & 1" Tweeter, 20 Watts / 100V & 16 $\Omega$ /60 Watts, 60Hz - 20KHz , White	EACH	2	8,148.00	16,296.00
3.02	Mixing amplifier 120W @ 100V / 70V /4 $\Omega$ , 2 mic / line inputs, 4 Music Input, 4-level	EACH	1	47,998.00	47,998.00
3.03	55" OLED DISPLAY - Panel depth 3.6mm / 4K wifi Screen Share	EACH	1	1,95,000.00	1,95,000.00
3.04	Interconnects, Connectors & Speaker Cables etc		1	17,700.00	17,700.00
4.00	Discussion Room 19'10 X 17'				
4.01	Two-way in-ceiling loudspeaker, 6.5" LF & 1" Tweeter, 20 Watts / 100V & 16 $\Omega$ /60 Watts, 60Hz - 20KHz , White	EACH	4	8,148.00	32,592.00
4.02	Mixing amplifier 120W @ 100V / 70V /4 $\Omega$ , 2 mic / line inputs, 4 Music Input, 4-level	EACH	1	47,998.00	47,998.00
4.03	75" DISPLAY - 4K wifi Screen Share	EACH	1	2,95,000.00	2,95,000.00
4.04	Interconnects, Connectors & Speaker Cables etc	EACH	1	20,650.00	20,650.00
5.00	Display Exhibition - 20'7" x 19'6"				
5.01	Two-way in-ceiling loudspeaker, 6.5" LF & 1" Tweeter, 20 Watts / 100V & 16 $\Omega$ /60 Watts, 60Hz - 20KHz , White	EACH	6	8,148.00	48,888.00
5.02	Mixing amplifier 240W @ 100V / 70V /4 $\Omega$ , 2 mic / line inputs, 4 Music Input, 4-level	EACH	1	77,508.00	77,508.00

5.03	75" DISPLAY - 4K wifi Screen Share	EACH	1	2,95,000.00	2,95,000.00
5.04	Interconnects, Connectors & Speaker Cables etc	EACH	1	23,600.00	23,600.00
6.00	Discussion Room 20' X 20'10"				
6.01	Two-way in-ceiling loudspeaker, 6.5" LF & 1" Tweeter, 20 Watts / 100V & 16 $\Omega$ /60 Watts, 60Hz - 20KHz , White	EACH	4	8,148.00	32,592.00
6.02	Mixing amplifier 120W @ 100V / 70V /4 $\Omega$ , 2 mic / line inputs, 4 Music Input, 4-level	EACH	1	47,998.00	47,998.00
6.03	75" DISPLAY - 4K wifi Screen Share	EACH	1	2,95,000.00	2,95,000.00
6.04	Interconnects, Connectors & Speaker Cables etc	EACH	1	20,650.00	20,650.00
7.00					
7.01	Two-way in-ceiling loudspeaker, 6.5" LF & 1" Tweeter, 20 Watts / 100V & 16 $\Omega$ /60 Watts, 60Hz - 20KHz , White	EACH	2	8,148.00	16,296.00
7.02	Mixing amplifier 120W @ 100V / 70V /4 $\Omega$ , 2 mic / line inputs, 4 Music Input, 4-level	EACH	1	47,998.00	47,998.00
7.03	55" OLED DISPLAY - Panel depth 3.6mm / 4K wifi Screen Share	EACH	1	1,95,000.00	1,95,000.00
7.04	Interconnects, Connectors & Speaker Cables etc	EACH	1	17,700.00	17,700.00
8.01	8" Driver + Coaxial Polycarbonate HF, 100V Line	EACH	6	8,148.00	48,888.00
8.02	250 Watts Amplifier	EACH	1	77,508.00	77,508.00
8.03	75" DISPLAY - 4K wifi Screen Share	EACH	2	2,95,000.00	5,90,000.00
8.04	Interconnects, Connectors & Speaker Cables etc	EACH	1	23,600.00	23,600.00
9.00					
9.01	Two-way in-ceiling loudspeaker, 6.5" LF & 1" Tweeter, 20 Watts / 100V & 16 $\Omega$ /60 Watts, 60Hz - 20KHz , White	EACH	4	8,148.00	32,592.00
9.02	Mixing amplifier 120W @ 100V / 70V /4 $\Omega$ , 2 mic / line inputs, 4 Music Input, 4-level	EACH	1	47,998.00	47,998.00
9.03	55" OLED DISPLAY - Panel depth 3.6mm / 4K wifi Screen Share	EACH	1	1,95,000.00	1,95,000.00
9.04	Interconnects, Connectors & Speaker Cables etc	EACH	1	20,650.00	20,650.00
10.00					
10.01	Digital desktop chairman microphone unit with chairman control buttons	EACH	1	59,900.00	59,900.00
10.02	Digital desktop delegate microphone unit	EACH	27	55,100.00	14,87,700.00
10.03	Central control unit with integrated PC	EACH	1	3,58,800.00	3,58,800.00
10.04	CONFERENCE BUS CABLE 3M to be supplied from same OEM as Conference System	EACH	28	2,200.00	61,600.00
10.05	CONFERENCE BUS CABLE 20M to be supplied from same OEM as Conference System		2	5,100.00	10,200.00
10.06	Wireless Microphone	EACH	4	57,900.00	2,31,600.00
10.07	Wireless Lapel Set	EACH	1	52,900.00	52,900.00
10.07	Wireless Head Set	EACH	1	61,900.00	61,900.00
10.08	12 Channel Mixing Console	EACH	1	31,900.00	31,900.00
10.09	6.5" design cabinet loudspeaker, 100v/60Watts or 16 $\Omega$ /150Watts	EACH	6	16,788.00	1,00,728.00

10.10	Quad Channel Digital Power amplifier 4 x 120Watts @ 100Volts, bridgeable, Class D Amp Topology , Class D Amp Topology, Convection cooled, Hypex inside, 19" rackmount	EACH	1	1,15,188.00	1,15,188.00
10.11	75" DISPLAY - 4K wifi Screen Share	EACH	1	2,95,000.00	2,95,000.00
10.12	55" OLED DISPLAY - Panel depth 3.6mm / 4K wifi Screen Share	EACH	4	1,95,000.00	7,80,000.00
10.13	Interconnects, Connectors & Speaker Cables etc	EACH	1	3,54,000.00	3,54,000.00
11.00	Conference Room				
11.01	Two-way in-ceiling loudspeaker, 6.5" LF & 1" Tweeter, 20 Watts / 100V & 16 Ω/60 Watts, 60Hz - 20KHz , White	EACH	4	8,148.00	32,592.00
11.02	Mixing amplifier 120W @ 100V / 70V /4 Ω, 2 mic / line inputs, 4 Music Input, 4-level	EACH	1	47,998.00	47,998.00
11.03	75" DISPLAY - 4K wifi Screen Share	EACH	2	2,95,000.00	5,90,000.00
11.04	Interconnects, Connectors & Speaker Cables etc	EACH	1	20,650.00	20,650.00
12.00					
12.01	Two-way in-ceiling loudspeaker, 6.5" LF & 1" Tweeter, 20 Watts / 100V & 16 Ω/60 Watts, 60Hz - 20KHz , White	EACH	4	8,148.00	32,592.00
12.02	Mixing amplifier 120W @ 100V / 70V /4 Ω, 2 mic / line inputs, 4 Music Input, 4-level	EACH	1	47,998.00	47,998.00
12.03	75" DISPLAY - 4K wifi Screen Share	EACH	1	2,95,000.00	2,95,000.00
12.04	Interconnects, Connectors & Speaker Cables etc	EACH	1	20,650.00	20,650.00
13	Testing and Installation of the above all items	L.S.	1	4,77,900.00	4,77,900.00
<b>TOTAL OF PART B (SECTION 1)</b>					<b>Rs.4,09,77,196.00</b>

**PART B: ELECTRICALWORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001**

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<b>Section 2: Lift for Main Building</b>					
Sl. No.	Description	Unit	Quantity	Unit Rate	Amount Rs. P
1	<b><u>PASSENGER ELEVATORS</u></b>				

	Supply, installation, testing and commissioning of the elevator as per specifications including CCTV provision of 8 passengers lift of max. speed 1.25 m/s made of stainless steel and hairline finish and of the following specifications.				
	Car Ceiling - Car Floor: SLEEK (SMALL CIRCULAR LIGHTS) - SS HAIRLINE FINISH -PVC				
	Car Fittings: LED LIGHTS & REGULAR (CIRCULAR) - FAN				
	Type Of Car Front Entrance Protection : POWER OPERATED CENTRE OPENING SLIDING DOOR - STAINLESS STEEL - HAIRLINE FINISH	Nos.	1.00	9,53,390.00	9,53,390.00
	Land Entrance Protection (0,1,2 ):CENTRE OPENING SLIDING DOOR - STAINLESS STEEL - HAIRLINE FINISH				
	Landing Door Frame (0,1,2 ): STAINLESS STEEL - HAIRLINE FINISH				
	Electric Supply : AC 3 PHASE, 50 CYCLES, 415 VOLTS $\pm 10\%$				
<b>TOTAL OF PART B (SECTION 2)</b>					<b>Rs. 9,53,390.00</b>

**PART B: ELECTRICALWORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001**

<b>Section 3:External Electrical Works</b>					
Sl. No.	Description	Unit	Quantity	Unit Rate	Amount Rs. P
<b>A</b>	<b><u>EARTHING INSTALLATION</u></b>				
1.0	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	Set	8	11794.00	94,352.00
2.0	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	Set	16	6126.00	98,016.00

3.0	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required.	Metre	200	853.00	1,70,600.00
4.0	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	Metre	800	131.00	1,04,800.00
5.0	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	Metre	150	595.00	89,250.00
6.0	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	Metre	250	85.00	21,250.00
7.0	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	Metre	150	1009.00	1,51,350.00
8.0	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	Metre	400	206.00	82,400.00
9.0	Providing and fixing 4.00 mm dia copper wire on surface or in recess for loop earthing as required.	Metre	150	128.00	19,200.00
10.0	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing as required.	Metre	400	57.00	22,800.00
11.0	Providing and fixing 4.00 mm dia copper wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/ submain wiring/ cable as required.	Metre	300	108.00	32,400.00
12.0	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/ submain wiring/ cable as required.	Metre	200	37.00	7,400.00
13.0	Providing and fixing earth bus of 50 mm X 5 mm copper strip on surface for connections etc. as required.	Metre	10	1844.00	18,440.00
14.0	Providing, laying and fixing following dia G.I. pipe (medium class) in ground complete with G.I. fittings including trenching (75 cm deep) and re-filling etc as required				
14.1	50 mm dia pipe.	Metre	20	536.00	10,720.00

14.2	100 mm dia pipe.	Metre	80	1113.00	89,040.00
<b>B</b>	<b><u>LIGHTNING PROTECTION SYSTEM</u></b>				
1.0	Providing and fixing of lightning conductor finial, made of 25 mm dia 300 mm long, G.I. tube, having single prong at top, with 85 mm dia 6 mm thick G.I. base plate including holes etc. complete as required.	Each	30	450.00	13,500.00
2.0	Fixing of lightning conductor finial (single prong) with base plate including holes etc. complete as required.	Each	30	750.00	22,500.00
3.0	Jointing copper / G.I. tape (with another copper/ G I tape, base of the finial or any other metallic object) by riveting / nut bolting/ sweating and soldering etc as required.	Each	60	200.00	12,000.00
4.0	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or surface of wall for lightning conductor complete as required. (For horizontal run)	Metre	300	120.00	36,000.00
5.0	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or surface of wall for lightning conductor complete as required. (For vertical run)	Metre	300	190.00	57,000.00
6.0	Providing and fixing testing joint, made of 20 mm X 3 mm thick G.I. strip, 125 mm long, with 4 nos. of G.I. bolts, nuts, chuck nuts and spring washers etc. complete as required.	Metre	60	250.00	15,000.00
7.0	Providing and laying G.I. tape 32 mm X 6 mm from earth electrode directly in ground as required.	Metre	250	272	68,000.00
<b>C</b>	<b>EXTERNAL LIGHTING FIXTURE SUPPLY AND INSTALLATION</b>				



1	Supply, Installation, Testing and Commissioning of LED Ground Mounted Bollard (0.8 m height) with a system lumen output of 300 lumens and a minimum system efficacy of 35 lm/W. The luminaire shall have a rated system lifetime of 25,000 burning hours at L70. The luminaire should have a color temperature of 3000K and CRI>75. The luminaire shall meet IP65 & IK10 rating with THD < 20% and PF > 0.9. The luminaire housing should made of pressure die cast aluminium with polycarbonate diffuser. The total power consumption should not exceed 8W (including driver).	NO	36	12000.00	4,32,000.00
2	Supply, Installation, Testing and Commissioning of LED Post Top with a system lumen output of 2300 lumens and a minimum system efficacy of >85 lm/W. The luminaire shall have a rated system lifetime of 25,000 burning hours at L70. The luminaire should have a color temperature of 4000K and CRI > 70. The luminaire shall meet IP65 with THD < 20% and PF > 0.9. The luminaire shall have closed diffused optics with polycarbonate diffuser board. The total power consumption should not exceed 27W (including driver).	NO	5	20000.00	1,00,000.00
3	Supply, installation ,testing and commissioning of SIGNAGE light with all necessary electrical connection with all fixing arrangement as per technical specification.	NO	1	572625.00	5,72,625.00

4	Supply, Installation, Testing and Commissioning of RGBW LED floodlight luminaire with Die-cast aluminium, powder-coated finish, system wattage not exceeding 50 Watt with minimum system lumens of 2100 lumens with all channel on, CRI >70 for White light. Luminaire should be capable of producing dynamic color changing light by DMX/Ethernet based control. Luminaire has a choice of architectural floodlighting optics with beam angles of 20°, 40°, 60°, 80° & 10°x40°. Luminaire should be capable of operating at line voltage without any separate power supply from 100- 277 V AC. Lifetime should be at least 50,000 burning hours at L70 at 25 degree centigrade. Lens material should be clear tempered glass, Weight-3.9KG, Maximum Dimensions (Height x width x depth)- 183 x 338 x 171 mm, IP66, Mechanical Impact IK10. The luminaire should have Approbation from UL/cUL, FCC Class A, CE, PSE, CQC, RCM	NO	52	94000.00	48,88,000.00
5	20 deg diffused lens for Item no 4	NO	52	11500.00	5,98,000.00
6	Diffuser Trim ring for Item no 4	NO	52	6600.00	3,43,200.00
7	Supply, Installation, Testing and Commissioning of RGB Spot Light luminaire with Die-cast aluminium, powder-coated finish, system wattage not exceeding 33 Watt with minimum system lumens of 800 lumens. Luminaire should be capable of producing dynamic color changing light by DMX/Ethernet based control. Luminaire has a choice of architectural floodlighting optics with beam angles of 10°, 20°, 40°, 60°, 80° and asymmetric 10° x 40°. Luminaire should be capable of operating at line voltage without any separate power supply from 100- 277 V AC. Lifetime should be at least 50,000 burning hours at L70 at 25 degree centigrade. Lens material should be clear tempered glass, Max Weight-4KG, Maximum Dimensions (Height x width x depth)-272 x 163 x 185 mm, IP66, Mechanical Impact IK08. The luminaire should have Approbation from UL/cUL, FCC Class A, CE, PSE, CQC, RCM	NO	46	47000.00	21,62,000.00
8	40deg diffused lens for item no 7	NO	16	7500.00	1,20,000.00
9	20deg diffused lens for Item no 7	NO	30	7500.00	2,25,000.00
10	Diffuser Trim ring for Item no 7	NO	30	1600.00	48,000.00

11	Supply, Installation, Testing and Commissioning of RGBW Spot Light luminaire with Die-cast aluminium, powder-coated finish, system wattage not exceeding 33 Watt with minimum system lumens of 1100 lumens .Luminaire should be capable of producing dynamic color changing light by DMX/Ethernet based control. Luminaire has a choice of architectural floodlighting optics with beam angles of 10°, 20°, 40°,60°, 80° and asymmetric 10° x 40°. Luminaire should be capable of operating at line voltage without any separate power supply from 100- 277 V AC. Lifetime should be at least 50,000 burning hours at L70 at 25 degree centigrade .Lens material should be clear tempered glass,Max Weight-4KG,Maximum Dimensions(Height x width x depth)-272 x 163 x 185 mm, IP66,Mechanical Impact IK08. The luminaire should have Approbation from UL/cUL, FCC Class A, CE, PSE, CQC, RCM.	NO	16	55500.00	8,88,000.00
12	20 deg diffused lens for Item no 11	NO	16	10000.00	1,60,000.00
13	Diffuser Trim ring for item no 11	NO	16	4000.00	64,000.00
14	Supply, Installation, Testing and Commissioning of Four Feet Length RGB LED linear grazing luminaire high power with housing material of extruded aluminium, dark grey anodized finish, system wattage not exceeding 60W and system lumen output of not less than 1900 lumens. Fixture shall be available with architectural optics with choice of beam angles of Elliptical 5°-10°x40°-50° .Fixture dimension(Height x Width x Depth) shall be not larger than 105 x 1210 x 75 mm and weight not more than 4.0kgs. Fixture shall operate in a temperature range of -40°C to 40°C. Fixture shall have auto-ranging input voltage for 100 – 277 VAC. Lifetime should be at least 50,000 burning hours at L70 at 25 degree centigrade with total IP66 protection. Fixture shall equipped with mechanical impact of minimum IK06.	NO	54	49500.00	26,73,000.00
15	Supply of Leader Cable 15 Metres Length for Item no 14	NO	5	12000.00	60,000.00
16	Supply of Jumper Cable 5 Metres Length for item no 14	NO	49	3250.00	1,59,250.00

17	Supply of Lighting Program Controller show storage and playback device capable of delivering light shows to installations with up to 340 unique light addresses. It should have flexibility to create and manage light shows using fully customizable effects, multi-track editing, timeline layering, and transition styles. It should have With factory preset shows, custom show-authoring capabilities, an intuitive LCD interface, removable SD card storage, and onboard light addressing features with two DMX output ports, each controlling a universe of 512 DMX channels. Input Voltage 100 – 240 VAC, 50 / 60 Hz, 5 W. Computer Interface USB 2.0 , External / Auxiliary Interface: Two DMX512 RJ45 ports Two RS-232 9-pin serial ports, Data Storage : Removable Secure Digital Card drive. It should be capable to deliver the following effects: Fixed Colour, Cross Fade, Colour Wash, Chasing, Sweep, Sparkle, Streak, Burst, Random, Phase in Phase Out etc.	NO	2	93000.00	1,86,000.00
18	Supply, Installation, Testing and Commissioning of Data formatting device specifically designed for luminaires operates on the same technology[single-cable line voltage operation] suitable for Power I / p - 100-240V AC, 50-60 Hz,Max connected load- 20A,Internal loss not to exceed - 20W,Heat dissipation should be in the order of 10W max Ambient temperature - 0°C- 50°C ,Data i/p interface - DMX / Ethernet ,Protection rating - IP 66 (Suitable for humid / raining locations),Input Voltage 100 – 277 VAC, auto-ranging, 50 / 60 Hz,Maximum Input Current 16.5 A, maximum load Current 16 A, Maximum Dimensions (Height x Width x Depth)-90 x 300 x 150 mm,Weight - 3.0KG,Construction -Cast aluminum enclosure with slots for surface mounting.	NO	16	61500.00	9,84,000.00
19	SITC of Necessary Accessories, Cables, Panels, Programming & Commissioning Light Fittings as an Entire Job	NO	1	3876000.00	38,76,000.00
20	Supply, Installation, Testing and Commissioning of 12 KVA voltage stabilizer with all necessary arrangement .	NO	1	40000.00	40,000.00
<b>D SOLAR POWER SYSTEM</b>					

1.0	Supply , Installation, Testing & Commissioning of 50 <b>KWp</b> on grid Solar Power Packs of following ratings with all fixing accessories etc as required as per following specification and the specifications laid down in the tender document.				
i.	330 Wp or similar rating PV Modules	EACH	50,000	24.3	12,15,000.00
ii.	On Grid String Inverter with Data Logger & RMU - 20 KW-2 nos and 10KW-1 nos	LOT	1	3,23,000.0	3,23,000.00
iii.	M.S. Galvanized module mounting structures - 1 Set	EACH	50,000	8.0	4,00,000.00
iv.	Array Junction Box - As per design	EACH	1	40,000.0	40,000.00
v.	ACDB (AC Distribution Box) with all protection Equipment - As per design	EACH	1	1,20,000.0	1,20,000.00
vi	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	EACH	8	11,794.0	94,352.00
vii	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required.	Metre	120	853.0	1,02,360.00
viii	AC Cable- 3.5 core 35 Sq.mm-Cu Armoured cable	RM	100	1,100.0	1,10,000.00
ix	DC Cable 4 Sq -6 Sq- Cu	RM	220	250.0	55,000.00
x	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.				
a)	25 mm	Meter	150	165.00	24,750.00
xi.	Net Meter (5-200A) - 1 Set	EACH	3	4,000.00	12,000.00
xii.	Lightning Protection -	Lot	1	10,000.00	10,000.00

	construction				2,90,000.00
	(20+20+10)kWp on grid solar power pack as described above				

<b>E</b>	<b>SUPPLYING,CABLING,INSTALLATION &amp; TESTING for LIGHTING FIXTURE FOR EXTERNAL / LANDSCAPE LIGHTING</b>				
1	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 kV grade of following size in the existing RCC/ HUME/ METAL pipe as required.				
1.1	Upto 35 sq. mm	Metre	150	31.00	4,650.00
2	Supplying and fixing compression type gland complete with brass gland, brass ring & rubber ring for dust & moisture-proof entry of XLPE/PVC armoured cables as below :				
2.1	For 2 Core				
i.	2.5 Sqmm	Each	10	63.00	630.00
ii.	4 Sqmm	Each	20	63.00	1,260.00
iii.	6 Sqmm	Each	15	68.00	1,020.00
iv.	10 Sq.mm	Each	50	115.00	5,750.00
v.	16 Sq.mm	Each	30	115.00	3,450.00
2	Supply and testing of following size XLPE insulated sheathed FRLS copper conductor 1100 V grade armoured cable as per specification.				
2.1	3 x 2.5 sq.mm	RM	150	216.00	32,400.00
2.2	3 x 4 sq.mm	RM	150	240.00	36,000.00
2.3	3 x 6 sq.mm	RM	90	256.00	23,040.00
2.4	2 C x 16 sq.mm	RM	40	288.00	11,520.00
2.5	2 C x 10 sq.mm	RM	110	252.00	27,720.00

2.6	2 C x 6 sq.mm	RM	100	228.00	22,800.00
3	Providing and fixing of following PVC insulated copper conductor 1100 volts grade stranded flexible wire in GI conduit including providing and fixing of conduit concealed or surface mounted as indicated PVC insulated green colour copper stranded flexible wire for earthing and making connection complete.				
3.1	3 x 4 sq.mm wire in 25 mm dia conduit.	RM	100	320.00	32,000.00
3.2	3 x 2.5 sq.mm wire in 25 mm dia conduit.	RM	80	290.00	23,200.00
4	Supplying & Fixing GI waterproof type looping cable box size 200x150x100 mm deep having 4 mm thick comprising of one 250 V 15 A kit-kat fuse unit, one NL on porcelain insulator, one compression type brass cable gland for upto 2- core 16 sqmm PVC/A cable and having lined with rubber gasketted GI top cover with brass machine screws etc., earthing terminal with lug, on steel tubular pole near base, including S&F 40x6 mm thick, MS clamps with bolts, nuts etc. including painting with anticorrosive paint	Nos.	5	498.00	2,490.00
5	Supplying and installation of pole earthing with 19mm dia 1.8 mtr. Long G.I. earth spike 750mm distance from pole at a depth of 250 mm below ground level complete with 10mm dia 50mm long G.I. nut, bolt, nuts and washers etc. as reqd.	Nos.	5	438.00	2,190.00
6	Supplying and installation of metallic 3 meter pole with all suitable necessary arrangement.	Nos.	5	10,000.00	50,000.00
7	Erection of RCC/ PCC pole of following length in brick ballast and ramming the foundation, finishing with 150 mm thick cement concrete (1:3:6) layer on top with including excavation and refilling etc. as required.				
7.1	3 meter pole	Nos.	5	3,000.00	15,000.00
<b>TOTAL OF PART B (SECTION 3)</b>					<b>Rs. 2,29,06,675.00</b>

**PART B: ELECTRICALWORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT  
15, STRAND ROAD KOLKATA -700001**

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**Section 4:HT Side**

Sl. No.	Description	Unit	Quantity	Unit Rate	Amount Rs. P
A	<b>11 kV PACKAGE SUBSTATION</b>				
	Supply, installation, testing and commissioning of the following Package Substation with all accessories complete as required:-				
	-				
	<b>Package substation will have the following equipments :</b>				
	-				
A.	2 No. 11 KV, 350 MVA, 50 Hz 3 phase, 630 Amps load break switch as per specifications and with following:				
	-				
	MS sheet enclosed cubicle type panel with main Copper bar rated for 800 A and droppers rated for 800A				
	630 Amps electrically operated trip free type SF6 breaker at 47 deg. C ambient.				
	Breaker control switch.				
	110 V DC tripping coil.				
	110 V DC closing coil.				
	240 V AC spring charging motor.				
	Set of ON/OFF/TRIP indicating lamps.				
	Set of Phase indicating lamps. (RYB)				
	Clear lamp for trip circuit health supply.				
	Digital ammeter & voltmeter with selector switch.				
	VIP35 relay or equivalent with suitable CT's.				



	3 Over current & earth fault IDMT relay range 50 – 200%				
	3 Nos. Cast resin CTs of dual core 60 – 150/5, CL:1, 5P10, 15VA.				
	Suitable space for termination of 1 No. 11 KV, 3 C x 185 sq.mm XLPE cable as incoming and outgoing				
B.	11 kV / 433V, 630 kVA 3 phase,copper wound Dyn 11, +5% to -5% in steps of 2.5%,off load tap changer and neutral brought out for earthing.				
C	APFC panel inclding with PF correction upto 0.98 .				
D.	1 No. 433V, 1500Amp LT devices with PVC sleeved Copper busbars.				
i	<b>Incomer</b>				
	1 No. 4 Pole 1250 Amp 4 pole EDO type ACB with microprocessor based release.				
ii.	<b>Outgoings</b>				
a.	1 No. 4 Pole 800 Amp TPN EDO fixed type ACB with microprocessor based release.				
b.	1 No. 320Amps TPN MCCB				
c.	2 No. 400 Amps TPN MCCB				
d.	1 No. 250 Amps TPN MCCB				
e	1 No. 100 Amps TPN MCCB				
	<b><u>Note:</u></b>				
	<i>All protection relays shall be numerical type only.</i>				
	<i>One separate earthing truck shall be provided as per Technical Specifications.</i>				
	<b>Package substation described as above</b>	<b>Set</b>	<b>1</b>	22,00,000.00	22,00,000.00
<b>B</b>	<b>MISCELLANEOUS ITEMS:</b>				

1.1	Supply and fixing in position the fire extinguishers carbon-di-oxide type 4.5 Kgs capacity.	NO	2	3,000.00	6,000.00
1.2	Supply and fixing of in position the fire extinguishers dry chemical power (ABC) 5 kg capacity.	NO	2	3,200.00	6,400.00
1.3	Supply and fixing of in-position the fire extinguishers dry chemical power (ABC) 2 kg capacity.	NO	2	2,000.00	4,000.00
1.4	Supply and fixing in position the best quality Danger Boards of approved shape and size as specified by Local Electricity Authorities written in English & Local Languages.	NO	4	500.00	2,000.00
1.5	Supply of fire buckets 5 No. in each set duly filled with fine sand and fixed on an angle iron frame as per requirement of local authorities. Fire buckets shall be painted red from outside and white from inside with additional handle at the bottom and suitable for outdoor installation.	NO	4	3,000.00	12,000.00
1.6	Supply and fixing in position 1000 mm wide rubber matting of 11 KV grade as per electricity rules. Thickness of rubber mat shall be not less than 12.5 mm.	RM	20	50.00	1,000.00
1.7	Supply of First Aid box of approved make as per specification.	NO	4	2,000.00	8,000.00
1.8	Supply of tool kit with 1 pair 11 KV rubber hand gloves of approved make.	NO	2	2,000.00	4,000.00
1.9	The professional charges for liason work and departmental procedures required for the above said work .				
	The work shall include the following:				
	a. Complete liasoning with CESC and electrical inspectorate.				
	b. Obtaining the feasibility report and spot inspection, etc.				
	c. Obtaining sanction of H.T. connection of Compact Substation				
	d. Preparation and submission of all statutory drawings to CESC and electrical inspectorate.				

	e. Obtaining necessary approvals and submitting to the clients.				
	f. Arranging for the service from the CESC.				
	g. Any other works related to CESC and Electrical inspectorate.	L.S.	1	50,000.00	50,000.00
<b>C</b>	<b><u>SUPPLYING AND LAYING OF HT CABLES &amp; LT CONTROL CABLES</u></b>				
1.1	Supplying and laying following size 11 kV grade XLPE (E) aluminium conductor armoured cables laid over MS supports in existing trenches.				
	a. 3 C x 185 sq.mm 11 kV XLPE (E) cable	RM	200	1,800.00	3,60,000.00
1.2	Supplying and making cable end terminations for the following size of 11 kV grade, XLPE (E) aluminium conductor armoured cable including termination kit complete heat shrinkable sleeve etc.				
	a. 3 C x 185 sq.mm 11 kV XLPE (E) cable	NO	4	9,000.00	36,000.00
1.3	Supplying, laying GI sleeves of following sizes:				
	a. 150 mm dia	RM	20	450.00	9,000.00
	b. 200 mm dia	RM	5	650.00	3,250.00
	c. 300 mm dia	RM	20	800.00	16,000.00
1.4	Supplying and laying of following 1100 volts grade PVC insulated sheathed copper conductor armoured control cables in existing trenches cables trays, clamped on wall with suitable saddles, fixing bolts, including testing and commissioning.				
	a. 7 Core 2.5 sq mm PVC insulated copper conductor armoured control cables	RM	200	400.00	80,000.00
1.5	Cable end termination of the following PVC insulated sheathed aluminium conductor armoured cables of 1100 volt grade including supplying and fixing of crimping lugs. Double compression glands, cable sockets etc as required.				

	a. 7 Core 2.5 sq.mm Control cable	NO	14	550.00	7,700.00
<b>D</b>	<b><u>EARTHING FOR SUBSTATION EQUIPMENT</u></b>				
1.1	Supplying, fixing, testing and commissioning of following bare Copper/GI tapes including all necessary fixing accessories and effecting connections.				
1.2	50 mm x 6 mm thick Cu.tape.	RM	10	1,400.00	14,000.00
1.3	50 mm x 6 m thick GI tape	RM	10	250.00	2,500.00
1.4	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	NO	4	11,798.00	47,192.00
1.5	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	NO	4	6,126.00	24,504.00
1.6	Providing, laying and fixing following dia G.I. pipe (medium class) in ground complete with G.I. fittings including trenching (75 cm deep) and re-filling etc as required				
1.6.1	150 mm dia pipe.	Metre	20	536.00	10,720.00
<b>TOTAL OF PART B (SECTION 4)</b>					<b>Rs. 29,04,266.00</b>

**PART B: ELECTRICALWORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT  
15, STRAND ROAD KOLKATA -700001**

**Section 5: DG Set**

Sl. No.	Description	Unit	Quantity	Unit Rate	Amount Rs. P
<b>A.</b>	<b><u>SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF DG SET INCLUDING ALL ACCESSORIES</u></b>	-			
	-	-			
<b>1</b>	<b><u>DG Set:</u></b>	-			
	-	-			
<b>i)</b>	Supply, installation, testing and commissioning of 750 kVA prime (actual) rating , radiator cooled, diesel generating in Acoustic enclosure set along with PMG, base frame, Alternator, Static Excitation System, Lube Oil System, Electronic Governor, Batteries, Battery Charger, Instrumentation, day oil fuel tank, Silencer with Bellows, Alarms, Engine Control Panel, AVM Pads, AVR Panel, SG 4 / PCCM 3.3 or equivalent for AMF ,Synchronization and load dependent Start - Stop facility, Terminal Arrangements including cable termination box with all associated equipment / work as per specifications. Alternator shall have class H insulation and rated for 580 KW output at 47deg. C. Engine shall not be derated upto 50 deg.C ambient.	Set	1	60,00,000.00	60,00,000.00
<b>B.</b>	<b><u>EXHAUST PIPE</u></b>				
<b>1</b>	Supply, installation, testing and commissioning of exhaust pipe fabricated out of 6 mm thick MS pipe with all fixing accessories and hardware. The exhaust pipes shall be insulated with 75 mm thick mineral wool insulation wrapped in chicken mesh and clad with 24 gauge aluminium sheet including all supporting structure as required.				
<b>1.1</b>	125 mm dia	RM	10	3,700.00	37,000.00
<b>1.2</b>	200 mm dia	RM	10	5,100.00	51,000.00
<b>1.3</b>	300 mm dia	RM	5	6,400.00	32,000.00
<b>1.4</b>	400 mm dia	RM	5	7,500.00	37,500.00
<b>C.</b>	<b><u>DG ISOLATOR/AUXILIARY PANELS</u></b>		-	-	-
	The rates for the DG Auxiliary Panels apart from the Breakers and instruments shall also include the following :				

1	Supporting rigid steel framework.				
2	Cubicle type, 2MM CRCA sheet steel enclosed.				
3	Complete with interconnections and distribution bus bars.				
4	Proper bonding to earth.				
5	Painting/lettering on Breakers and distribution boards, the location they serve, providing on each panel its circuit diagram.				
6	Providing cable clamps / supports within cable alley of distribution boards.				
7	All MCB's shall be of appropriate breaking capacity but minimum of 10 KA breaking capacity.				
8	The breaking capacity of MCCB's are mentioned panel wise. All MCCB's shall be with adjustable thermal magnetic releases for 100amp and more only.				
9	All motor feeders MCCBs / MCBs shall be of motor duty.				
10	Distribution panels shall be Powder Coated with Siemens gray paint shade no. RAL-7032				
11	Degree of protection for following type of distribution panel enclosure shall be as per IS:13947-1993.				
	a. IP 42 for indoor panels.				
	b. IP 55 for outdoor panels.				
12	All MCCB's shall be provided with extended operating mechanism for door interlock.				
13	Current density of copper bus bars shall be 1.25 amps for 1 sq.mm of rated current of bus bars.				
14	GI / Aluminium earth bus shall be provided through out the length of each board.				
15	All measuring instruments (Meters) shall be of digital electronic (LED Type) of approved make and compliant with BAS.				
16	All hinged door shall be earthed through 2.5 sq mm tinned braided copper wire.				
17	All panels shall have provision of the following:				
	a. Pad locking of Switch board doors.				
	b. Pad locking of MCCB's handles in "OFF" Position.				
18	MCB's used for protection of inductive (motor) load shall be of type "C" characteristic.				
<b>C.</b>	<b><u>DG ISOLATOR/AUXILIARY PANELS</u></b>				

	Design, fabrication, assembling, wiring, supply installation, testing and commissioning of DG isolator panel/DG Auxiliary panels, fabricated out of 14 gauge GI in cubicle formation, compartmentalized, from 3b consutruction, free standing floor mounted, dust and vermin proof with reinforcement of suitable size angle iron, channel, 'T' sections and / or flats wherever necessary. 3 mm thick cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall be treated with all anticorrosive process before powder coating as per specifications and final approved shade. 2 No. earthing terminals shall be provided for all panels. Panels shall be suitable for 415V, 3 phase, 4 wire, 50 HZ supply system. Lifting hooks shall also be provided in case of large panels. Approval shall be taken for each panel in the form of shop drawings before fabrication. Galvanised hardwares with zinc passivation shall be used in fabrication of panels. DG ISOLATOR PANEL may be mounted inside the accoustic enclosure.			
<b>1</b>	<b>DG Isolator Panel ( for 750kVA DG sets )</b>			
<b>A.</b>	<b>Incoming as well as Outgoing</b>			
	-			
	1250 amps TPN ACB, EOD type with short circuit, over current and earth fault protection with adjustable setting as per specification and with following accessories :			
i.	Phase indicating light shall be protected by 2 amps MCB's. - 3 Set			
ii.	Breaker ON / OFF / TRIP indicating lights with control MCB's. - 1 Set			
iii.	VAF digital meter with inbuilt selector switch and 1250/5 Amps suitable VA, CL 1 CTs . - 2 Set			
iv.	3 Nos. Cast resin CTs of ratio 1250 / 5 Amps CL:1, 5P10, 15 VA.			
	DG Isolator Panel as described above.	Set	1	3,60,000.00
<b>D.</b>	<b><u>STATUTORY APPROVAL &amp; CLEARANCE</u></b>			
1	Obtaining clearance from Central Pollution Control Board (CPCB) & State Pollution Central Authority in respect of noise level and emission level being within permissible level and obtaining clearance from Electrical Inspectorate.	Lot	1	10,00,000.00
<b>E.</b>	<b><u>TESTING &amp; COMMISSIONING</u></b>			

1	Supply, installation, testing & commissioning of temporary load bank of 800 kVA for 750 kVA DG set and as required for the lower rated DG sets at unity power factor with all necessary cables and accessories for full load testing of all DG set at site. The diesel fuel for testing shall also be supplied as required for testing and included in the quoted price.	Lot	1	1,50,000.00	1,50,000.00
<b>TOTAL OF PART B (SECTION 5)</b>					<b>Rs.76,67,500.00</b>

#### Summary of Works

Sl. No.	Description of Items	Amount(Rs. P.)
	<b>PART B : ELECTRICALWORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001</b>	
8	Section 1: Internal Electrical Works for Main and Annexe Building	<b>4,09,77,196.00</b>
9	Section 2: Lift for Main Building	<b>9,53,390.00</b>
10	Section 3:External Electrical Works	<b>2,29,06,675.00</b>
11	Section 4 :HT Side	<b>29,04,266.00</b>
12	Section 5: DG Set	<b>76,67,500.00</b>
	<b>Total of Part B</b>	<b>Rs. 7,54,09,027.00</b>



**PART C:HVAC WORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001**

-					
Sl. No.	Description	Unit	Quantity	Unit Rate	Amount Rs. P
A.	CHILLER				
	<b><u>EQUIPMENT (INDIGENOUS/IMPORTED)</u></b>				
1	Supplying, installing, testing and commissioning of AHRI/EUROVENT Certified <b>Magnetic Bearing oli free centrifugal turbo core Chiller with mutil compressore Machine</b> , each complete with <b>300 TR</b> actual capacity water cooled condenser, insulated chiller, flow switch at chiller and condenser, vibration isolators, integral refrigerant piping and wiring, BMS interface unit (Tracer / Microgateway / Datalink), grooved couplings for condenser and cooler water in/out connections, complete charge of refrigerant and oil, accessories as required and called for, automatic and safety controls mounted in central micro-processor based console panel and all mounted on a steel frame complete as per specifications. Motor shall be suitable for 400±10% 50 cycles. 3 phase AC supply and motor cable terminal box shall be suitable to connect Aluminium Cabling. Refrigerant used shall be Ozone friendly HFC-134a as detailed in specifications.				
	Chiller				
	Chiller Water IN 54°F				
	Chilled Water OUT 44°F				
	Fouling factor 0.0005 FPS				
	Chiller Water Flow 720GPM				
	Condenser				
	Condenser Water IN 92°F				
	Condenser Water OUT 102°F				
	Fouling factor 0.001 FPS				

	Chiller Water Flow	775GPM				
	Maximum Power Consumed : Not greater than <b>0.58</b> kW/TR (At Operating Condition)					
	Starting current 2 to 5 Amp					
	Minimum COP (At ARI conditions) : <b>6.4</b>					
	Minimum NPLV (At design with ARI 550/590 relife) - <b>0.34</b>					
	1 No. Suitable capacity squirrel cage IP 54 rated TEWAC (Totally Enclosed Water to Air Circuit Cooled type) or TERC (Totally Enclosed Refrigerant Cooled type) induction motor with class 'F' Insulation suitable for operation on 400+10% volts, 50 HZ, A.C. Supply. (for open type compressor motor H.P. Shall be at least 10% higher than the compressor consumed kW requirement at full load at site design conditions as per AHRI certified design conditions Selection sheet.					
	1 No. factory fitted Variable Frequency drive (VFD) (Make has to be approved by MEP Consultants) suitable for clean motor complete with ammeter with CTs, overload protection, under voltage protection, protection against phase reversal & independent single phase preventers etc. complete as required. The VFD shall be UL & CE approved. Irrespective to type of VFD cooling method (Aircooled/Watercooled/Refrigerant) ; VFD Protection rating shall be minimum IP54 or higher to safeguard from surrounded environmental conditions.					
	1 No. - Auto ball tech tube cleaning system complete with injector, ball trap with necessary piping fitted with necessary motorized and manual valves. The quoted price shall be inclusive of PLC programmable control box for auto operation of system FOR 200 TR CHILLER.					

1 Set- lubrication device consisting of automatic electric oil pump, oil cooler, oil strainer, automatic pressure regulating valve, oil heater, thermal switch etc. as required for the functioning of complete equipment				
1 No - matching ASME 'U' stamped shell and tube water cooled condenser of Steel shell and integrally fined copper tubes with 2 pass configuration and max pressure drop up to 3.0 meters. Refrigerant sight glass shall be mandatorily provided in the condenser shell for checking moister content and refrigerant level.				
1 No - matching ASME U stamped shell and tube water cooled condenser of Steel shell and integrally fined copper tubes with 2 pass configuration and max pressure drop up to 3.0 meters. Refrigerant sight glass shall be mandatorily provided in the condenser shell for checking moister content and refrigerant level.				
1 Set - Microprocessor based control panel with minimum 10 inches colored touch screen display complete with accessories. The chiller controller shall be factory wired and unit mounted on the chiller machine. Separate mounting of chiller controller is not acceptable, so that any shifting of the chiller will not necessitate sensor field wiring.				
Lot - Refrigerant line accessories comprising of safety valves, angle valves, liquid line indications, liquid level control etc. Liquid line isolation valve shall be provided to isolate refrigerant in condenser for maintenance purposes.				
Lot- Water Differential Pressure switches at inlet and outlet of condenser and chiller, water drain and air purge valves wherever required.				
Lot- Victaulic coupling at the inlet and outlet piping connections of evaporator and condenser of chillers.				

	Lot- Suction line and chiller insulation with minimum 19 mm thick polyvinyl nitrile rubber insulation duly insulated at manufacturer works				
	Lot - Frame work for mounting the above condenser, chiller compressor and motor with base plate complete with ant vibration neoprene rubber pads or springs isolator				
	Lot-Factory Charged refrigerant gas and compressor oil.				
	Lot-RCC/Cement concrete foundation for the chilling unit.				
1.1	Supply imported portion of above chillers CIF ( Kolkata)	Nos.	2	9300000	1,86,00,000.00
	Note: Please quote INR only.				
1.2	Indicate for all chillers port charges, port handling charges, other local duties, loading, transportation/insurance upto site, octroi charges and all other taxes and incidentals complete till delivered at site.	Nos.	2	150000	3,00,000.00
1.3	Customs duty and countervailing duty for the above imported equipment or actual basis.	Nos	2	770000	15,40,000.00
1.4	Receiving at site above imported equipment, unloading, storing, handling hoisting, installing in position, effecting connections, anchoring, grouting testing and commissioning above equipment including supplying & installing all necessary indigenous accessories as required to complete the installation.	Nos.	2	150000	3,00,000.00
1.5	One unit shall be witness tested on AHRI certified test bed at 100%/75%/50% & 25% capacity at reducing condenser water conditions as per AHRI 550/590 std to verify full load IKW/TR-0.58 & NPLV Of 0.34 KW/TR at tender design conditions.	Nos.	1	500000	5,00,000.00
<b>B.</b>	<b>PUMPS AND CT</b>				

	<b><u>EQUIPMENT</u></b>				
1	Supply, installation, testing and commissioning of <b>Vertical Inline Split Coupled</b> (with rigid aluminium alloy coupling between pump shaft and motor shaft) <b>single stage centrifugal pump</b> each capable of delivering the specified flow rate comprising the following and complete as per specifications. Casing (Volute) - Cast Iron (BS 1452 Grade 220) - PN 16 Impeller - Gunmetal Bronze (BS1400LG2C) - Statically and Dynamically Balanced Casing Gasket - Confined Non Asbestos Fiber Pump Shaft - SS (BS970 416) Flush Line - Braided Stainless Steel Mechanical Seal - Outside Balanced (the pump design shall met the requirement of servicing / changing the mechanical seal without disturbing the pump shaft alignment) Motor Type - TEFC Squirrel Cage, Efficiency Class - IE3, Insulation - Class F, 415V $\pm$ 10% , 50Hz $\pm$ 5%, 3Ø AC Power Supply				
	Primary Chilled water pumps	-			
	Water flow rate = 720 USGPM				
	Head = 40 Ft. of water				
	Motor KW = 11 kW				
1.1	Quantity indicated includes one standby.	Nos	3	370000	11,10,000.00
	Condenser water pumps	-			
	Water flow rate = 900 USGPM				
	Head = 70 Ft. of water				
	Motor KW = 18.5 kW				
1.2	Quantity indicated includes one standby.	Nos	3	420000	12,60,000.00

2	Supplying, installing, testing and commissioning of <b>PRESSURISED CHILLED WATER EXPANSION TANK</b> suitable for total volume of water in chilled water circuits along with necessary accessories such as centrifugal air separator, pumps etc. in order to keep chilled water system under (+) pressure and to prevent entrapment of pressure and to prevent entrapment of air in the system. The tank shall be precharged steel expansion tank with replaceable heavy duty butyl rubber bladder. The tank shall have 40 MM system connection and 20 mm drain and charging valve connection to facilitate the on site charging of the tank to meet system requirement. The tank shall be fitted with lifting rings and a floor mounting skirt for vertical installation. The tank and air separator must be constructed in accordance stamped <b>145</b> PSI working pressure. The complete system shall be sourced from single manufacturer and supplied and installed with all accessories and safety fixtures and safety fixtures required for proper functioning of the complete hydronic system.				
2.1	The total flow rate of water in chilled water circuit = <b>1030 gallons per min</b> and static head of approximate <b>80 ft</b> to be considered . The contractor shall submit calculations for total system volume and tank sizing calculations.	Nos.	1	650000	6,50,000.00
3	Supply, installation, testing and commissioning of <b>Vertical Inline Split Coupled</b> (with rigid aluminium alloy coupling between pump shaft and motor shaft) <b>single stage centrifugal pump</b> each capable of delivering the specified flow rate comprising the following and complete as per specifications. Casing (Volute) - Cast Iron (BS 1452 Grade 220) - PN 16 Impeller - Gunmetal Bronze (BS1400LG2C) - Statically and Dynamically Balanced Casing Gasket - Confined Non Asbestos Fiber				

	Pump Shaft - SS (BS970 416) Flush Line - Braided Stainless Steel Mechanical Seal - Outside Balanced (the pump design shall met the requirement of servicing / changing the mechanical seal without disturbing the pump shaft alignment) Motor Type - TEFC Squirrel Cage, Efficiency Class - IE3, Insulation - Class F, 415V $\pm$ 10% , 50Hz $\pm$ 5%, 3Ø AC Power Supply VFD - Integrated Motor Mounted, IP-55 Enclosure, Integrated fliter to meet EN61800-3 for RFI Control, Integrated DC link Reactor equivalent in performance to a 5% AC line reactor, confirming to ASHRAE 90.1 guidelines. The VFD LCD should display the dynamic head & flow rate at any point of operation.				
	Secondary Chilled Water pumps				
	Water flow rate = 1100 USGPM				
	Head = 80 Ft. of water				
	Motor HP = 22 kW				
3.1	Quantity indicated includes one standby.	Nos.	2	850000	17,00,000.00
4	Supplying, installing, testing and commissioning of UL & CE approved <b>VARIABLE SPEED PUMPING SYSTEM</b> consisting of adjustable frequency drive (AFD) for each pump, one dedicated microprocessor based pump controller per zone housed within the enclosure of one of the AFD with parallel pumping software duly down loaded and multiple differential pressure sensor / transmitters along with complete control cabling from transmitter to AFD Panel as per the site requirement. The entire system along with primary / secondary pumps as described under item 5 / 9 must be sourced from single manufacturer only, to ensure unit responsibility. Necessary factory test certificates for entire system shall be submitted along with the equipment. Sensor				

	/ Transmitters as described in specification. System shall be BMS compatible with open protocol communication port, so that complete data can be transported to remote IBMS console.				
	The system shall be complete in all respects and suitable for following motor ratings:				
4.1	Pump Controller & Sensor Transmitters	Nos.	2	200000	4,00,000.00
5	Supply, installation, testing and commissioning of Single cell TYPE FRP induced draft cooling tower with FRP water basin, PVC fills with integral louvers and drift eliminators complete with hot water basin either fitted with spray nozzles or having self rotating sprinklers, statically & dynamically balanced axial flow, gear/direct driven fans with TEFC induction motor of class F insulation, efficiency class EFF-1 suitable for operation on 415 + 10% volts, 50 Hz. AC supply; suction screen, make up-quick fill arrangement, overflow and drain connections with all necessary valves & foot valves, suitable inspection ladder, access arrangement for cooling tower interior, steel /masonry supporting structure with proper design, anti-vibration mountings, suitable civil foundation as per manufacturer's standard with foundation nuts, bolts, painting etc. complete as required and as per specification with the following:				
	Cooling tower should be CTI Certified.				
	Capacity : 450 TR				
	Wet bulb temp : 29.00deg C				
	Entering water temp : 36.00 deg C				
	Leaving water temp : 32.00 deg C				
	Flow rate /Cell : 1350gpm (Minimum)	Nos.	2	750000	15,00,000.00
	<b>EQUIPMENT (INDIGENOUS)</b>				
1	<b>AHU/CSU/FCU/CASSETTE UNIT</b>				



A	<p>Supply, installing, testing and commissioning of horizontal Automatic remote control operated <b>Fan Coil unit / four way cassette (2 PIPE SYSTEMS) with integrated draing pump</b>, blow thru type, each complete with Digital Thermostat, 4 rows deep Chilled Water Coil, one or more centrifugal fans, cleanable fabric filters, main condensate extended SS drain pans, as described in specifications, casing, coil piping connections, through copper pipes, condensate drain connections, wiring, control wiring in conduit upto thermostat boxes. Fan coil unit shall be factory fitted with valve package comprising of ball valve with Y-strainer at inlet &amp; Ball valve at outlet and necessary copper coil piping connections. The actuator of modulating valve shall be provided with interface cards to receive 0-10V or 4-20 mA signal from Digital Thermostat.</p>				
B	<p>Supplying, installing, testing and commissioning of double skin construction draw thru type <b>AIR HANDLING UNITS</b> with Thermal Break Profile as per specification, each complete with pre-filter section MERV 6 (90% down to 10 microns), min 6 Row Deep coil of copper tube &amp; aluminium fins construction , <b>EC motor, Plug fan</b> and vibration isolators, coil size shall be selected for a maximum face velocity of 500 feet/minute and static pressure shall be as indicated. The motor selected shall be energy efficient having efficiency (Class I) at full load ranging between 82.5% to 92% in accordance with motor rating as per specification. Motor shall be suitable for 415±10% volts, 50 cycles, 3 phase AC supply. Fan motor assembly (as whole) shall be statically and dynamically balanced to grade G 6.3 as per ISO-1940/AMCA 204-3.All units shall be complete with opposed blade volume control dampers at outlet, return and fresh air connections. Duct flexible connector (fire proof) shall be provided at outlets and return connection of AHU. For AHUs with VFD,</p>				

	complete equipment shall be designed to limit THDi to less than 5%.				
	Entering Air Temperature - DBT : 25 °C & 55% RH Leaving Air Temperature - DBT : 11°C The Chilled water in let / out let temperature : 8°C / 13 °C.				
	<b>FOR MAIN BUILDING</b>				
	STANDARD 4 WAY CASSETTE AC OF 1 TR AND 400 CFM	Nos.	38	35500	13,49,000.00
	STANDARD 4 WAY CASSETTE AC OF 1 .5 TR AND 600 CFM	Nos.	25	41500	10,37,500.00
	STANDARD 4 WAY CASSETTE AC OF 2 TR AND 800 CFM	Nos.	11	46750	5,14,250.00
	STANDARD 4 WAY CASSETTE AC OF 2.5 TR AND 1000 CFM	Nos.	11	50250	5,52,750.00
	STANDARD 4 WAY CASSETTE AC OF 3 TR AND 1200 CFM	Nos.	9	57500	5,17,500.00
	STANDARD 4 WAY CASSETTE AC OF 3.5 TR AND 1400 CFM	Nos.	4	62300	2,49,200.00
	STANDARD CSU OF 6.3 TR AND 2500 CFM	Nos.	3	100000	3,00,000.00
	STANDARD CSU OF 8.8 TR AND 3500 CFM	Nos.	1	125000	1,25,000.00
	STANDARD CSU OF 5.3 TR AND 2100 CFM	Nos.	2	85000	1,70,000.00
	STANDARD CSU OF 5.6 TR AND 2500 CFM	Nos.	1	95000	95,000.00
	STANDARD FCU OF 4 TR AND 1600 CFM	Nos.	1	65000	65,000.00
	<b>FOR ANNEXE BUILDING</b>				
	STANDARD 4 WAY CASSETTE AC OF 1 TR AND 400 CFM	Nos.	7	35500	2,48,500.00
	STANDARD 4 WAY CASSETTE AC OF 1 .5 TR AND 600 CFM	Nos.	11	41500	4,56,500.00
	STANDARD 4 WAY CASSETTE AC OF 2 TR AND 800 CFM	Nos.	19	46750	8,88,250.00
	STANDARD 4 WAY CASSETTE AC OF 2.5 TR AND 1000 CFM	Nos.	11	50250	5,52,750.00
	STANDARD 4 WAY CASSETTE AC OF 3 TR AND 1200 CFM	Nos.	8	57500	4,60,000.00
	STANDARD 4 WAY CASSETTE AC OF 3.5 TR AND 1400 CFM	Nos.	6	62300	3,73,800.00
<b>D.</b>	<b><u>VENTILATION</u></b>				

1	Supplying, installing, testing and commissioning of <b>INLINE FANS</b> suitable for installing in any position in vertical or horizontal ducts. The casing shall be double skin, internally acoustically lined and constructed of galvanised steel. The fan shall be DIDW with forward curve impeller fitted with maintenance free external rotor motor and electrical Panel if required. The motor shall be suitable for 220±10% volt single phase 50 cycles AC supply. All units shall be complete with duct flexible connector and volume control damper.					
	<b>DESCRIPTION</b>	<b>CFM</b>	<b>Esp (in mm wg)</b>			
	<b>MAIN Building</b>					
1.1	Toilet exhaust Fan(GF) 15	600	No.	1	25000	25,000.00
1.2	Toilet exhaust Fan(GF) 10	350	Nos.	2	15000	30,000.00
1.3	Toilet exhaust Fan(1F) 15	550	Nos.	2	25000	50,000.00
1.4	Toilet exhaust Fan(1F) 15	650	No.	1	25000	25,000.00
1.5	Toilet exhaust Fan(1F) 15	500	No.	1	25000	25,000.00
1.6	Toilet exhaust Fan(1F) 10	350	No.	1	15000	15,000.00
1.7	Toilet exhaust Fan(1F) 10	300	No.	1	12000	12,000.00
1.8	Toilet exhaust Fan(2F) 10	150	Nos.	6	10000	60,000.00
1.9	Toilet exhaust Fan(2F) 20	900	No.	1	35000	35,000.00
	<b>Annex Building</b>					
1.10	Toilet exhaust Fan(1F) 20	1000	No.	1	35000	35,000.00
1.11	Toilet exhaust Fan(2F) 15	500	No.	1	25000	25,000.00
1.12	Toilet exhaust Fan(2F) 15	600	No.	1	25000	25,000.00
1.13	Toilet exhaust Fan(3F) 15	500	Nos.	2	25000	50,000.00

1.14	Toilet exhaust Fan(4F) 500 15	Nos.	2	25000	50,000.00
1.15	Toilet exhaust Fan(5F) 500 15	Nos.	2	25000	50,000.00
1.16	Toilet exhaust Fan(6F) 500 15	Nos.	2	25000	50,000.00
	<b>Plant Room</b>				
1.17	Plant room exhaust Fan 6000 20	Nos.	2	120000	2,40,000.00
2	Supply, Installation, Testing and commissioning of Smokespill <b>Axial flow fans</b> shall be complete with casing made of GI Sheet, motor, with impeller (Hub and blades) shall be constructed of die cast aluminium alloy. Impeller should have aerodynamic profile, Casing made of Galvanized steel. Direction of discharge and rotation position shall be as per the job requirement and shall be marked on the fan assembly. The axial Flow Fans with the capacity of 4000 CFM - 25 mm static pressure for Car Park ventilation Exhaust Air. The supply should include Fan Accessories: Mounting Clits for ceiling suspension, Spring Hanger, Grouting Frame, Fire Retardant Flexible canvas connection at inlet, Bird Screen at outlet.				
	<b>DESCRIPTION</b>	<b>CFM</b>	<b>Esp (in mm wg)</b>		
	<b>Main Building</b>				
2.1	Smoke Exhaust Fan 6000 30	Nos.	3	150000	4,50,000.00
	<b>Annex Building</b>				
2.2	Smoke Exhaust Fan 1500 20	Nos.	6	150000	9,00,000.00

3	Supply, installation, testing & commissioning of <b>AXIAL FLOW FAN</b> suitable for installing in any position in Horizontal or vertical and complete with totally enclosed fan cooled motor belt drive, multi sheaved pulley mounted on motor and fan shaft, belt guard, motor mount and vibration isolators. The fan shall be selected for low noise level and low RPM (less than 1000 RPM) Fan motor shall be suitable for 415 ± 10% volts, 50 cycles, 3 phase power supply and high efficiency. The fan shall be equipped with mounting bracket & outlet core required at discharge.						
	<b>DESCRIPTION</b>	<b>CFM</b>	<b>Esp (in mm wg)</b>				
	<b>MAIN Building</b>						
3.1	Lift Well Pressurization	12000	45	Nos.	2	250000	5,00,000.00
3.2	Staire case Pressurization	12000	45	Nos.	2	250000	5,00,000.00
	<b>Annex Building</b>						
3.3	Lift Well Pressurization	12000	45	No.	1	250000	2,50,000.00
3.4	Staire case Pressurization	12000	45	No.	1	250000	2,50,000.00
4	Supplying, installing, testing and commissioning of direct driven PROPELLER FANS for exhaust air as shown in drawings. Each fan shall be complete with permanent split capacitor or shaded pole motor, mounting plate, accessories like wire guard, bird screen and fixed louvers for weather protection as required. Fan selection arrangement and Electrical characteristics shall be as follows :						
5.1	1000 CFM dia 900 RPM fan suitable for 220±6% volts 50 cycles, 1 phase AC supply.			Nos.	1	35000	35,000.00
5.2	500CFM 900 RPM fan suitable for 415±10% volts 50 cycles, 3 phase AC supply			Nos.	1	24000	24,000.00
5.3	300CFM 900 RPM fan suitable for 415±10% volts 50 cycles, 3 phase AC supply			Nos.	1	17000	17,000.00

5.4	200CFM 900 RPM fan suitable for 415±10% volts 50 cycles, 3 phase AC supply	Nos.	1	14000	14,000.00
5.5	100CFM 900 RPM fan suitable for 415±10% volts 50 cycles, 3 phase AC supply	Nos.	1	12000	12,000.00
3	Supply, installation, commissioning and testing of factory assembled <b>Ceiling Suspending type Heat reclaim Ventilator System</b> . The unit shall have Double skin casing with nitrile insulation, heat recovery wheels (effectiveness not less than 70%), pre filters both at supply and return air. The supply and exhaust Plug fan with inbuilt EC motor suitable for single phase operation. The unit also include inbuilt wired remote control for on/off operation. The unit also have inbuilt electrical wiring for HRW, supply and exhaust fans. The manufacturer shall have inhouse test lab to carry out performance testing at their factory in India.				
	Design conditions shall be as follows				
	Fresh Air				
	1. DB - 102 deg F				
	2. WB - 77.9 deg F				
	Exhaus/Return Air Temp.				
	1. DB - 80 deg F				
	2. RH - 60%				
	Air moving capacity shall be as follows :				
	Fresh Air CFM      Exhaust/Return air CFM				
3.1	1000 Building)      1000 (Haritage	Nos.	9	250000	22,50,000.00
3.2	700 Building)      700 (Annexe	Nos.	6	220000	13,20,000.00
<b>E.</b>	<b><u>ELECTRICAL</u></b>				

1	<b>MOTOR CONTROL CENTRES FOR AIR CONDITIONING (PLANT ROOM)</b>				
	Design, manufacture, supply, installation, testing and commissioning of the following cubicle type 2 mm thick sheet steel enclosed separate compartment for each feeder, front operated, rear connections indoor type LT motor control panel, dust and vermin proof, drawout/hinged and lockable doors, complete with internal wiring, colour coding with ferrules, cable glands, bonding to earth and painting. Quoted price for each panel & motor control centre shall include all cabling & earthing over cable trays into various equipment, all associated control wiring and interlocking circuitary.				
	Each MCC shall include cost of wiring, control wiring & inter locking between chillers, primary CHW pumps, Secondary CHW Pumps, condenser water pumps, Cooling towers, motorized valves at chillers and condensers, flow meter & flow switch installed in de-coupler by-pass line, in order to execute the required sequence of operation.				
	All outgoing shall be provided with Stop/Manual/ Auto/selector switch to facilitate operation through <b>BAS</b> . All starters shall be provided with potential free Contact for Connections to Building Automation System.				
	A separate set of CTs to be provided for <b>BAS</b> and wiring from CT's and voltage transducers to be brought on to separate set of terminals.				
	<b>Motor Control Centre 415V Bus Section-1 consisting of</b>				
a.	<b><u>Incoming-1</u></b>				

	One No. <b>1000 amps</b> TPN electrical drawout type incoming microprocessor based ACB complete with the following :				
i.	0 - 500 volts 96 x 96 sq mm digital voltmeter with selector switch.				
ii.	0 - <b>1000 amps</b> 96 x 96 sq mm digital ammeter with <b>1200 amps</b> CT's and selector switch				
iii.	Over voltage tripping mechanism for persistent voltage exceeding 110% of the rated voltage for more than 5 minutes				
iv.	Phase indicating lamps, with toggle switches.				
v.	TPN bus bars shall be of Copper m and shall be sleeved. Phase bus bars shall be rated at <b>1500amps</b> and neutral bus bar shall be of 50% capacity.				
	Maximum density of Copper bus bars for current carrying capacity shall be 1.6 amp per square mm.				
b	<b><u>Outgoing</u></b>				
	<b>1 Nos.630 amps</b> ACB feeders to 260 kW starter panel and outgoing feeders to the chilling unit compressor motor. The ACB compartment shall contain :				
i.	0 - 500 volts 96 x 96 sq mm digital voltmeter with selector switch.				
ii.	0 - <b>630 amps</b> 96 x 96 sq mm digital ammeter with <b>630/5 amps</b> CT's and selector switch				
iii.	Over voltage tripping mechanism for persistent voltage exceeding 110% of the rated voltage for more than 5 minutes.				



iv.	Phase indicating lamps, with toggle switches.				
v.	TPN bus bars shall be of aluminium and shall be sleeved. Phase bus bars shall be rated at <b>800 amps</b> and neutral bus bar shall be of 50% capacity.				
	Maximum density of aluminium bus bars for current carrying capacity shall be one amp per square mm.				
vii.	<b>2 No. 32 amps MPCB, 11 kW</b> star delta starters, over load relay with built in single phasing protection and outgoing feeders to <b>primary chilled water pump motors</b> . Each of these compartment shall contain CT operated digital ammeter of <b>0-32 amps</b> range with selector switch, and an indicating lamp with MCB and toggle switch for 'ON' status of pump motors.				
viii.	<b>1 No.63 amps MPCB</b> and <b>1 Nos.</b> outgoing feeders to Adjustable Frequency Drive ( <b>22kW</b> AFD) panel zone (A) and <b>1 Nos.</b> outgoing feeders to <b>secondary chilled water pump motors(22kW)</b> . The compartments shall contain CT operated digital ammeter <b>0 - 630 amps</b> range with selector switch and an indicating lamp with MCB and toggle switch for 'ON' status of pump motors.				
ix.	<b>2 No. 63 amps MPCB 18.5 kW</b> star delta starter, over load relay with built in single phasing protection and outgoing feeders to condenser water pump motors. Each of these compartment shall contain CT operated digital ammeter of <b>0-63 amps</b> range with selector switch, and an indicating lamp with MCB and toggle switch for 'ON' status of pump motors.				
x.	<b>1 No. 63 amps MPCB, 12.5 kW</b> star delta starters, over load relay with built in single				

	phasing protection and outgoing feeders to Cooling tower fan motors. Each of these compartment shall contain CT operated digital ammeter of <b>0-63 amps</b> range with selector switch, and an indicating lamp with MCB and toggle switch for 'ON' status of pump motors.				
x.	Necessary cable alleys, space for spare switches, internal wiring, control wiring/cabling cabling between motor to panel and copper earthing of all equipment shall also be included. All switches and other components shall be motor duty rating.				
1.1	Motor Control Centre No. 1 as described above.	No.	1	1500000	15,00,000.00
b.	<b><u>Incoming-2</u></b>				
	One No. <b>1000 amps</b> TPN electrical drawout type incoming microprocessor based ACB complete with the following :				
i.	0 - 500 volts 96 x 96 sq mm digital voltmeter with selector switch.				
ii.	0 - <b>1000 amps</b> 96 x 96 sq mm digital ammeter with <b>1200 amps</b> CT's and selector switch				
iii.	Over voltage tripping mechanism for persistent voltage exceeding 110% of the rated voltage for more than 5 minutes				
iv.	Phase indicating lamps, with toggle switches.				
v.	TPN bus bars shall be of Copper and shall be sleeved. Phase bus bars shall be rated at <b>1500amps</b> and neutral bus bar shall be of 50% capacity.				

vi.	Maximum density of Copper bus bars for current carrying capacity shall be 1.6 amp per square mm.				
b	<b><u>Outgoing</u></b>				
	<b>1 Nos.630 amps</b> ACB feeders to 250 kW starter panel and outgoing feeders to the chilling unit compressor motor. The ACB compartment shall contain :				
i.	0 - 500 volts 96 x 96 sq mm digital voltmeter with selector switch.				
ii.	0 - <b>630 amps</b> 96 x 96 sq mm digital ammeter with <b>630/5 amps</b> CT's and selector switch				
iii.	Over voltage tripping mechanism for persistent voltage exceeding 110% of the rated voltage for more than 5 minutes.				
iv.	Phase indicating lamps, with toggle switches.				
v.	TPN bus bars shall be of Copper and shall be sleeved. Phase bus bars shall be rated at <b>800 amps</b> and neutral bus bar shall be of 50% capacity.				
	Maximum density of Copper bus bars for current carrying capacity shall be one amp per square mm.				
vii.	<b>1 No. 32 amps</b> MPCB, <b>11 kW</b> star delta starters, over load relay with built in single phasing protection and outgoing feeders to <b>primary chilled water pump motors</b> . Each of these compartment shall contain CT operated digital ammeter of <b>0-32 amps</b> range with selector switch, and an indicating lamp with MCB and toggle switch for 'ON' status of pump motors.				

viii.	<b>1 No.63 amps MPCB</b> and <b>1 Nos.</b> outgoing feeders to Adjustable Frequency Drive ( <b>22kW</b> AFD) panel zone (A) and <b>1 Nos.</b> outgoing feeders to <b>secondary chilled water pump motors(22kW)</b> . The compartments shall contain CT operated digital ammeter <b>0 - 630 amps</b> range with selector switch and an indicating lamp with MCB and toggle switch for 'ON' status of pump motors.				
ix.	<b>1 No. 63 amps MPCB 18.5 kW</b> star delta starter, over load relay with built in single phasing protection and outgoing feeders to condenser water pump motors. Each of these compartment shall contain CT operated digital ammeter of <b>0-63 amps</b> range with selector switch, and an indicating lamp with MCB and toggle switch for 'ON' status of pump motors.				
x.	<b>1 No. 63 amps MPCB, 12.5 kW</b> star delta starters, over load relay with built in single phasing protection and outgoing feeders to Cooling tower fan motors. Each of these compartment shall contain CT operated digital ammeter of <b>0-63 amps</b> range with selector switch, and an indicating lamp with MCB and toggle switch for 'ON' status of pump motors.				
x.	Necessary cable alleys, space for spare switches, internal wiring, control wiring/cabling cabling between motor to panel and copper earthing of all equipment shall also be included. All switches and other components shall be motor duty rating.				
1.2	Motor Control Centre No. 1 as described above.	No.	1	1500000	15,00,000.00
2	<b>CONTROL PANELS FOR FANS</b>				

	Design, manufacture, supply, installation, testing and commissioning of the following cubicle type, dead front, sheet steel, wall mounted control panels, including anchoring into the wall, wiring terminating into MCCB and copper earthing, in each panel shall be provided by the electrical contractor.				
	All outgoing shall be provided with Stop /Manual /Auto selector switch to facilitate operation through BAS. All starters shall be provided with potential free Contact for Connections to Building Automation System.				
	All wiring and copper earthing of motors from the panel shall be included.				
	The panel shall include the following components & accessories.				
a.	MCCB as per the ratings given below, suitable for motor duty and able to withstand fault level of 20 KA.				
b.	DOL / SD starter as per HP ratings given.				
c.	Terminal block for power distribution as required.				
d.	Contactor, over load relay with built in single phasing protection.				
e.	Phase indicating lights and indicating light for 'ON' status.				
f.	144 mm x 144 mm voltmeter and digital ammeter.				
g.	Time delay relay for delayed automatic restart of motor.				

h.	Wiring for microswitch for stopping the fan when fire damper closes (in case of Fan only).				
i.	For on/off/remote and local operation, 3 pole single throw switch shall be provided in each panel to facilitate override of the automatic operation.				
j.	All starters shall be provided with suitable potential free contact for connections to the Building Automation System and FAS integration separately.				
	The number of control panels shall be as follows.				
2.1	16 amps MPCB, 5.5 KW with Star-Delta Starter	No.	6	55000	3,30,000.00
2.2	63 amps MPCB, 9.3 KW with Star-Delta Starter	No.	4	55000	2,20,000.00
<b>F.</b>	<b>LOWSIDE</b>				
	<b>PIPING-CHILLED WATER AND CONDENSER WATER</b>				
1	Providing & fixing the following <b>factory rolled MSClass "C"</b> pipes with specified wall thickness cut to required lengths and installed with all welded / grooved joints, providing and fixing in position necessary fittings like bends, elbows, tees, reducers, mating flanges & sockets for BAS, fabricated to size and shape in workshop or brought out ready made where available of acceptable quality.				
1.1	300 mm dia MS pipes.	RM	300	5500	16,50,000.00
1.2	250 mm dia MS pipes.	RM	60	4500	2,70,000.00

2	Providing and fixing in position the following <b>MS class 'C'</b> pipes cut to required lengths and installed with all welded joints, providing and fixing in position the necessary fittings like elbows, tees and reducers, mating flanges & sockets for BAS:				
2.1	200 mm dia MS pipes	RM	350	3500	12,25,000.00
2.2	150 mm dia MS pipes	RM	60	2200	1,32,000.00
2.3	125 mm dia MS pipes	RM	40	1800	72,000.00
2.4	100 mm dia MS pipes	RM	250	1500	3,75,000.00
2.5	75 mm dia MS pipes	RM	350	1000	3,50,000.00
2.6	65 mm dia MS pipes	RM	280	850	2,38,000.00
2.7	50 mm dia MS pipes	RM	900	650	5,85,000.00
2.8	40 mm dia MS pipes	RM	500	450	2,25,000.00
2.9	32 mm dia MS pipes	RM	1050	420	4,41,000.00
2.10	25 mm dia MS pipes	RM	900	350	3,15,000.00
2.11	20 mm dia MS pipes	RM	1900	220	4,18,000.00
3	Providing and fixing in position the following <b>butterfly valves (PN16)</b> with counter flanges, nuts & bolts and gasket to suit pressure rating.				
3.4	350 mm dia Valves.	Nos.	1	57500	57,500.00
3.5	300 mm dia Valves.	Nos.	5	55000	2,75,000.00

3.6	250 mm dia Valves.	Nos.	14	40000	5,60,000.00
3.7	200 mm dia Valves.	Nos.	19	28000	5,32,000.00
3.8	150 mm dia Valves.	Nos.	1	22000	22,000.00
3.9	125 mm dia Valves.	Nos.	1	20000	20,000.00
3.10	100 mm dia Valves.	Nos.	8	12000	96,000.00
3.11	75 mm dia Valves.	Nos.	12	7000	84,000.00
3.12	65 mm dia Valves.	Nos.	1	6500	6,500.00
3.13	40 mm dia Valves.	Nos.	12	4500	54,000.00
3.14	32 mm dia Valves.	Nos.	4	4500	18,000.00
4	Supplying, installation, testing and commissioning in position the following double regulating manual <b>BALANCING VALVES.</b>				
4.1	250 mm dia.	Nos.	4	110000	4,40,000.00
4.2	200 mm dia.	Nos.	2	110000	2,20,000.00
4.3	150 mm dia.	Nos.	1	90000	90,000.00
4.4	125 mm dia.	Nos.	1	85000	85,000.00
4.5	100 mm dia.	Nos.	3	65000	1,95,000.00
4.6	75 mm dia.	Nos.	6	55000	3,30,000.00
4.7	65 mm dia.	Nos.	1	42500	42,500.00



5	Supplying, installation, testing and commissioning of <b>Motorised butterfly</b> valve (PN 16) of following sizes with counter flanges and accessories				
5.1	300 mm dia Valves.	Nos.	2	120000	2,40,000.00
5.2	250 mm dia Valves.	Nos.	2	95000	1,90,000.00
5.3	40 mm dia Valves for Cooling tower make up water line.	No.	1	25000	25,000.00
8	Providing and fixing in position the following Pre insulated <b>check valves</b> :				
8.1	250 mm dia valves	Nos.	3	55000	1,65,000.00
8.2	200 mm dia valves	Nos.	5	40000	2,00,000.00
9	Providing and fixing in position the following <b>'Y' Strainers</b> :				
9.1	250 mm dia strainers	Nos.	3	55000	1,65,000.00
9.2	200 mm dia strainers	Nos.	5	45000	2,25,000.00
10	Providing and fixing in position the following Automatic Backwash type <b>pot strainers</b> alongwith two motorised valves compatible to Building Automation System				
10.1	350 mm dia pipes	Nos.	1	100000	1,00,000.00
11	Supply, installation, testing and commissioning of <b>flexible connections</b> of suitable pressure rating to be installed at pump suction, discharge and at pipes crossing building expansion joints.				

11.1	250 mm dia pipes	Nos.	14	30000	4,20,000.00
11.2	200 mm dia pipes	Nos.	14	25000	3,50,000.00
12	Supplying, installation, testing and commissioning of Auto air vents.	Nos.	20	2500	50,000.00
13	Supplying, installation, testing and commissioning of Drain Valve (25mm Dia).	Nos.	20	2500	50,000.00
14	Providing and fixing in position SS 304 the industrial dial type pressure gauges with gun metal valves.	Nos.	40	2200	88,000.00
15	Providing and fixing in position SS 304 the mercury-in- glass industrial dial type thermometers.	Nos.	12	1800	21,600.00
16	Providing and fixing in position the following GI class 'B' pipes cut to required lengths and installed with all screwed joints, and providing and fixing in position the necessary elbows, tees and reducers as per specifications for AHU / FCU drain.				
16.1	50 mm dia	Rmt	100	550	55,000.00
16.2	40 mm dia	Rmt	450	500	2,25,000.00
16.3	25 mm dia	Rmt	1200	300	3,60,000.00

17	Supply, installation, testing and commissioning of <b>Electronic Self Balancing pressure independent with independent type dynamic balancing valve</b> for AHUs with integrated 2 way modulating control valves in a single body. The actuator shall be capable of accepting 2-10 VDC / 4-20 mA electric signal and shall provide similar transduced feedback output signal to control system for flow measurement. Contractor shall show actual flow measurement v/s flow indicated by valve for atleast 5% of the valves. Necessary instruments for manual flow measurement shall be included. The minimum close off pressure actuator must be 1.5 times shut off head of pump OR 5 bars whichever is maximum. The valves shall be suitable for following pipe sizes:				
	The actuator of the valve shall have necessary torque to overcome pressure differential of 4 bars rating. All fan coil units shall be suitable for 220±6% volts, 50 cycles, single phase power supply. Fan coil units shall be of following refrigeration capacities as listed.				
	Supply imported portion of the Electronic Self Balancing valve CIF (Kolkata):				
17.1	2.4 GPM	Nos.	51	20000	10,20,000.00
17.2	3.6 GPM	Nos.	41	20000	8,20,000.00
17.3	4.8 GPM	Nos.	37	20000	7,40,000.00
17.4	6 GPM	Nos.	34	20000	6,80,000.00
17.5	7.2 GPM	Nos.	25	55000	13,75,000.00
17.6	8.4 GPM	Nos.	13	35000	4,55,000.00
17.7	12.6 GPM	Nos.	2	35000	70,000.00
17.8	13.2 GPM	Nos.	1	35000	35,000.00
17.9	15 GPM	Nos.	2	35000	70,000.00
17.10	21 GPM	Nos.	1	65000	65,000.00
	<b><u>AIR DISTRIBUTION</u></b>				

	<b>(FOR DUCTS FABRICATED AT SITE AS PER "IS" CODES)</b>				
1	Supply, Fabrication, installation and testing of sheet metal ducts in accordance with the approved shop drawings and as required by the specifications.				
1.1	26 gauge galvanised sheet steel	sq. m	1	892.5	892.50
1.2	24 gauge galvanised sheet steel	sq. m	2000	950	19,00,000.00
1.3	22 gauge galvanised sheet steel	sq. m	200	1050	2,10,000.00
1.4	20 gauge galvanised sheet steel	sq. m	30	1600	48,000.00
1.5	18 gauge galvanised sheet steel	sq. m	1	1642.5	1,642.50
2	Supply, fabrication, installation and testing the <b>flexible connections</b> constructed of fire resistance flexible double canvas sleeve with sandwiched 25 mm thick fibreglass insulation as per the approved shop drawings.	sq. m	9	7000	63,000.00
3	Supply, installation, testing and commissioning of motorised combined <b>smoke &amp; fire damper(UL listed)</b> complete with control panel, inter connecting wiring at locations shown in approved shop drawings and as per specifications.				
3.1	Smoke & Fire Dampers	Sq. m	9	15000	1,35,000.00

3.2	Actuators	Nos.	12	16000	1,92,000.00
3.3	Control Panel & Wiring including	Nos.	12	5000	60,000.00
4	Supply, Installation, Testing and Balancing of <b>Linear Grilles</b> with removable core as per approved drawings and specifications.				
4.1	Powder coated extruded aluminium construction with volume control damper	sq. m	40	15000	6,00,000.00
4.2	Powder coated extruded aluminium construction without volume control damper	sq. m	0.1	12250	1,225.00
5	Supplying & fixing of opposed blade <b>volume control dampers</b> in supply air duct collars as per approved drawings and specifications. Damper shall be with 18G GSS body and blades shall be with aluminium airfoil construction.	sq. m	10	10000	1,00,000.00
6	Supply, installation, testing and commissioning Powder Coated Extruded Aluminium Air transfer <b>door grilles</b> with rear side frame as per approved shop drawings.	sq. m	3	6000	18,000.00
7	Supply, installation, testing and balancing of <b>louvers with bird screen</b> for exhaust air as per specifications and approved drawings.				
7.1	Powder coated/Anodised extruded aluminium construction.	sq. m	12	8500	1,02,000.00
7.2	Powder coated MS construction	sq. m	0.1	8500	850.00
	<b><u>THERMAL INSULATION</u></b>				

1	Supply and installation of <b>Thermal insulation</b> (Nitrile rubber) on ducts as per the approved specifications. Quoted price shall be inclusive of adhesive, tapes as per specification, UV protective coating over exposed ducts.				
1.1	19 mm thick insulation for supply & return air ducts.	Sq. m.	1000	950	9,50,000.00
1.2	25 mm thick insulation for supply & return air ducts exposed to weather	Sq. m.	1	1400	1,400.00
2	Supply, installation and testing of <b>acoustic insulation</b> (Nitrile rubber) in supply and return air ducts as per the specifications. All ducts shown cross hatched on the approved shop drawings shall be provided with acoustic lining as per the specifications.				
2.1	25 mm thick insulation for supply & return air ducts.	Sq. m.	1	1400	1,400.00
2.2	50 mm thick insulation for supply & return air ducts.	Sq. m.	1	1650	1,650.00
3	Supply, installation and testing of 25 mm thick nitrile rubber / EPDM/XLPE insulation with protective coating on chilled water pipes and fittings like valves, flanges and unions, etc. as per approved shop drawings and specifications.				
3.1	40 mm dia pipes	RM	500	418	2,09,000.00
3.2	32 mm dia pipes	RM	1050	390	4,09,500.00
3.3	25 mm dia pipes	RM	900	369	3,32,100.00
3.4	20 mm dia pipes	RM	1900	355.35	6,75,165.00

3.5	15 mm dia pipes	RM	1	355.35	355.35
3.6	50 mm dia condensate drain pipes	RM	100	449	44,900.00
3.7	32 mm dia condensate drain pipes	RM	450	390	1,75,500.00
3.8	25 mm dia condensate drain pipes.	RM	1200	368	4,41,600.00
4	Supply, installation and testing of 50 mm thick nitrile rubber / EPDM/XLPE insulation with protective coating on chilled water pipes and fittings like valves, flanges and unions, etc. as per approved shop drawings and specifications.				
4.1	150 mm dia pipes	RM	60	966	57,960.00
4.2	125 mm dia pipes	RM	40	866	34,640.00
4.3	100 mm dia pipes	RM	250	764	1,91,000.00
4.4	80 mm dia pipes	RM	350	675	2,36,250.00
4.5	65 mm dia pipes	RM	280	620	1,73,600.00
4.6	50 mm dia pipes	RM	900	558	5,02,200.00
5	Supply, installation and testing of 75 mm thick nitrile rubber / EPDM/XLPE insulation with protective coating on chilled water pipes and fittings like valves, flanges and unions, etc. as per approved shop drawings and specifications.				
5.1	400 mm dia pipes	RM	1	2300	2,300.00
5.2	350 mm dia pipes	RM	1	2150	2,150.00

5.3	300 mm dia pipes	RM	1	2000	2,000.00
5.4	250 mm dia pipes	RM	1	1800	1,800.00
5.5	200 mm dia pipes	RM	350	1436	5,02,600.00
6	Supply and installation of acoustic lining on of walls & ceiling of mechanical plant room or AHU rooms covered with 50 mm thick fiber glass and perforated aluminium sheet as per the approved shop drawings & specifications.				
6.1	50 mm thick acoustic lining.	Sq. m.	500	1200	6,00,000.00
	SYSTEM TESTING, BALANCING & COMMISSIONING BY THIRD PARTY	Lot	1	1500000	15,00,000.00
<b>TOTAL OF PART C</b>					<b>Rs. 7,48,53,780.00</b>

**PART D :ELV WORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001**

Sl. No.	Description	Unit	Quantity	Unit Rate	Amount Rs. P
A.	<b><u>INTELLIGENT ADDRESSABLE FIRE PROTECTION &amp; ALARM SYSTEM</u></b>				
1.00	<b>Supply, installation, testing and commissioning of imported portion of the following equipment for FAS.</b>				



1.30	Repeater panel with 40 character back lit super twist LCD display with system function keys like system reset. Alarm acknowledge, Alarm Silence, Trouble Acknowledge etc. Quoted price shall be inclusive of armoured cable ( power, communication & signal) or unarmoured in PVC FRST conduits between main panel and repeater panel. Make: Schrack Seconet	No.	1.00	81,000.00	81,000.00
1.40	Addressable <b>monitoring module</b> to connect NO/NC contacts such as pressure switch, <b>flow switches</b> , fire pump contacts (provided by Fire fighting contractor). However testing and commissioning shall be included in the fire detection and alarm system contractor scope. Panel shall be located at Security room and reception area.	No.	20.00	3,780.00	75,600.00
1.50	Addressable <b>control modules</b> for shutting down AHU's, and magnetic fire door holders. Elevator recall, fire damper, pressurization fan, speakers, strobes etc. Make: Schrack Seconet	No.	40.00	3,780.00	1,51,200.00
1.70	Intelligent addressable <b>Multi criteria type detector</b> with housing, LED and bypass switch for testing complete as per specification. (MTD533X + USB502-6)	Nos	200.00	3,780.00	7,56,000.00
1.10	Intelligent addressable type <b>rate of rise and fixed temperature heat detectors</b> as per specifications. Make: Schrack Seconet	Nos	5.00	3,780.00	18,900.00
1.12	Addressable type <b>manual call point</b> as per specifications (MCP545X-2R)	Nos	1.00	3,780.00	3,780.00
1.13	Surface mounted addressable type fully solid state circuitry dual tone Electronic loud speaker type hooters with strobe lights of 110 Cd intensity as per specifications	Nos	1.00	5,940.00	5,940.00
1.14	Directinal <b>sounder /eqv Hooters</b> with mutitones for easy understanding and exit as per specifications	Nos	45.00	4,860.00	2,18,700.00
1.15	Addressable <b>Fault Isolation</b> Module as per specifications (BX-OI3)	Nos	10.00	3,780.00	37,800.00
1.16	Addressable Fire Fighters Telephone Jack as per specifications.	Nos	10.00	1,296.00	12,960.00
1.17	Response Indicator as per specifications Make: Schrack Seconet	Nos	50.00	270.00	13,500.00
1.18	Fire Fighters Telephone Receiver as per specifications	Nos	2.00	16,200.00	32,400.00

1.19	Auto Dialer unit as per specifications	Nos	1.00	5,400.00	5,400.00
1.20	Addressable Magnetic door hold open device including termination, fixing, contact on the door complete as required and as per specification.	Nos	1.00	8,640.00	8,640.00
<b>AA</b>	<b>CABLES &amp; ACCESSORIES FOR FAS</b>				
1.00	Supplying, installing, testing and commissioning of cabling for fire detection and alarm system with 2 core annealed tinned copper conductor PVC sheathed, flexible, FRLS 2 x 1.5 sq mm armoured cables as per specifications. Cable conductor size should be minimum 1.5 Sq.mm dia and depends on the loop length the contractor should decide the size of the conductor as per their loop power capacity. More than two cables should not be saddled to wall /ceiling. Perforated Cable tray /trunking of appropriate size should be used more than two cables to be layed thru ceiling /walls. Cables shall be estimated per device basis as per the drawings.	Mtrs	5,600.00	86.40	4,83,840.00
2.00	Supply , Installation , testing and commissioning of the 16 gauge 25 mm dia PVC FRST Conduits with Accessories.	Mtrs	1.00	34.56	34.56
3.00	Supplying, installing, testing and commissioning of 2 mm thick GI trunking with cover of the following sizes complete with angle iron supports/hanging arrangement etc				
3.10	40 x 300 x 40	Mtrs.	1.00	572.40	572.40
3.20	40 x 200 x 40	Mtrs.	1.00	540.00	540.00
3.30	25 x 150 x 25 in riser	Mtrs.	200.00	529.20	1,05,840.00
4.00	Wiring for the following telephone jack points with two pair 0.61 mm dia PVC sheathed twisted shielded tinned copper conductor 1100 volts grade flexible FRLS wires of approved make <b>in concealed or surface mounted 2 mm thick 25 mm dia PVC FRLS Conduit including fixing, supporting, saddling &amp; flexible conduit etc complete in all respect.</b>	Mtrs.	500.00	34.56	17,280.00
5.00	Supplying, Installing, Testing & Commissioning of the Central Control Station consisting of the following				

5.10	i7 core, 7th generation Machine as per specification with cordles mouse and cordless keyboard as per specification.	No.	1.00	81,000.00	81,000.00
5.20	21"color monitor flat screen LCD display as per specifications	No.	1.00	23,760.00	23,760.00
5.30	Laser Jet Printer (A3 size) as per Specification	No.	1.00	9,720.00	9,720.00
6.00	Inspection, testing, rectification/replacement and commissioning of filed devices Detectors for <b>a existing setup total</b> 500 nos. field devices, One nos Fire alarm manin panel and one repeater panel	Lot	1.00	3,50,000.00	3,50,000.00
<b>B.</b>	<b>CCTV SYSTEM EQUIPMENT (IP)</b>				
<b>1</b>	<b>Supply, Installation &amp; Commissioning of following CCTV System Component</b>				
1.1	Indoor IP base 1/3"color auto iris Fixed lense CMOS Cameras ( <b>high resolution cameras / minimum 4mm Lence/ 3 megapixel /PoE</b> ) fitted enclosed in a discrete mirror dome complete with sockets as per specification and IR range min 30 Meter.	Nos	55	25,000.00	13,75,000.00
1.2	Outdoor IP base Day & Night 1/3"color auto iris fixed lense <b>CMOS Cameras (high resolution cameras / minimum 4mm Lence/ 3 megapixel/PoE)</b> fitted enclosed in a weather proof outdoor housing and flexible wall mount / pole mount type complete with sockets as per specification.including Out door housing all necessary power supply units & all accessories as per specification and IR range min 50 Meter.	Nos	25	35,000.00	8,75,000.00
1.3	Indoor IP base 1/3"color auto iris verifocal lense CMOS wireless Cameras ( <b>high resolution cameras / minimum 4mm Lence/ 3 megapixel /PoE</b> ) fitted enclosed in a discrete mirror dome complete with sockets as per specification and IR range min 50 Meter.	Mtr.	3	35,000.00	1,05,000.00

1.4	Supply, installation, testing and commissioning of Central Server with 55" totally flat colour LED monitor.	Nos	3	92,250.00	2,76,750.00
1.5	Supply, installation, testing and commissioning of 32 chanel NVR including accessories, decoder/encoder, suitable power socket, DC power converters, connectors, cables, etc. complete as per spec. Hard disc for 25 FPS / 4 CIF resolution 30 days of continous recording for video compression of H.265, H.264, MPEG4, to be considered as specified in the tender.	Set	3	2,50,000.00	7,50,000.00
1.6	Supply, installation, testing and commissioning of <b>Video Analytics control software</b> complete as per spec with valid licenses. The software should enable the user to view selected cameras in any combination available on the network (For 100 Nos. Camera in minimum three different control station location)	Set	1	1,50,000.00	1,50,000.00
1.7	Supply, installation, testing and commissioning of user <b>Client control software</b> complete as per spec with valid licenses. The software should enable the user to view multiple cameras in any combination available on the network (maximum 32 Nos. per monitoring screen)	Set	3	1,50,000.00	4,50,000.00
<b>C.</b>	<b>PASSIVE NETWORK</b>				
	<b>Copper Cabling Components: CAT6A UTP</b>				
1.00	Supply,Installation, Testing and Commissioning of Category 6A U/UTP Cable, ETL verified, 4 pair count, LSZH 60332-3 compliant, 305 mtr reel	Boxes	12.00	22,000.00	2,64,000.00
2.00	Supply,Installation, Testing and Commissioning of CAT6A UTP Solid Cordage Modular Patch Cord, 23 AWG, LSZH, 7 ft	Nos	100.00	530.00	53,000.00
3.00	Supply,Installation, Testing and Commissioning of CAT6A UTP Solid Cordage Modular Patch Cord, 23 AWG, LSZH, 10 ft	Nos	100.00	430.00	43,000.00

6.00	Supply,Installation, Testing and Commissioning of CAT6A UTP Patch Panel, 24 Port, with rear cable manager, 1U	Nos	5.00	13,440.00	67,200.00
7.00	Supply,Installation, Testing and Commissioning of Ceiling connector, CAT6A UTP, 110 style termination	Nos	90.00	1,066.00	95,940.00
9.00	6F OM4 Indoor/Outdoor, Single Jacket All-Dielectric, LSZH-3, Gel-Free, Stranded Loose Tube Cable	Mtr	150.00	320.00	48,000.00
14.00	42 U Rack 600X600 with all standard accessories	Nos	1.00	28,000.00	28,000.00
15.00	12 U Rack 600X600 with all standard accessories	Nos	12.00	21,000.00	2,52,000.00
<b>D.</b>	<b><u>PARKING MANAGEMENT SYSTEM</u></b>				
1	Supply, Installation, testing & Commissioning of <b>Motorized Boom Barriers</b> with Signal (Indication) light for 3.5m length with Vehicle loop detector. Compatible with card reader system,code or biometric devices. Quoted price shall be consider cabling for cabling between the Boom Barriers and the motor control center, card reader, push button, loop detector, controller & all necessary accessories.Quototed price shall be inclusive of wires running in 25 mm PVC FRST havy duty conduit. Approved make: Hikvision, Kaba, Automatic System, Magnetic & Godrej	No.	2	95,000.00	1,90,000.00
2	Supply, Installation, Testing and Commssioining of <b>X-Ray cargo Baggage Scanner</b> B86, suitable for tunnel size 1050 mm X 850 mm	Nos.	1	25,00,000.00	25,00,000.00
	Approved make: Hikvision, Kritikal Seurescan, Godrej				
3	Supply, Installation, Testing and Commssioining of <b>Door Frame Metal detector. - 8 Zone, with head counting sensor / detector. All the necessary field devices, softwares and all type of cabling (Control/Communication and Power) to be consider with this iteam to provide complete solution.</b>	Nos.	4	1,20,000.00	4,80,000.00
	Approved make: Hikvision, Kritikal Seurescan, Godrej				
11	Supply, laying, testing and commissioning of <b>3C x 2.5 Sq.mm Cu.</b> Conductor armoured power cable.	RM	200	125.00	25,000.00

12	Supply, laying, testing and commissioning of <b>25mm GI conduiting</b> with necessary anchoring Fixtures, bend etc.	RM	200	110.00	22,000.00
<b>E.</b>	<b>BUILDING AUTOMATION SYSTEM</b>				
<b>I.</b>	<b>CENTRAL CONTROL STATIONS FOR ELV SYSTEM</b>				
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1.00	<b>Supplying, Installing, Testing &amp; Commissioning of the Central Control Stations consisting of the following</b>				
1.10	Pentium i7 7th gen Machine as per specification with cordles mouse and cordless keyboard as per specification.	No.	1.00	80,000.00	80,000.00
1.20	21" color monitor flat screen LCD display as per specifications.	No.	1.00	8,000.00	8,000.00
1.30	Laser Jet Colour Printer (A3 size) as per Specification	No.	1.00	2,50,000.00	2,50,000.00
<b>II.</b>	<b>SOFTWARES</b>				
1.00	<b>Supply, installation, testing &amp; commissioning of the following Software for BAS:</b>				
1.10	Multi user with simultaneous minimum 2 user web based Server license <b>Software</b> for Building Management System with dynamic graphics. The Web-Based Server software shall permit use of Standard Web-Browsers such as Microsoft Internet Explorer, Netscape Navigator, etc with EMAIL / SMS OPTION AVAILABLE. . Software shall have the capacity to accommodate <b>950 IO points and 1800 soft IO Points or more.</b>	Lot	1.00	3,00,000.00	3,00,000.00
1.20	Developing and commissioning of software interface with <b>75 Nos.</b> LM / KWH meters for two way flow of data between central control station and static power meters.The price shall include the necessary integrator required for integration and also the networking of all load managers include network cabling. <b>All necessary cabling ( Communication / signal &amp; power ) from integrator / convertor to each equipment shall be included in the scope.</b>	Lot	1.00	90,000.00	90,000.00

1.30	Developing and commissioning of software interface with <b>1 No.</b> Fire Alarm Panel for two way flow of data between central control station and Fire Alarm panels. The price shall include the necessary integrator required for integration and also the networking of all include network cabling. <b>All necessary cabling ( Communication / signal &amp; power ) from integrator / convertor to each equipment shall be included in the scope.</b>	Lot	1.00	90,000.00	90,000.00
1.40	Developing & commissioning of Software interface for <b>10 Nos.</b> VFD / PLC via communication bus. The price shall include the necessary integrator / gateway required for integration and also the networking of all include network cabling. <b>All necessary cabling ( Communication / signal &amp; power ) from integrator / convertor to each equipment shall be included in the scope.</b>	Lot	1.00	90,000.00	90,000.00
1.50	Developing & commissioning of Software interface for <b>1 Nos.</b> DG via communication bus. The price shall include the necessary integrator / gateway required for integration and also the networking of all include network cabling. <b>All necessary cabling ( Communication / signal &amp; power ) from integrator / convertor to each equipment shall be included in the scope.</b>	Lot	1.00	90,000.00	90,000.00
1.60	Developing and commissioning of software interface with <b>3 No.</b> BTU Meter for two way flow of data between central control station and <b>BTU meter</b> . The price shall include the necessary integrator required for integration and also the networking of all include network cabling. <b>All necessary cabling ( Communication / signal &amp; power ) from integrator / convertor to each equipment shall be included in the scope.</b>	Lot	1.00	90,000.00	90,000.00
1.70	Developing and commissioning of software interface with <b>3 Nos</b> Elevators for two way flow of data between central control station and Elevator Panels. The price shall include the necessary integrator required for integration and also the networking of all Elevator Micro processor Panels. include network cabling. <b>All necessary cabling ( Communication / signal &amp; power ) from integrator / convertor to each equipment shall be included in the scope.</b>	Nos.	1.00	90,000.00	90,000.00
<b>III.</b>	<b>BUILDING AUTOMATION SYSTEM</b>				
1.00	<b><u>CONTROLLERS</u></b>				

	Supply, Installation & Commissioning of following equipment for BAS				
1.10	Programmable and Application specific 32 bit, UL Listed BACnet (BTL certified) Real Time controllers, field mounted configured as per Data Point Summary for respective building services and as per below distributions. The DDC shall be with Minimum of 22 IO Points with minimum 16 Universal Inputs in it & with a polling speed of 100 ms. The controller shall be housed in vandal proof lockable MS cabinets. No Digital output to Analog Output, Analog Output to Digital output Module shall be allowed. Proprietary Protocol shall not be accepted. As per Tender Specifications.				
1.1.1	DCC controllers for Chiller Plant	Lot.	1.00	25,00,000.00	25,00,000.00
1.1.2	DCC controllers for AHU (Max 2 AHU in 1 DDC-Not Required for the project)				
1.1.3	DCC controllers for Ventillation System (Max 5 Fan in 1 DDC)				
1.1.4	DCC controllers for DG system				
1.1.5	DCC controllers for LT Energy Meters/Transformer				
1.1.6	DCC controllers for Fire Fighting System				
1.1.7	DCC controllers for UPS & PAC				
1.1.8	DCC controllers for Plumbing / Domestic / Raw System (Max 5 Pumps 1 DDC)				
1.1.9	DCC controllers for STP System				
1.1.10	DCC controllers for Electrical System				
1.1.11	DCC controllers for Lift System				
1.1.12	Supplying, installing, testing and commissioning of 24 AWG communication cables as per specifications. <b>(For entaire BMS system)</b>	RM	1,200.00	45.00	54,000.00
1.1.13	Supplying, installing, testing and commissioning of 2 x 1.5 mm signal / power cables armoured as per specification. <b>(per For entaire BMS system)</b> . More than two cables should not be saddled to wall /ceiling. Perforated Cable tray /trunking of aproprate size should be used more than two cables to be layed thru ceiling /walls.	RM	7,500.00	65.00	4,87,500.00
1.1.14	Supply, installation, testing and commissioning of hand held portable operator terminals.(POT). These shall be required if the Controllers and Integration Units do not have a built in keypad on the facia .	No	1.00	54,000.00	54,000.00



1.1.15	Microprocessor based 32 Bit ,UL Listed Embedded Web Server Engine-cum-Network & Supervisory controller on BACnet/IP units for connecting all field DDC controllers and 3rd party System Integration Units to it and for transferring data from field devices to BMS Web-Server Software . The Network Controller shall support BACnet standard MS/TP Protocol and shall be BACnet testing lab certified (BTL) and carry the BTL label .The Network supervisory Controller shall have imbedded graphic capability for generating web based user graphics & support minimum of Five Concurrent User .The Web user shall have the capability to access all system data through one Network Controller. In case of PC/Software Failure, User can access the system using POT.	Lot	1.00	7,50,000.00	7,50,000.00
2.00	<b><u>SENSORS &amp; FIELD DEVICES</u></b>				
	<b>Supply, Installation &amp; Commissioning of following equipment for BAS</b>				
2.10	Pressure transmitters for measuring pressure in water / steam (0-16 Kg/sqm) for Sprinkler Header	Nos	1.00	21,000.00	21,000.00
2.20	Differential Pressure transmitters for measuring pressure in water / steam (0-16 Kg/sqm)(If required)	Nos	1.00	21,000.00	21,000.00
2.30	Differential pressure switches across the pumps for indicating the pumps status	Nos	15.00	12,800.00	1,92,000.00
	<b>Water Flow Switches</b>				
2.40	Flow switch for monitoring water flow direction (250mm dia- If required))	Nos	1.00	55,000.00	55,000.00
2.4.1	Flow meter for monitoring water consumption (50mm dia- <b>2 CuM/Hr.)</b>	Nos	1.00	25,000.00	25,000.00
2.50	Supply, Installation, testing & commissioning of level switch suitable for mounting for Sumps.( Low & High )				
2.5.1	Bi-Level Switch	Nos	6.00	5,400.00	32,400.00
2.5.2	Single Level Switch	Nos	4.00	3,200.00	12,800.00
2.50	Differential pressure switches across the Blower for indicating the Blower status	Nos.	6.00	2,800.00	16,800.00
2.60	Differential pressure switches across the Filter for indicating the Filter status (If required)	Nos	1.00	5,500.00	5,500.00

2.90	Differential pressure Transmitter across the Fine Filter for indicating the Filter status (If required)	Nos	1.00	5,500.00	5,500.00
2.10	Duct Temperature Sensor + RH Sensor(If required)	Nos	1.00	12,500.00	12,500.00
2.11	Duct type Temperature sensors. (If required)	Nos	1.00	3,500.00	3,500.00
2.12	Developing and commissioning of integration of Pressure independent Dynamic valve shall have communication port for modulation shall be wired to the DDC Panel and providing power supply to valve shall be scope of BAS contractor.				
2.12.1	200 nos. Valve	Lot	1.00	1,60,000.00	1,60,000.00
2.13	Ultrasonic type BTU Meter				
2.13.1	1667 gpm	No.	1.00	2,50,000.00	2,50,000.00
2.13.2	220.6 gpm	Nos	1.00	1,50,000.00	1,50,000.00
2.13.3	199.2 gpm	Nos	1.00	1,50,000.00	1,50,000.00
2.13.4	206.4 gpm	Nos	1.00	1,50,000.00	1,50,000.00
2.13.5	82.8 gpm	Nos	1.00	1,00,000.00	1,00,000.00
2.13.6	68.8 gpm	Nos	2.00	1,00,000.00	2,00,000.00
2.13.7	61.2 gpm	Nos	1.00	1,00,000.00	1,00,000.00
2.13.8	72 gpm	Nos	1.00	1,00,000.00	1,00,000.00
2.13.9	69.6 gpm	Nos	1.00	1,00,000.00	1,00,000.00
2.15	Immersion Temperature Sensor	Nos	10.00	3,000.00	30,000.00
2.16	CO Sensor as per specification (If required)	Nos.	1.00	15,000.00	15,000.00
2.17	CO2 Sensor as per specification (If required)	Nos.	1.00	12,000.00	12,000.00
2.18	Outside Air Temperature & Humidity Sensor	Nos	1.00	25,000.00	25,000.00
2.19	Outside CO2 Sensor	Nos	1.00	22,000.00	22,000.00
<b>F.</b>	<b>ACCESS CONTROL SYSTEM (SMART CARD)</b>				

1.10	Supply, installation, testing & commissioning of <b>Smart card / Multi Technology readers</b> as per specification suitable for mounting on metal surface/metal frames or wooden frames wall or as required based on site conditions including all accessories	Nos.	15.00	2,000.00	30,000.00
1.20	Supply , installation, testing & commissioning of <b>Biometric Finger Print card readers</b> as per specification suitable for mounting on metal surface/metal frames or wooden frames wall or as required based on site conditions including all accessories	Nos	4.00	21,000.00	84,000.00
1.30	Supply , installation, testing and commissioning of <b>Smart cards</b> ( 16 KB- <b>QR</b> or higher ) as per specification.	No.	500.00	102.22	51,110.00
1.40	Supply , installation, testing and commissioning of <b>Push Button for Exit</b>	No.	4.00	500.00	2,000.00
1.50	Supply , installation, testing and commissioning of <b>Door Controller</b> for Controlling the above card readers as per specification mentioned including all accessories.Max. 4 Reader combination (Tenderer to mention quantity of controllers based on their system.)	Lot.	1.00	60,000.00	60,000.00
1.60	Supply, installation, testing and commissioning of <b>Central access control controller</b> complete with software, tamper switch, power electronics tamper switch etc. which with connect to the door controllers as stated above.	Set	1.00	60,000.00	60,000.00
1.70	Supply, installation, testing and commissioning of <b>electromagnet door holder</b> (fail safe type) of 600 lb holding force for the following doors :				
1.7.1	Single Leaf Door	No.	4.00	25,000.00	1,00,000.00
1.7.2	Supply , installation, testing & commissioning of Door Contact	No.	4.00	15,000.00	60,000.00

1.80	Supply, installation, testing and commissioning of door open <b>break glass switch</b> for individual access control door. This shall be located in a powder coated lockable enclosure housed in control room. Quoted price shall be inclusive of wires running in 25 mm dia PVC FRST heavy duty conduit between door and this switch.	No.	4.00	600.00	2,400.00
1.90	Supply, installation, testing and commissioning of <b>master switch</b> for opening all access control door. It shall be housed in the enclosure described in item 1.9. Quoted price shall be inclusive of wire in 25 mm dia PVC FRST heavy duty conduit between doors and switch.	No.	1.00	7,000.00	7,000.00
1.10	Supply, laying, testing and commissioning of <b>power / communication / Signal</b> cables in PVC FRST heavy duty conduits with all accessories including glanding and termination. Quoted price shall be considering cabling for each door including that from card reader, push button, between controllers, door strike and magnetic contact.	RM	2,000.00	100.00	2,00,000.00
1.11	Supply, installation, testing and commissioning of <b>card issue terminal</b> with necessary interface modules and operating software and all others accessories (as per specification).	Set	1.00	75,000.00	75,000.00
<b>G. BGM CUM PAS</b>					
1	Supply, installation, testing, commissioning of ceiling mounted circular loudspeaker with 6.5 inch/165.1 mm driver in a dual cone design with paper woofer material and an IP rating of IP50, including multiple transformer taps of at least 6 - 3 - 1.5 watts at 100v, dynamic power of at least 30 watts and low impedance connection of 4 ohms amplifier, output SPL at a distance of 1m with 1w input level applied shall be at least 91 dB and maximum output SPL of at least 99 dB, frequency response of at least 70 - 20KHz, have a main construction material of ABS plastic with a steel grille and will be available in white / black colour. Approved Makes: Apart Audio, Bose, QSC	Nos.	218	2,863.50	6,24,243.00

2	Supply, Installation, Testing & Commissioning of audio control device with 8 configurable zone outputs; output level unbalanced (dB): 5; signal to noise level SNR (dB) >100; crosstalk (dB) >95; with MIC level control and source selection per zone; 6 nos unbalanced MIC inputs; Phantom power voltage: 24 volts; with selectable input dynamics, 6 configurable balanced line inputs; 1 stereo S/PDIF input; with RS232 (serial communication port), chime, priority output contact, frequency response (in Hz) 20 - 30 k; applicable in low impedance; power consumption (max) 75 watts; total harmonic distortion (%) <0.005; with music level control and VCA level control; 6 balanced MIC inputs; 6 inputs with Phantom power; with noise gate on MIC and selectable output dynamics; 6 configurable unbalanced line inputs; with tone control and wall panel controls, maximum qty paging Mics: 120; with emergency input; priority levels configurable; frequency response (in Hz) 20 - 30 k; and applicable in 100V; OEM should have authorized service centre in India Approved Makes: APART-AUDIO / BOSE / QSC	Nos.	1	2,17,338.50	2,17,338.50
3	Digital programmable wall control for audio control device. Approved Makes: APART-AUDIO / BOSE / QSC	Nos.	7	14,018.50	98,129.50
4	Supply, Installation, Testing & Commissioning of paging station with a gooseneck mic with a uni-directional polar pattern and a length of 395mm / 15.55 inches and 12 switches which can be programmed for paging zone select or control functions and 2 switches which allow selected or all call paging to 12 zones in the connected device. OEM should have authorized service centre in India Approved Makes: APART-AUDIO / BOSE / QSC	Nos.	1	55,418.50	55,418.50
5	Supply, Installation, Testing & Commissioning of Dual Channel Digital Power amplifier, 4 x 240Watts @ 100V / 4Ω, 2 X 480Watts @ 100V / 8Ω; Power Amp Topology : Class D; PSU Technology : SMPS; Convection cooled; Hypex inside, Power Supply : SMPS; Protection Circuit : Over Current, Over temperature; Frequency response : 50 - 20KHz; S/N ratio : > 101 dB A-Weighted; THD : 0.07% @ 1KHz A-Weighted ; Power Consumption < 1050 Watts; 1U 19" rackmount Approved makes : APART-AUDIO/ QSC / BOSE	Nos.	2	1,43,738.50	2,87,477.00
6	Media Player, CD/MP3 from Disc, SD-card or USB memory stick, RS232 control, IR remote included.	Nos.	1	33,338.50	33,338.50
7	Supply, installation, testing and commissioning of <b>IP based Voice Controller</b> as required for system.	Nos.	1	5,75,000.00	5,75,000.00

**CONDUITING AND CABLING PUBLIC ADDRESS SYSTEM**

8	Supply, laying and connecting of <b>2.5 Sq. mm single pair PVC insulated FRLS twisted shielded copper conductor cable in 20/0.2 mm dia</b> in PVC FRLS conduit including all fixing accessories as required.	RM.	5000	70.00	3,50,000.00
<b>H.</b>	<b>Rodent Repellent System For MSR, Hub Room, UPS Room Bettery Room, Cable Tray and Race Ways</b>				
1.10	<b>Supply,Installation,Testing &amp; Commissioning of Rodent Repellent System For Server Room, Hub Room and Cable Tray, Race Ways .</b>				
1.00	Rodent repellent system network controller capable of supporting 20 Transducers. Inclusive of mounting brackets, 3pin power supply cord (1.5 meters), etc.	Nos.	12.00	15,000.00	1,80,000.00
2.00	Satellite transducers, circular ceiling mounted type, having power output of 800mW/transducer. Inclusive of necessary mounting clips / clamps, junction box etc.	Nos.	50.00	10,000.00	5,00,000.00
3.00	Standard 2 core, flexible (14/40) SWG multi-stranded CT wires. shall be used for connectivity between transducers & master console in 20mm PVC Conduit	Mtr.	2,000.00	110.00	2,20,000.00
4.00	Supply, Installation, Testing & Commissioning of hooter cum strobe	No.	1.00	6,500.00	6,500.00
5.00	MS powder coated stands and bracket support for Rodent Repellent panel.	No.	12.00	15,000.00	1,80,000.00
<b>I,</b>	<b>NOVEC</b>				
1.	Kidde Fenwal 120 L CYLINDER ASSEMBLY	Nos.	2.00	1,20,000.00	2,40,000.00
2.	NOVEC 1230	Kgs.	250.00	3,600.00	9,00,000.00
3.	<b>KF NOVEC MASTER ACCESSORY KIT_IN</b>	Nos.	2.00	16,000.00	32,000.00
a	Electric Control Head, 24 V DC				
b	Discharge Hose, 2" x 31"				
c	Warning Sign - Novec				

4.	Kidde NOVEC NOZZLE	Nos.	2.00	3,000.00	6,000.00
5.	Discharge pressure switch 3pole double throughwith locking device suitable with operating pressure of 25 bar. Pressure switch shall be UL & FM approved. Quoted rate shall include all necessary fittings.	Nos.	2.00	4,500.00	9,000.00
6.	Cylinder Supervisory Pressure Switch	Nos.	2.00	5,000.00	10,000.00
7.	Gas Release Panel along with Modbus Panel, Abort switch release switch, Delector, Control Releay Module. Panel shall have the provision of integrating with BMS through RS-485 Modbus protocol and in built battery backup	set	2.00	3,500.00	7,000.00
8.	Manifold & Pipes	Lot	2.00	25,000.00	50,000.00
9.	Installation, Testing, Pressure testing & Commissioning	Lot	2.00	15,000.00	30,000.00
10.00	Installation, Testing, & Commissioning of warning signage for inside & out side	Nos.	4.00	15,000.00	60,000.00
11.00	Installation, Testing, & Commissioning of warning signage for Manual about and release switches	Nos.	2.00	2,500.00	5,000.00
12.00	Room integrity test for NOVEC-1230 gas suppression system. Quoted rate shall include supply of all necessary equipments required to carry out the test.	Lot	2.00	15,000.00	30,000.00
<b>J. ACCESS CONTROL</b>					
1	<b>Core Switches</b>				
	Core Switches X620-8x-Base	Nos.	1	4,80,000.00	4,80,000.00
	Pwr Cord,10A,BS546,C13				
	Summit Fan module FB Fan Module for Summit X460-G2/X450-G2 Series Switches - front to back airflow				

	Summit 300W AC PSU XT300W AC Power Supply module for Summit X460 & E4G-400 Series Switches - Extended Temparture Range from -10 to +50 degrees Celsius				
	QSFP+ Transciver 16 x Transciver				
2	<b>Access Switch</b> X440 - 28-Port-PoE+ X440-G2-24P-10GE4 long description: X440-G2 48 10/100/1000BASE-T, 4 SFP combo, 4 1GbE unpopulated SFP upgradable to 10GbE SFP+ (2 combo/2 non-combo), 2 1GbE copper combo upgradable to 10GbE, 1 Fixed AC PSU, 1 RPS port, ExtremeXOS Edge license,PoE+ Switch	Nos.	5	180000	9,00,000.00
	QSFP+ Transciver 4 x Transciver				
	Power Cord Pwr Cord,10A,BS546,IEC320-C13				
	Transciver 4 x 10 Gigabit Ethernet SFP+ module, 850nm, MMF 26-300m link, LC connector				
	Power Cord Pwr Cord,10A,BS546,IEC320-C13				
3	Implementation Installation Commissioning, Testing and Others wherever necessary	LOT	1	230000	2,30,000.00
<b>TOTAL OF PART D</b>					<b>Rs. 2,45,82,752.00</b>

### Summary of Works

Sl. No.	Description of Items	Amount(Rs. P)
1.	<b>PART A : CIVIL,INTERIOR, SANITARY PLUBMING AND FIRE WORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001</b>	<b>22,83,66,131.05</b>
2.	<b>PART B : ELECTRICALWORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001</b>	<b>7,54,09,027.00</b>
3.	<b>PART C:HVAC WORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001</b>	<b>7,48,53,780.00</b>



4.	<b>PART D :ELV WORKS FOR REFURBISHMENT OF KoPT HEAD OFFICE BUILDING AT 15, STRAND ROAD KOLKATA -700001</b>	<b>2,45,82,752.00</b>
<b>GRAND TOTAL</b>		<b>Rs.40,32,11,690.05</b>

**GRAND TOTAL (In Words) : (Rupees Forty Crore Thirty Two Lakh Eleven Thousand Six Hundred Ninety & paise five Only)**

**Tenderer to fill up the following [ score out which is not applicable]**

**price not to be quoted here**

(a).....%  
(in figures) } Below par (-) Rs.

.....Percent  
(in words) }

(b)..... At par NIL

(c).....%  
(in figures) } Above par (+) Rs.

..... Percent  
(in words) }

**Total Tendered Amount: Rs. \_\_\_\_\_**

Total tendered amount (in words.....  
.....

**[The prices quoted shall be including all statutory levies excluding GST, which shall be paid extra]**

Maximum number of workmen likely to be engaged in days work..... numbers

Permanent Income Tax A/C.No... ..

Date:

\_\_\_\_\_  
(Signature of Tenderer)

[Total amount of tender, completion time and preliminary time as quoted / stated above are to be carried over to Form of Tender attached]

Witness: -

(Name in block letters)

Address:

Occupation:

**THE BOARD OF TRUSTEES FOR THE PORT OF KOLKATA**  
**FORM OF TENDER**

To  
 The Chief Engineer,  
 Kolkata Port Trust.

I/We \_\_\_\_\_ having examined the site of work, inspected the Drawings and read the specifications, General & Special Conditions of Contract and Conditions of the Tender, hereby tender and undertake to execute and complete all the works required to be performed in accordance with the Specification, Bill of Quantities, General & Special Conditions of Contract and Drawings prepared by or on behalf of the Trustees and at the rates & prices set out in the annexed Bill of Quantities within **Eleven months** from the date of order to commence the work and in the event of our tender being accepted in full or in part. I / We also undertake to enter into a Contract Agreement in the form hereto annexed with such alterations or additions thereto which may be necessary to give effect to the acceptance of the Tender and incorporating such Specification, Bill of Quantities, Drawing and Special & General Conditions of Contract and I / We hereby agree that until such Contract Agreement is executed the said Specification, Bill of Quantities, Conditions of Contract and the Tender, together with the acceptance thereof in writing by or on behalf of the Trustees shall be the Contract.

THE TOTAL AMOUNT OF TENDER Rs. **Not to mention here**

(Repeat in words) **Not to mention here**

I / We require \_\_\_\_\_ days / months preliminary time to arrange and procure the materials required by the work from the date of acceptance of tender before I We could commence the work.

I / We have deposited with the Trustees' Manager (Finance), HDC, vide Receipt No. \_\_\_\_\_ of \_\_\_\_\_ as Earnest Money.

I / We agree that the period for which the tender shall remain open for acceptance shall not be less than four months.

Dated:

(Signature of Bidder with Seal)

Name of the Bidder :

Address :

ANNEXURE - F

# General Conditions of Contract Forms and Agreements

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Sanctioned by the Trustees under Resolution No. 92 of the 6<sup>th</sup>  
Meeting held on 27<sup>th</sup> May, 1993

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Including Addendum Sanctioned by the Trustees Meeting held on  
July, 2014

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**KOLKATA PORT TRUST**  
**KOLKATA DOCK SYSTEM**  
**& HALDIA DOCK COMPLEX**  
**JULY , 2014**

**GENERAL CONDITIONS OF CONTRACT**

	<b>CLAUSE</b>		<b>PAGES</b>
<b>1.</b>	AMENDMENT TO GENERAL CONDITIONS OF CONTRACT	...	<b>GC 1</b>
<b>2.</b>	DEFINITION	...	<b>GC 2 – GC 3</b>
<b>3.</b>	DUTIES & POWERS OF ENGINEER & ENGINEER'S REPRESENTATIVE	...	<b>GC 3 – GC 5</b>
<b>4.</b>	THE TENDER/OFFER AND ITS PRE-REQUISITES	...	<b>GC 5 – GC 9</b>
<b>5.</b>	THE CONTRACT & GENERAL OBLIGATIONS OF CONTRACTOR	...	<b>GC 9 – GC 14</b>
<b>6.</b>	COMMENCEMENT, EXECUTION AND COMPLETION OF WORK	...	<b>GC 14 – GC 17</b>
<b>7.</b>	TERMS OF PAYMENT	...	<b>GC 18 – GC 20</b>
<b>8.</b>	VARIATION AND ITS VALUATION	...	<b>GC 20 – GC 22</b>
<b>9.</b>	DELAY/EXTENSION OF COMPLETION TIME/LIQUIDATED DAMAGE/TERMINATION OF CONTRACT	...	<b>GC 22 – GC 24</b>
<b>10.</b>	MAINTENANCE AND REFUND OF SECURITY DEPOSIT	...	<b>GC 24 – GC 25</b>
<b>11.</b>	INTERPRETATION OF CONTRACT DOCUMENTS, DISPUTES & ARBITRATION	...	<b>GC 25 – GC 27</b>
<b>12</b>	FORMS GC-1, GC-2 , GC-3		
<b>13</b>	FORM OF AGREEMENT		
<b>14</b>	PROFORMA FOR B.G. FOR CONTRACT PERFORMANCE		
<b>15</b>	INTEGRITY PACT DOCUMENT: PROFORMA		
<b>16</b>	DRAFT Memorandum of Understanding between Ko.P.T. & Transparency International India		

## GC – 1

## AMENDMENT TO

### GENERAL CONDITIONS OF CONTRACT

❖ CI-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/-	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/-	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
<b>A</b>	Rs 10,000/-	Any tender priced upto Rs 2,00,000/-	<b>A</b>	Rs 50,000/-	Any tender priced up to Rs 10,00,000/-
<b>B</b>	Rs 5,000/-	Any tender priced upto Rs 1,00,000/-	<b>B</b>	Rs 25,000/-	Any tender priced upto Rs 5,00,000/-
<b>C</b>	Rs 2,500/-	Any tender priced upto Rs 50,000/-	<b>C</b>	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 ]

## GC - 2

## 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 Specification

Specifications (latest revisions) for materials and workmanship unless stated otherwise in the Tender.

### GC - 3

- |      |   |                                 |
|------|---|---------------------------------|
| 1.10 | “Drawings” means the drawings referred to in the Tender and specification and any modification of such drawings approved in writing by the Engineer and such other drawings as may from time to time be furnished or approved in writing by the Engineer.   | 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 Agreement, if separately entered into and the Schedule of Rates and Price, if any, adopted by the Trustees at their discretion.   | Contract                        |
| 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.  | Constructio<br>nal Plant        |
| 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.   | Site                            |
| 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.   | Contract<br>Price               |
| 1.15 | “Month” means English Calendar Month.   | Month                           |
| 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). | Excepted<br>Risks               |
| 1.17 | Word importing the singular only, also includes the plural and vice-versa where the context so requires.  | Singular/<br>Plural             |
| 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.  | Headings/<br>Marginal<br>Notes. |
| 1.19 | Unless otherwise stipulated the work “Cost” shall be deemed to include overhead costs of the Contractor, whether on or off the site.  | Cost                            |
| 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. **Engineer's Authority**

**GC - 4**

- 2.2** The Contractor shall take instructions from the Engineer and subject to limitation of Clause 2.5 hereof, from the Engineer's Representative. **Authority of Engineer's Representative**

- 2.3** *The Engineer shall have full power and authority :* **Engineer's Power**

(a) to supply to the contractor from time to time during the progress of the works such further drawings and instructions as shall be necessary for the purpose of proper and adequate execution and maintenance of the works and the contractor shall carry out and be bound by the same.

(b) to alter or modify the specification of any material and workmanship and to inspect the work at any time.

(c) to order for any variation, alteration and modification of the work and for extra works.

(d) to issue certificates as per contract.

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

(f) To grant extension of completion time.

- 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.

## GC - 5

**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

**Drawing/**

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.

Specification / Nature & extent of work to be done.

#### GC - 6

- (c) The accommodation required for the workmen and site office, mobilisation/demobilisation and storage of all plant, equipment and Construction materials. Accommodation for Contractor's men/materials.
- (d) The sources and means of procurement of water for drinking, washing and execution of work, and source and availability of electrical power, all at Contractor's cost. Water for drinking etc. /Electrical power.
- (e) Payment of taxes and duties and compliance of all applicable statutes, ordinances and law together with the rules made thereunder, the rules, regulations and bye-laws of public bodies or any local or other authority by the Contractor, keeping the Trustees indemnified against penalties and liabilities of every kind arising from the Contractor's failure in such compliance. Payment of Taxes/duties and observance of all statutes.
- (f) Payment of all kinds of stamp-duty for executing the agreement or for any legal instrument including Bank Guarantees and Indemnity Bonds. Payment of Stamp Duty by the Contractor.
- 3.2 The Contractor's tender shall be in ink on the Tender Forms supplied by the Trustees, unless stipulated otherwise in the Notice Inviting the Tender and shall be faultless in figures and free from erasing. Corrections, if any, shall only be made by scoring out and initialling of the revised figure.
- 3.3 If required by the Engineer or the Trustees, the Contractors in their tender or subsequently, shall disclose the names of their owners/partners/share holders at the required points of time. The failure in this regard shall be treated as a breach and a contract, if entered into, shall be liable to be cancelled. Disclosure of Owner's name.
- 3.4 (a) Unless otherwise stipulated in the Notice Inviting Tender / Offer, every tender must be submitted with Earnest Money of the amount calculated as per the following scale. Earnest Money and Security Deposit.

Estimated Value of Work	Amount of Earnest Money	
	For Works Contract	For Contract of Supplying Materials or Equipment only

Up to Rs. 1,00,000=00	5% of the estimated value of work	1% of the estimated value of work
Over Rs. 1,00,000=00	2% of the estimated value of work subject to a maximum of Rs. 20,000/- and minimum of Rs. 5,000/-.	½% of the estimated value of work subject to a maximum of Rs. 10,000/- and minimum of Rs. 1,000/-.

## GC - 7

- (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 **E.M. to be converted to part S.D.**

previous Receipt of Earnest Money.

- (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.

#### GC - 8

Value of Work	% of Security Deposit for works contract.	% of Security Deposit For contract of supply-ing materials & equipment only.	Scale of S.D. recovery.
For works up to Rs.10,00,000/-.	10% (Ten percent)	1% (One percent)	
For works costing more than Rs.10,00,000/- and up to Rs.20,00,000/-	10% on first Rs.10,00,000/- + 7½% on the balance.	1% on first Rs.10,00,000/- + ½% on the balance.	
For works costing more than Rs.20,00,000/-	10% on first Rs.10,00,000/- + 7½% on the next Rs.10,00,000/- + 5% on the balance.	1% on first Rs.10,00,000/- + ½% on the next Rs.10,00,000/- + ¼% on the balance.	

- (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 Mode of refund of S.D.

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.

(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.**

#### GC - 9

- 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 :
2. The Contract Act (India), 1872.
  3. The Major Port Trusts Act, 1963.
  4. The Workmen's Compensation Act, 1923.
  5. The Minimum Wages Act, 1948.
  6. The Contract Labour (Regulation & Abolition) Act, 1970.
  7. The Dock Workers' Act, 1948.
  8. The Arbitration and Conciliation Act (1996) (in the case of a definite Arbitration Agreement only).
- Applicability of laws on the contract**

- 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

## GC - 10

- 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. Contractor is responsible for all

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.

construction process, except for correctness of design and specification formulated by the Engineer Contractor to submit his programme of work

- 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.

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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 representative shall consider necessary during the maintenance period. The Contractor or his competent and authorised agent or representative shall be constantly at site and instructions given to him by the Engineer or his representative in writing shall be binding upon the Contractor subject to limitation in Clause 2.5 hereof. The Contractor shall inform the Engineer or his representative in writing about such representative/agent of him at site.

Contractor to supervise the works

- 4.11 The Contractor shall employ in execution of the Contract only qualified careful and experienced persons and the Engineer shall be at liberty to direct the Contractor to stop deployment of any of his staff, workmen or official at site and the Contractor shall within 48 hours comply with such instruction without any demur whenever the Engineer shall feel that the deployment of the person concerned will not be conducive to the proper and timely completion of the work.

Contractor to deploy qualified men and Engineer's power to remove Contractor's men

- 4.12 The Contractor shall be responsible for the true and proper setting out of the works in relation to reference points/lines/levels given by the Engineer in writing. The checking of any setting-out or of any alignment or level by the Engineer or his Representative shall not in any way relieve the contractor of his responsibility for the correctness thereof and he shall fully provide protect and preserve all stakes, templates, bench marks, sight rails, pegs, level marks, profile marks and other things used in setting out the works.

Contractor is responsible for line, level, setting out etc.

- 4.13 From the commencement of the works till issue of the completion

Contractor is

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.

responsible  
to protect the  
work

#### GC – 12

- 4.14** The Contractor shall at his own cost protect support and take all precautions in regard to the personnel or structure or services or properties belonging to the Trustees or not which may be interfered with or affected or disturbed or endangered and shall indemnify and keep indemnified the Trustees against claim for injury, loss or damage caused by the Contractor in connection with the execution and maintenance of the work to the aforesaid properties, structures and services and/or to any person including the Contractor's workmen. Cost of Insurance Cover, if any, taken by the Contractor shall not be reimbursed by the Trustees, unless otherwise stipulated in the Contract.
- Contractor is responsible for all damages to other structures / persons caused by him in executing the work.
- 4.15** The Contractor shall immediately inform the Engineer's Representatives if any fossil, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological importance be discovered at site which shall remain the property of the Trustees and protect them from being damaged by his workmen and arrange for disposal of them at the Trustees' expense as per the instruction of the Engineer's Representative.
- Fossils, Treasure travois, etc. are Trustees' property
- 4.16** The Contractor shall be deemed to have indemnified and shall indemnify the Trustees against all claims, demands, actions and proceedings and all costs arising therefrom on account of :
- Contractor to Indemnify the Trustees against all claims for loss, damage, etc.
- (a) Infringement of any patent right, design, trademark or name or other protected right in connection with the works or temporary work.
  - (b) Payment of all royalties, rent, toll charges, local taxes, other payments or compensation, if any, for getting all materials and equipment required for the work.
  - (c) Unauthorised obstruction or nuisance caused by the contractor in respect of Public or Private or Private road, railway tracks, footpaths, crane tracks, waterways, quays and other properties



belonging to the Trustees or any other person.

- (d) Damage/injury caused to any highway and bridge on account of the movement of Contractor's plants and materials in connection with the work.
- (e) Pollution of waterway and damage caused to river, lock, sea-wall or other structure related to waterway, in transporting contractor's plants and materials.
- (f) The Contractor's default in affording all reasonable facilities and accommodation as per the direction of the Engineer or his Representative to the workmen of the Trustees and other agencies employed by or with the permission and/or knowledge of the Trustees on or near the site of work.

- 4.17 Debris and materials, if obtained by demolishing any property, building or structure in terms of the Contract shall remain the property of the Trustees. Dismantled materials Trustees' property

#### GC – 13

- 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 Preliminary time to commence work an maintenance of steady rate of progress

contract on the part of the contractor.

- |         |   |   |
|---------|---|---|
| 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   |
| GC – 15 |   |   |
| 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 :   |   |
|         | (e) 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  | The Contractor shall account for and look after the Trustees'                               |

container to the Trustees' Stores as per the direction of the Engineer or his Representative. materials

- (f) Being the custodian of the Trustees' materials, the contractor shall remain solely responsible for any such materials issued to him and for any loss or damage thereof for any reason other than "Excepted Risks", the Contractor shall compensate the Trustees' in the manner decided by the Engineer and shall at no stage remove or cause to be removed any such material from the site without his permission in writing. Contractor to compensate for loss and damage to Trustees' materials

- (c) The Trustees' materials will generally be supplied in stages and in accordance with the rate of progress of work but except for grant of suitable extension of completion time of work as decided by the Engineer. The Contractor shall not be entitled to any other compensation, monetary or otherwise, for any delay in the supply of Trustees' materials to him. The Contractor shall, however, communicate his requirement of such materials to the Engineer from time to time. Delay in supply of Trustees' materials will only entitle the Contractor for extension of completion time of work

#### GC – 16

- (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 Contractor to replace materials/work not acceptable to the Engineer or his Representative

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.

- 5.10** No work shall be covered up and put out of view by the contractor without approval of the Engineer or his Representative and whenever required by him, the contractor shall uncover any part or parts of the work or make openings in or through the same as may be directed by the Engineer or his representative from time to time and shall reinstate or make good those part of works thus affected to the satisfaction of the Engineer, all at the cost of the contractor.
- Contractor to seek approval of Engineer or his Representative before covering up any portion of work

The Trustees shall reimburse such cost as determined by the Engineer, if the initial covering up was with prior written order of the Engineer or his Representative.

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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

- (d) otherwise provided for in the contract, or
- (e) necessary by reason of some default on the part of the contractor, or
- (f) necessary by reason of climatic conditions on the site, or
- (g) 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.**

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#### **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
- Limitation for on account payment**

advance.

- 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**

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- 6.5** Based on the quantum of work and the value thereof computed in the Measurement Book, the Contractor shall type out his bill in the proforma approved by the Engineer and submit the same to the Engineer's Representative in quadruplicate, duly signed by him or his accredited Agent over his Rubber Stamp. The Engineer or his Representative may in his absolute discretion, allow advance payment against such bill to the extent of an amount not exceeding 75% of the "net payable" sum of the said bill, subject to adjustment thereof against the bill at the time of checking and auditing the bill at the Trustees' end. The measurement Book will not be handed over to the Contractor; but he will obtain the abstracts of quantities, amounts and recoveries to type out the bill.
- Contractor to prepare and submit his bills**
- 6.6** At the discretion of the Engineer or his Representative and only in respect of accepted offers/where estimated amount put to tender would be Rs.2,00,000/- or more, advance payment may be made to the extent of 75% of the value of any material purchased and brought to the site by the Contractor. Provided always that –
- (i) the materials shall, in the opinion of the Engineer or his Representative be of imperishable nature,
  - (vi) the value of such materials shall be assessed by the
- Advance payment against Non-perishable materials**

engineer or his Representative at their own discretion,

- (vii) a formal agreement has been drawn up with the contractor, under which the Trustees secure a lien on the contractor's materials,
- (viii) 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,
- (ix) 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,

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- (x) 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.
- (xi) 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 Where written order for variation is not needed

Engineer shall be complied with by the Contractor and the Engineer'' subsequent written confirmation of such verbal order shall 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, 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
- Extension of completion time

allow in writing the extension period as he would deem proper for completion of the work with or without the imposition of "Liquidated Damage" Clause (No.8.3 hereof) on the Contractor and his decision shall be final and binding on the Contractor. If an extension of completion time is granted by the Engineer without imposition of liquidated damage, from the Clause No.8.3 of the Liquidated damage shall apply from its date of expiry, if the work be not completed within the extended time, unless stated otherwise in the decision communicated by the Engineer, as aforesaid.

- 8.2 9. 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,  $\frac{1}{2}\%$  (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' or his Representative'' 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 cost and all expenses, consequent thereon or incidental thereto, shall be recoverable from the Contractor in any manner deemed suitable by the Engineer.
- Contractor's obligation for maintenance of work.

## **GC – 25**

- 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 therefrom 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.

### **GC - 26**

- 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.

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- [c]** Contractor's dispute if any arising only during the maintenance period, if any, stipulated in the contract, must be submitted to the Engineer, with detailed justification in the context of contract conditions, before the issuance of final completion certificate in Form G.C.-2 *ibid*.  
No dispute or difference on any matters whatsoever, the Contractor can raise pertaining to the Contract after submission of certificate in form G.C.3 by him.
- [d]** Contractor's claim / dispute raised beyond the time limits prescribed in sub-clauses 10.5[b] and 10.5 [c] hereinabove, shall not be entertained by the Engineer and / or by any Arbitrator subsequently.
- [e]** The Chairman / Trustees shall have the right to alter the panel of Arbitrators, vide Clause 10.3 hereinabove, on their sole discretion, by adding the names of new Arbitrators and /

**or by deleting the names of existing Arbitrators, without making any reference to the Contractor.**



(TO BE SUBMITTED WITH COVER- I OFFER)  
**THE BOARD OF TRUSTEES FOR THE PORT OF KOLKATA**  
**FORM OF TENDER (UNPRICED)**

To  
 The Manager (I&CF),  
 Haldia Dock Complex.

I/We \_\_\_\_\_  
 having examined the site of work, inspected the Drawings and read the specifications, General & Special Conditions of Contract and Conditions of the Tender, hereby tender and undertake to execute and complete all the works required to be performed in accordance with the Specification, Bill of Quantities, General & Special Conditions of Contract and Drawings prepared by or on behalf of the Trustees and at the rates & prices set out in the annexed Bill of Quantities within \_\_\_\_\_ months / weeks from the date of order to commence the work and in the event of our tender being accepted in full or in part. I / We also undertake to enter into a Contract Agreement in the form hereto annexed with such alterations or additions thereto which may be necessary to give effect to the acceptance of the Tender and incorporating such Specification, Bill of Quantities, Drawing and Special & General Conditions of Contract and I / We hereby agree that until such Contract Agreement is executed the said Specification, Bill of Quantities, Conditions of Contract and the Tender, together with the acceptance thereof in writing by or on behalf of the Trustees shall be the Contract.

THE TOTAL AMOUNT OF TENDER Rs. **NOT TO BE QUOTED IN COVER I OFFER**

(Repeat in words) **NOT TO BE QUOTED IN COVER I OFFER**

I / We require \_\_\_\_\_ days / months preliminary time to arrange and procure the materials required by the work from the date of acceptance of tender before I We could commence the work.

I / We have deposited with the Trustees' Manager (Finance), HDC, vide Receipt No. \_\_\_\_\_ of \_\_\_\_\_ as Earnest Money.

I / We agree that the period for which the tender shall remain open for acceptance shall not be less than four months.

Dated :

\_\_\_\_\_  
 (Signature of Bidder with Seal)

**WITNESS :**

Signature :  
 Name : (In Block  
 Letters)  
 Address :

Occupation :

Name of the Bidder :

Address :

**KOLKATA PORT TRUST****HALDIA DOCK COMPLEX**FORM G.C.1

Contractor \_\_\_\_\_

Address -----

-----

Date of completion :

Dear sir(s),

This is to certify that the following work viz :-

Name of work : .....

.....

.....

Estimate No. E.E.0.....Dt.....

C.E.O.....Dt.....

Work Order No.....

Allocation.....

Contract No. ....

which was carried out by you is in the opinion of the undersigned complete in every respect on the \_\_\_\_\_ day of \_\_\_\_\_ 2000 in accordance with terms of the Contract and you are required to maintain the work as per Clause 62 of the General Conditions of Contract and under provisions of the Contract for a period of \_\_\_\_\_ weeks / months / years

from the \_\_\_\_\_ day of \_\_\_\_\_ 2000 to \_\_\_\_\_ day of \_\_\_\_\_ 2000 .

Yours faithfully,

Signature.....  
(ENGINEER/ENGINEER'S REPRESENTATIVE)

Name.....

Designation.....

OFFICE SEAL

**KOLKATA PORT TRUST  
HALDIA DOCK COMPLEX**

**FORM G.C.2.**

**Certificate of Final Completion.**

**The Financial Adviser & Chief Accounts Officer  
The Manager (Finance), Haldia Dock Complex.**

**This is to certify that the following work viz:-**

**Name of work : .....**

**Estimate No. E.E.O.....dt.....  
C.E.O.....dt.....**

**Work Order No.....**

**Contract No. ....**

**Resolution & Meeting No. ....**

**Allocation : .....**

**which was carried out by Shri/Messrs..... is now complete in every respect in accordance with the terms of the Contract and that all obligations under the Contract have been fulfilled by the Contractor.**

**Signature.....  
(ENGINEER/ENGINEER'S REPRESENTATIVE)  
NAME.....  
DESIGNATION.....  
OFFICE SEAL**

**KOLKATA PORT TRUST  
HALDIA DOCK COMPLEX**

**FORM G.C.3**

**(‘NO CLAIM ‘ CERTIFICATE FROM CONTRACTOR)**

**The Manager (I&CF)  
Haldia Dock Complex  
Calcutta Port Trust  
Haldia.**

**(Atten:.....)**

**Dear Sir,**

**I / We do hereby declare that I / we have received full and final payment from the Calcutta Port Trust for the execution of the following work viz:-**

**Name of work :** \_\_\_\_\_  
\_\_\_\_\_

**Work Order No :-** \_\_\_\_\_

**Contract No.** \_\_\_\_\_

**Agreement No.....Dt.....**

**and I / we have no further claim against the Calcutta Port Trust in respect of the above-mentioned job.**

**Yours faithfully,**

**(Signature of the Contractor)**

**Dated** \_\_\_\_\_

**Name of Contractor.....**

**Address:.....**

**(OFFICIAL SEAL OF THE CONTRACTOR)**

## KOLKATA PORT TRUST

### PROFORMA OF FORM OF AGREEMENT

THIS AGREEMENT made \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_ between the "Board Of Trustees for the Port Of Calcutta , a statutory body constituted under Major Port Trust Act ,1963 under the rules there under and statutory modification thereto having Registered Office at 15, Strand Road , Calcutta -700001 (hereinafter called "EMPLOYER" which expression unless excluded by or repugnant to the context be deemed to include his successor/s in office) on the one part and \_\_\_\_\_ (hereinafter called the "CONTRACTOR" which expression shall unless excluded by or repugnant to the context he deemed to include his heirs, executors, administrators, representative, successor in officer and permitted assigns) of the other part.

WHEREAS The TRUSTEES are desirous that certain works should be executed viz \_\_\_\_\_ and have accepted a Tender/Offer by the contractor for the execution, completion and maintenance of such works .

NOW THIS CONTRACT AGREEMENT WITNESSETH as follows :-

1. In this agreement words expressions shall have the same meanings as are respectively assigned to them in General 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 , viz :-
  - i.The said Tender/Offer & the acceptance of Tender/ Offer.
  - ii.The Drawings.
  - iii.The General Conditions Of Contract.
  - iv.Special Conditions Of Contract (If any).
  - v.The Conditions Of Tender.
  - vi.The Specifications.
  - vii.The Bill Of Quantities.
  - viii.All correspondences 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 and maintain the work in conformity in all respects with the provisions of Contract.
4. The Trustees hereby covenants to pay to the contractor in consideration of such execution ,completion and maintenance of the works the Contract Prices at the times and in the manner prescribed by the contractor .

IN WITNESS whereof the parties hereto have caused their respective Common Seals to be hereunto as fixed (or have set their respective hands and seals) the day and year first above written.  
have executed these presents on the day and year first above written.

The Seal of \_\_\_\_\_

Was hereunto affixed in the presence of :

Name :- \_\_\_\_\_

Address :- \_\_\_\_\_

OR

SIGNED SEALED AND DELIVERED

By the said \_\_\_\_\_

In the presence of :

Name :- \_\_\_\_\_

Address :- \_\_\_\_\_

The Common Seal of the Trustees was hereunto affixed in he presence of :

Name :- \_\_\_\_\_

Address :- \_\_\_\_\_

**Proforma Of Irrevocable Bank Guarantee (PERFORMANCE BOND) in lieu of cash Security Deposit, to be issued by the Kolkata/ Haldia Branch, as the case may be, of any nationalised Bank of India on Non-Judicial Stamp Paper worth Rs 50/- or as decided by the Engineer/ Legal Adviser of the Trustees.**

Ref. \_\_\_\_\_ Bank Guarantee No. \_\_\_\_\_  
Date \_\_\_\_\_

To  
The Board of Trustees for the Port of Kolkata,  
15, Strand Road  
Kolkata – 700 001

Dear Sirs,

In consideration of the Board of Trustees For the Port of Kolkata, - (hereinafter referred to as the “EMPLOYER” which expression shall unless repugnant to the context or meaning thereof include its successors administrators and assigns) having awarded to \_\_\_\_\_, with 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 EMPLOYER’S work order dated \_\_\_\_\_ the same having been unequivocally accepted by the Contractor resulting in a ‘CONTRACT’ bearing Letter Of Award No \_\_\_\_\_ dated \_\_\_\_\_ Valued at Rs \_\_\_\_\_ for “ \_\_\_\_\_ ” and the contractor having agreed to prove a Contract performance Guarantee for the faithful performance of the entire Contract equivalent to Rs. ( rupees \_\_\_\_\_ only) to the EMPLOYER.

We, the \_\_\_\_\_ Bank, \_\_\_\_\_, Kolkata/ Haldia having its Head Office at \_\_\_\_\_ (hereinafter referred to as the “Bank”, which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the Employer on demand any and all monies payable by the Contractor to the extent of Rs. -( \_\_\_\_\_ only) as aforesaid at any time upto \_\_\_\_\_ without any demur, reservation, contest, recourse or protest an/or without any reference to the CONTRACTOR, Any such demand made by Employer on the Bank shall be conclusive and binding notwithstanding any difference between EMPLOYEER and CONTRACTOR or any dispute pending before any Court, tribunal, Arbitrator or any other Authority. The Bank undertakes not to revoke this guarantee during its currency without previous consent of employer and further agrees that the guarantee herein contained shall continue to be enforceable till the Employer discharges his guarantee.

EMPLOYER shall have the fullest liberty without affecting in any way the liability of the Bank under this guarantee from time to time to extend the time for performance of the CONTRACT by CONTRACTOR. Employer shall have the fullest liberty, without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or any right which they might have against Contractor, and to exercise the same at any time in any manner, and other to enforce or to forebear to enforce any covenants, contained or implied, in the CONTRACT between EMPLOYER and CONTRACTOR or any other course of remedy or security available to EMPLOYER . The Bank shall not be released of its obligations under these presents by any

exercise by EMPLOYER of its liberty with reference to the matters aforesaid or any of them or by reason or any other acts of omission or commission on the part of employer or any other indulgence shown by EMPLOYER or by any other matter or thing whatsoever which under Law would, but for this provision, have the effect of reliving the bank.

The Bank also agreed that EMPLOYER at its option shall be entitled to enforce this Guarantee against the Bank as principal debtor, in the first instance without proceeding against CONTRACTOR and notwithstanding any security or other guarantee that EMPLOYER may have in relation to the CONTRACTOR'S liabilities.

Notwithstanding anything contained herein above our liability under this guarantee is restricted to Rs (rupees only) and it shall remain in force up to and including and shall be extended from time to time for such period , on whose behalf this guarantee has been given.

Dated, this ..... day of .....2010 ..... at .....

#### WITNESSES

-----  
(Signature)

-----  
(Signature)

-----  
(Name)

-----  
(Name)

-----  
(Official address)

-----  
(Designation with Bank Stamp)  
+ Attorney as per power of Attorney No.

Dated .....



## **Integrity Pact**

Between

**Kolkata Port Trust (KoPT)** 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 compliances 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 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 Port 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.

**8.a) The Name and Correspondence Particulars of Independent External Monitors:**

a) Shri Subhashish Sarkar,  
Flat No. 406, Block-III,  
Kirti Apartments,  
Mayur Vihar Phase-I Extension,  
Delhi-110 091,  
Mob No. 98117 07230,  
E-mail : subhashishsarkar53@yahoo(dot)com  
b) Ms. Bulbul Sen, IRS (Retd.),  
B-104 Nayantara Apts.  
Block 8B, Sec - 7  
Dwarka  
New Delhi-110075  
E-mail ID – bsensarkar@gmail(dot)com

**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, KoPT.

**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.

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(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) .....

.....

.....

**ANNEXURE-A****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 KoPT 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 KoPT.
  - 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 KoPT 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 KoPT 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 KoPT. Besides this there would be a penalty of banning business dealings with KoPT or damage or payment of a named sum.