



भारतीय मानक ब्यूरो

9, बहादुर शाह जफर मार्ग, नई दिल्ली 110002-

BUREAU OF INDIAN STANDARDS

**9, Bahadur Shah Zafar Marg,
New Delhi-110002**

ई निविदा दस्तावेज़

E-Tender Document for

**20/9, साइट – IV, औद्योगिक, क्षेत्र, साहिबाबाद, गाज़ियाबाद
(केमिकल ब्लॉक का भूतल) में सिविल इलेक्ट्रिकल प्लम्बींग कार्य (भवन में रेनोवेशन कार्य)**

**CIVIL / ELECTRICAL / PLUMBING WORK AT 20/9, SITE – IV, INDUSTRIAL AREA, SAHIBABAD,
GHAZIABAD OF BIS (Ground Floor of Chemical Block)**

(www.bis.gov.in और <https://eprocure.gov.in> से नि: शुल्क डाउनलोड के लिए उपलब्ध)

(Available for download free of cost from www.bis.gov.in and <https://eprocure.gov.in>)

Tender Reference Number: PM/B/61/T1

Tender Ref No. **PM/B/61/T1**

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Section-1: NOTICE INVITING E-TENDER

Bureau of Indian Standards (BIS)
9, Bahadur Shah Zafar Marg
New Delhi-110002

1. The Bureau of Indian Standards (hereinafter referred to as the Bureau or BIS) invites online bids under Two Bid System viz. Technical Bid and Financial Bid through **Central Public Procurement Portal (eprocure.gov.in)** from eligible bidders for **Civil/ Electrical / Plumbing Renovation Works at 20/9, Site – IV, Industrial Area, Sahibabad, Ghaziabad (U.P.) building of BIS (Ground Floor of Chemical Block)**. Bids submitted by any other mode (fax/post/email etc.) shall not be accepted.

Location	Schedule of Requirement	Quantity	Approximate Cost	Earnest Money Deposit (EMD)
20/9, Site – IV, Industrial Area, Sahibabad, Ghaziabad building of BIS (Ground Floor of Chemical Block)	Civil/ Electrical / Plumbing Renovation works at 20/9, Site – IV, Industrial Area, Sahibabad, Ghaziabad building of BIS (Ground Floor of Chemical Block)	As per BOQ	Rs. 34,24,625/- (Rupees Thirty four lakhs twenty four thousand six hundred and twenty five Only)	Rs. 68,500/- (Rupees Sixty Eight thousand and Five Hundred only @ 2%)

NOTE: Earnest Money: The bidder should submit DD/FDR/BG for Rs. 68,500/- for the above EMD (See Clause 6/Sec 2). The EMD scanned copy has to be submitted off line to **Head, BIS Central Laboratory, Bureau of Indian Standards, 20/9, Site – IV, Industrial Area, Sahibabad, Ghaziabad-201010** before **1000 h on 20 June 2018** and scanned copy of DD to be uploaded online before with the bid documents within the dates mentioned in CRITICAL DATE SHEET below.

Publish Date	<i>30 May 2018 (0900 h)</i>
Bid Document Download / Sale Start Date	<i>30 May 2018 (0900 h)</i>
Pre bid meeting	<i>12 June 2018 (1100 h)</i>
Bid Submission Start Date	<i>30 May 2018 (0900 h)</i>
Bid Document Download / Sale End Date	<i>20 June 2018 (1000 h)</i>
Bid Submission End Date	<i>20 June 2018 (1000 h)</i>
Technical Bid Opening Date	<i>22 June 2018 (1100 h)</i>

Head, PMW Department (pmwd@bis.gov.in)

SECTION – II: पात्रता शर्तें/ELIGIBILITY CONDITIONS

1. Eligible Bidder:

- (i) Should be a company which has been incorporated/in existence for a minimum period of **5 years** and has a permanent establishment in **Delhi/NCR** (copies of certificate of incorporation and proof of address to be submitted).
- (ii) Average Annual financial turnover during the last 3 years, ending 31st March of the previous financial year, should be **at least Rs 11 Lakhs**. (Copies of audited balance sheet and PL Statement certified by Chartered Accountant to be submitted)
- (iii) Should have successfully executed building interior works for a government department/organization **during past 3 years (between 2015 and 2018)** with following criteria:
 - a) **Three works of minimum value Rs 14 Lakhs each, or**
 - b) **Two works of minimum value Rs 18 Lakhs each, or**
 - c) **One works of minimum value Rs 28 Lakhs**

(Copy of satisfactory completion certificates issued by the client clearly indicating value of work to be submitted)

“Building interior work” means Civil/Electrical/Plumbing work
- (iv) **Should Not have been black listed** by the Departments/ Ministries of the Government of India/ State Government/ Public Sector Undertakings (Declaration has to be submitted in the specified format).
- (v) **Should have valid registration with CPWD as Class II contractor** or above and also have valid **GST registration, PAN Card, ESI and EPF registration** (copies of supporting documents should be enclosed)

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SECTION III- आवेदकों को निर्देश/Instructions to Applicants

1. E-tenders are invited *under two bid system (Technical bid and financial bid)*, by the Bureau of Indian Standards (BIS), from eligible Bidders for **Civil/ Electrical/ Plumbing Renovation Works 20/9, Site – IV, Industrial Area, Sahibabad, Ghaziabad building of BIS (Ground Floor of chemical block)**
2. **Issue of Tender Document:**
 - a. The Tender document will be available during the period indicated in the **Critical Date Sheet (Section I)**, on the web site of the Bureau (www.bis.gov.in) **(for reference only)** and Central Public Procurement Portal (<http://eprocure.gov.in>).
 - b. **Bid has to be submitted only online at <http://eprocure.gov.in/eprocure/app> in two bid systems i.e. (i) technical bid and (ii) financial bid in the prescribed proforma (see clause 9 for manner of submission of bid)**
 - c. Aspiring Bidders who have not enrolled/registered in e-procurement should enroll/ register before participating in the tender through the website <http://eprocure.gov.in/eprocure/app>. The portal enrolment is free of cost.
 - d. The Bidder shall bear all costs associated with the preparation and submission of its bid.
 - e. The Bureau shall, in no case, be responsible or liable for these costs, regardless of the conduct or the outcome of the Bidding process.
3. **Language of Bid/Contract:** The language of the Bid shall be in English/ Hindi and all correspondence, etc. shall conform to the English/ Hindi language.
4. **Pre-bid Meeting:**
 - a. A Pre-bid meeting of all intending Bidders will be held at **Room no. 453, Project Management and Works Department (PMWD), Manakalaya, 9, Bahadur Shah Zafar Marg, New Delhi** on the scheduled date and time indicated in the **Critical Date Sheet (Section I)**. Intended Bidders will be allowed to seek clarification, if any through online between specified clarification date & time.
 - b. Intending bidders are advised to visit the site of work before quoting so as to be familiar with the site conditions. The contact person at site will be Sh. Ritesh Barnwal, Assistant Director (A & F). No extra charges would be payable due to additional cost involved for adverse site conditions (if any).
5. **Validity of Bids:**

The Bids will be valid for a period indicated in **Annexure 7** from the date of its opening.
6. **Earnest Money/ Bid Security:**
 - a. The Bidder shall deposit with the Bureau as sum indicated in the **Annexure 7**, as an interest

free Earnest Money Deposit (EMD). The Earnest Money shall be deposited in the form of Demand Draft (DD)/Fixed Deposit Receipt (FDR)/Bank Guarantee from Commercial Bank (BG) in favor of **Bureau of Indian Standards payable at Ghaziabad**. Scanned copy of EMD to be uploaded online at the time of online submission of tender documents and original EMD is to be submitted to the **Head, BIS Central Laboratory, Bureau of Indian Standards, 20/9, Site – IV, Industrial Area, Sahibabad, Ghaziabad-201010** within the deadline mentioned in **Section I**. Bidders are requested to write their name and full address at the back of the Bank Draft submitted.

- b. The failure or omission to deposit the Earnest Money shall disqualify the Bid and the Bureau shall exclude from its consideration such disqualified Bid(s).
- c. Bidder shall be liable for legal action for non-submission of original EMD against the submitted bid.
- d. Bidder shall not revoke his Bid or vary its terms and conditions without the consent of the Bureau during the validity period of the Bid. If the bidder revokes the bid or varies its terms or conditions, the Earnest Money deposited by it shall stand forfeited to the Bureau without prejudice to its other rights and remedies and the Bidder shall be disentitled to submit a Bid to the Bureau for supply of works during the next twenty-four (24) months effective from the date of such revocation.
- e. If the successful Bidder fails to furnish the performance security or fails to sign the agreement, its Earnest Money Deposit will be forfeited by the Bureau.
- f. The Earnest Money of all Bidders shall be refunded on the request of bidder after the successful Bidder furnishes the required Performance Security to the Bureau and signs the contract or within thirty (30) days of the expiry of validity period of Bids, whichever is earlier.

7. Eligible Bidders

- a. Only those Bidders, who fulfill the eligibility criteria as mentioned in the **Section II**, are eligible to submit their Bids.

8. Rates how to be quoted

- a. The bidders are expected to work out his rates keeping in view the site conditions and arrive at the amount to be quoted. The Bidder shall be deemed to have satisfied itself before Bidding as to the correctness and sufficiency of its Bid and of the rates and prices quoted in their bid, which rates and prices shall, except as otherwise provided, cover all its obligations under the contract and all matters and things necessary for proper fulfilling his obligations under the contract.
- b. The price quoted shall be **exclusive** of applicable taxes. The taxes as may be levied by the Government from time to time shall be charged by the contractor in addition to the rates quoted in the bid by the contractor.
- c. **The prices are to be quoted by bidders in the BOQ template in the form of an .xls document.** This BOQ template is provided as BoQ_XXXX.xls along with this tender document at <https://eprocure.gov.in/eprocure/app>. Bidders are advised to download this BoQ_XXXX.xls as it is and quote their offer/rates in the permitted column and upload the same in the commercial bid. **Bidder shall not tamper/modify downloaded price bid template in any manner.** In case if the same is found to be tempered/modified in any manner, tender will be

completely rejected and EMD would be forfeited and Bidder is liable to be banned from doing business with BIS

- d. **In case different rates are quoted by the bidder for identical items of work, the lower rates shall be considered for determining L1 bid, award of work and payment.**
- e. **Wherever “basic rates” for an item of work have been indicated in the BOQ, bidder shall not quote below the basic rate.**
- f. The rates shall be quoted in Indian Rupee (INR) only. In case of any discrepancy/difference in the amounts indicated in figures and words the amount in words will prevail and will be considered.
- g. **The rate quoted shall be firm throughout the tenure of the contract (including extension of time, if any, granted)** and will not be subject to any fluctuation due to increase in cost of material, labor, octroi or any other levy etc., unless specifically provided in these documents.
- h. The terms price bid, financial bid and commercial bid have been used interchangeably in this tender document. They shall be taken to mean the same thing wherever they appear in this tender document.

9. Manner of Submission of Bid

- a. Bids shall be submitted online only at CPPP website: <https://eprocure.gov.in/eprocure/app>.
- b. Bidders are advised to follow the instructions provided in the ‘Instructions to the Contractors/Bidder for the e-submission of the bids online through the Central Public Procurement Portal for e-Procurement at <https://eprocure.gov.in/eprocure/app>’. A set of instructions for online bid submission is also given in **Annexure 11** for reference.
- c. Bid documents may be scanned with minimum 100 dpi with black and white option which helps in reducing size of the scanned document.
- d. Bidders may also refer the instructions at **Clause 8** regarding rates how to be quoted i.e. price bids
- e. The documents comprising the technical bid and the price bid are given in **Clause 12**.
- f. Bidder who has downloaded the tender from the BIS website <http://bis.gov.in> and Central Public Procurement Portal (CPPP) website <https://eprocure.gov.in/eprocure/app> shall not tamper/modify the tender form including downloaded price bid template in any manner. In case if the same is found to be tempered/modified in any manner, tender will be completely rejected and EMD would be forfeited and Bidder is liable to be banned from doing business with BIS.

10. Clarifications of bids

To assist evaluation and comparison of the bids, the Bureau may at its discretion ask the bidder for clarification of the bid. The clarification will be asked in writing online through the e-procurement portal. The clarification and response from bidder shall also be online through the e-procurement portal (<https://eprocure.gov.in/eprocure/app>)

11. Last Date for Submission

Bids shall be received as per schedule specified in **Section I (Notice Inviting Tender)** not later than the time and date specified in **Annexure 7**. Bids received after the specified date and time for receipt of bids shall not be considered. Hence, such bids shall be rejected.

12. Contents of Bid Document

The tender shall be submitted online in two parts, viz., technical bid and price bid. All the pages of bid being submitted must be sequentially numbered by the bidder irrespective of nature of content of the documents before uploading. **The bids submitted by hand/ Post/ Telegram/ Fax/ email shall not be considered.** No correspondence will be entertained in this matter.

12.1 Technical Bid: The following documents are to be uploaded in PDF Format by the Contractor as the **Technical Bid** as per the tender document:

- a. Scanned copy of Check-List of all the documents (as per format at **Annexure 10**);
- b. Scanned copy of EMD as indicated in **Clause 6** above. (Scanned copy to be uploaded and original to be submitted physically within date mentioned at **Section I**)
- c. Scanned copy Details of the firm(s) and scanned copies of following supporting documents (**As per Annexure-2**)
 - i) Proof of address
 - ii) Certificate of incorporation
 - iii) Balance sheet and PL Statements of previous 3 years certified by Chartered Accountant
 - iv) Scanned copy of registration certificate with CPWD as Class II Contractor or above, PAN Card, GST, ESI, EPF registration certificate
- d. Scanned copy of details of building interior works executed during past 3 years for government department/organization with scanned copies of completion certificate clearly indicating value of work issued by client (**As per Annexure-3**);
- e. Scanned copies of declarations regarding black-listing and/or litigations (**As per Annexure-4**), and Website Downloaded & Non-tampered Tender Document (**As per Annexure 5**) and Tender Acceptance Letter (**As per Annexure 6**)

12.2 Financial Bid: The following are to be furnished by the Contractor as the **Financial Bid** as per the tender document:

- a. Price bid in the form of **BOQ template** BOQ_XXXX.xls available along with this tender document on CPPP website <https://eprocure.gov.in/eprocure/app> (Please see clause 8 above

for manner of quoting rates). Bidders are advised to download this BoQ_XXXX.xls as it is and quote their offer/rates in the permitted column and upload the same in the commercial bid. **The BOQ is also given in Appendix 2, Section 6 for reference only.**

13. Corrupt or Fraudulent Practices

13.1 The Bureau requires that the Bidders under this Bid observe the highest standards of ethics during the procurement and execution of such Contracts. Accordingly, the Bureau defines the terms set for that as follows:

- a. “corrupt practice” means the offering, giving, receiving or soliciting of anything of value to influence the action of the public official in the procurement process or in contract execution; and
- b. “Fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or an execution of a contract to the detriment of the Bureau, and includes collusive practice among Bidders (prior to or after Bid submission) designed to establish Contract amounts at artificial non-competitive levels and to deprive the Bureau of the benefits of the free and open competition.

13.2. The Bureau shall reject a proposal for award, if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the Contract in question; The Bureau shall deem affirm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged incorrupt and fraudulent practices in competing for, or in executing, a contract.

14. Modification and Withdrawal of Offer:

Bidder can modify the bid online before bid submission date and time. Once bid is withdrawn by the bidder then he will not be able to submit the bid again.

15. Opening of Bid

The Bid received before the time and date specified in Tender Notice, will be opened as per the specified program in the office as mentioned in the **Annexure 7** (if possible), in the presence of Bidders or their authorized representatives who choose to remain present on the opening day, at the scheduled time.

16. Short-listing of Bidders

The Bureau will short-list technically qualifying Bidders and Financial Bids of only those Bidders, who qualify in technical bids, will be opened at a date and time to be intimated.

17. Opening of Financial Bids

The Bureau shall open financial bids of technically qualified bidders, on notified date, and the total amounts quoted by the bidder in Bill of Quantities shall then be read out.

18. Acceptance of Bid

Acceptance of Bid shall be done by the Competent Authority of the Bureau. The Bureau is not

bound to accept the lowest or any Bid. The Bureau reserves the right to reject any or all Bids received without assigning any reason whatsoever. The acceptance of Bid will be communicated to the successful Bidder in writing by the authorized officer of the Bureau.

19. Issue Of Letter Of Intent

The issue of Letter of Intent shall constitute the intention of the Bureau to place the Order with the successful bidder. The bidder shall within 15 days of issue of Letter of Intent give its acceptance along with **Performance Security (PI refer Clause 3, Section 4)** in conformity with the bid documents.

20. Cancellation Of Letter Of Intent

Failure of the successful bidder to comply with the requirement of submission of Performance Guarantee in time shall constitute sufficient ground for the cancellation of the acceptance of bid and forfeiture of the EMD, in which case The Bureau may make the offer to any other bidder at the discretion of the Bureau or call for new bids.

21. Post Bid Clarifications

No post bid clarification at the initiative of the bidders shall be entertained and any effort by the bidders to influence the Bureau in the bid evaluation, bid comparison or award of the contract shall result in rejection of the bid.

22. Process to be Confidential

Information relating to the examination, evaluation and comparison of Bids and the award of a Contract shall not be disclosed to Bidders or any other person not officially concerned with such process until the award to the successful Bidder has been announced.

23. Execution of Contract Document and Issue of Work Order

- a. The successful Bidder after deposit of Performance Security, is required to execute an Agreement in duplicate in the form attached (**Annexure 8**) with the Bid Documents on a stamp paper of proper value (the proper value at present is **Rs.100.00/-**). The Agreement should be signed within **7 days** from the date of issue of performance security. The Contract will be governed by the Agreement, the Conditions of the Contract (CoC) and other documents as specified in the CoC (**Section 4**).
- b. It shall be incumbent on the successful Bidder to pay stamp duty, legal and charges for the Agreement, as applicable on the date of the execution.
- c. **A Work Order** shall be issued to the Contractor on execution of contract agreement. The commencement date and time for completion will be reckoned from the date of the Work Order.

24. Rights of the Bureau

- a. The Bureau reserves the right to suitably increase/ reduce the scope of work. The right to split up works in two or more parts is reserved by the Bureau and also the right to award contract to more than one agency is reserved.

- b. In case of any ambiguity in the interpretation of any of the clauses in Tender Document or the conditions of the Contract, interpretation of the clauses by the Bureau shall be final and binding on all Parties.

25. Amendment to bid documents

At any time, prior to the date of submission of bids, the Bureau may for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bid documents by amendments. The amendments/Corrigendum will be notified on the Bureau's Website and these amendments will be binding on them. Bidders are advised to visit again BIS website <http://bis.gov.in/> and CPPP website <https://eprocure.gov.in/eprocure/app> at least 3 days prior to closing date of submission of tender for any corrigendum / addendum/ amendment.

26. Notice to form Part of Contract

Tender Notice and these instructions shall form part of the Contract. The Bidder shall submit the Bid which satisfies each and every condition laid down in this tender document, failing which the Bid shall be liable to be rejected. **Conditional Bids will be rejected.**

All bidders are expected to visit and inspect site conditions further to which only they should quote their best prices. For any clarifications **PI contact: Head, PMW Deptt. BIS, Manakalaya, New Delhi (pmwd@bis.gov.in)**.

Section 4: CONDITIONS OF CONTRACT

1 DEFINITIONS:

- i) **“Act of Insolvency”** shall mean any act of insolvency as defined by the Presidency Towns insolvency Act or the provincial Act or any amending Statute.
- ii) **‘Annexure’** referred to in these conditions shall mean the relevant annexure appended to the Tender Document and the Contract.
- iii) **‘Approved’** shall mean approved in writing including subsequent confirmation of previous verbal approval and **“Approval”** shall mean approval in writing including as aforesaid.
- iv) **‘Bid’** means the Contractor’s priced offer to the Bureau for the supply of the Works at the specified places and remedying of any defects therein in accordance with the provision of the Contract, the installation and services as accepted by the Letter of Acceptance.
- v) **“Bidder”** shall mean the construction company/agency who quotes against the tender enquiry for undertaking the work.
- vi) **“Bill of Quantities”** means the priced and completed Bill of Quantities forming part of the Bid.
- vii) **‘Bureau’** shall mean Bureau of Indian Standards established under the Bureau of Indian Standards Act, 1986.
- viii) **‘Commencement Date’** means the date on which the work is started on the site (Within 15 days from issue of work order)
- ix) **‘Competent Authority’** shall mean any officer authorized by the Bureau to act on behalf of the Bureau under this contract.
- x) The **“Completion Date”** is the date of completion of the Works as certified by the Bureau.
- xi) **“Consultant”** , shall mean Sh. Manish Gupta, and his (their) heirs, legal representatives, assigns and successors.
- ii) **‘Contract’** shall mean and include the Tender Notice, instructions to bidders, terms and conditions of contract, Letter of Acceptance, the Offer, the Agreement and mutually accepted conditions in the authorized correspondence exchanged with the bidder by the Bureau and any other document forming part of the contract.
- iii) **“Contractor”** shall mean the successful bidder whose tender has been accepted by the Bureau and to whom the order is placed by the Bureau and shall include his heirs, legal representatives, successors etc.
- iv) The **“Contractor’s Bid”** is the completed Bidding documents submitted by the Contractor to the Bureau.
- v) **‘Contract Amount’** shall mean the sum quoted by the Contractor in his bid and accepted by the Bureau.
- vi) A **“Defect”** is any part of the Works not completed in accordance with the Contract.
- vii) The **“Defect Liability Period”** is the 12 months period from the date of virtual completion of the work.
- viii) **‘Director General’** shall mean the Director General of the Bureau, for the time being holding that office and also his successor and shall include any officer authorized by him.

- ix) **“Equipment”** is the Contractor’s machinery and vehicles brought temporarily to the Site to construct the Works as well as the equipment already available on the site.
- x) **‘Government’** shall mean the Central Government.
- xi) **‘Letter of Acceptance’** means the formal acceptance by the Bureau.
- xii) **“Material”** are all supplies, including consumables, used by the contractor for incorporation in the Works.
- xiii) **“Months”** are calendar months and **“Days”** are calendar days
- xiv) **“Notice in writing”** or written notice shall mean a notice in written, typed or printed characters sent (unless delivered personally) or otherwise proved to have been received) by registered post to the last known private or business address or registered office of the addressee and shall be deemed to have been received when in the ordinary course of post it would have been delivered.
- xv) **“Plant”** is any integral part of the Works, which is to have mechanical, electrical, electronic, or chemical or biological function.
- xvi) **“Site”** shall mean the site of the contract works as shown bounded red on the site plan attached hereto including any buildings and erections thereon and any other land adjoining thereto inclusively as aforesaid allotted by the Bureaus authorized representative for the “Contractor’s use.
- xvii) **‘Specification’** means the specification referred to in the tender. In case where no particular specification is given, the relevant specification of the Bureau, where one exists, shall apply.
- xviii) **“Temporary Works”** are works designed, constructed, installed and removed by the Contractor which are needed for construction or installation of the Works.
- xix) **‘Tender’** means formal invitation by the Bureau to the prospective bidders to offer fixed price for supply of Works.
- xx) **‘Time for Completion’** means the time for completing the works(including passing of tests) or any part thereof as stated in the Contract calculated from the Commencement Date (As per work order).
- xxi) The **“Trained Work Person”** are those employed / proposed to be employed by the Contractor at the Project Site, who have participated and are in possession of a valid Competency Certificate through a program run under the auspices of a University, State Technical Board, Ministry of Government of India.
- xxii) A **“Variation”** is an instruction given by the Bureau/Consultant, which varies the Works.
- xxiii) **“Virtual/Provisional Completion”** shall mean that the work is completed as per requirements as certified by the Consultant and accepted by the Bureau.
- xxiv) **‘Works’** shall mean the items to be executed for the Bureau by the Contractor as stated in the Contract and shall include installation and other services that are prescribed in the Tender document.

2. PARTIES TO THE CONTRACT

The parties to the contract shall be the Contractor, whose offer is accepted by the Bureau; and the Bureau.

The person signing the offer or any other document forming the part of Contract on behalf

of other persons of a firm shall be deemed to have due authority to bind such person/s or the firm as the case may be, in all matters pertaining to the Contract. If it is found that the person concerned has no such authority, the Bureau may, without prejudice to any other Civil/Criminal remedies, terminate the Contract and hold the signatory and/or the firm liable for all costs and damages for such termination.

3. Performance Security

- a. To ensure due performance of the contract, an interest-free Performance Security, @ 5% of the total tender amount **i.e. Rs 1,71,300/- Only** has to be deposited by the contractor in the form of Bank Guarantee from scheduled bank in favor of 'Bureau of Indian Standards' payable at 'Ghaziabad' as per proforma as indicated in **Annexure 1**. The performance security has to be deposited by the contractor within **15 days** of date of issue of letter of intent conveying the decision of The Bureau to award the work to the contractor, failing which the award of work would be liable for cancellation and EMD will be forfeited.
- b. **The Performance Security shall be valid up to at least 3 months beyond the contract validity period including defect liability period and shall be retained until all disputes, if any, between both the parties have been settled to the entire satisfaction of the Bureau.** In case it is decided to extend the validity of the contract beyond the initial contract period, the contractor shall, within **fifteen (15) days** of extension of contract validity by the Bureau, get the bank guarantee extended up to at least 3 months beyond the extended contract validity period.
- c. Any amount due/recoverable from the Contractor under the terms of this Contractor any other account, may be deducted from the amount of Performance Security. In case, the amount of Performance Security is reduced by reason of any such deduction, the Contractor shall, within **fifteen (15) days** of receipt of notice of demand from the Bureau, make good the deficit. In case, security is deposited by way of bank guarantee by the Contractor, then any penalty for damages liquidated or un-liquidated or for any breach or failure or determination of Contract, not previously paid to the Bureau, shall immediately on demand be paid by the said bankers to Bureau under and in terms of the said guarantee.
- d. If during the term of this Contract, the Contractor is in default of the due and faithful performance of its obligations under this Contract, or any other outstanding dues by the way of fines, penalties and recovery of any other amounts due from the Contractor, the Bureau shall, without prejudice to its other rights and remedies here under or at the Applicable Law, be entitled to call in, retain and appropriate the Performance Security.
- e. Nothing herein mentioned shall debar the Bureau from recovering from Contractor by a suit or any other means any such losses, damages, costs, charges and expenses as aforesaid, in case the same shall exceed the amount of the Performance Security.

- f. The performance security along with 5% retention money shall be released by the Bureau after satisfactory completion of defect liability period i.e. after 12 months of date of virtual/provisional completion of the work.

4. **CONTRACT DOCUMENTS:**

The several Contract documents forming the Contract shall be taken as mutually explained to one party by the other, but in case of ambiguities or discrepancies the same shall be explained and harmonized by the Competent Authority of the Bureau who shall issue to the Contractor necessary instruction thereon and in such event unless otherwise provided in the Contract the priority of the documents forming the contract shall be as follows:

- i) The Agreement
- ii) Minutes of pre-bid meetings, clarifications
- iii) The Conditions of Contract
- iv) Tender Notice and Tender Document
- v) Letter of Acceptance.
- vi) Any other correspondence exchanged between the parties in connection with the contract.
- vii) The Contractor's Bid

5. **Quality of Works**

All works by the Contractor shall be in conformity with the specifications laid down in the relevant latest CPWD specifications and as per technical specifications (Enclosed at **Appendix 1**), bill of quantities laid down in this tender document. In case CPWD specifications and technical specifications specified in this contract are different, or if specification is not available, the Consultant shall submit a proposal with justification for the specification to be adopted, to the Bureau for approval. Decision of the Bureau in this regard shall be final. If desired by the Bureau/Consultant, the Contractor shall furnish proof to the satisfaction of the Bureau/Consultant that the works so comply.

6. **Inspection**

The contractor shall provide an inspection report/ certificate that the materials/ installations confirm to all specification contained in the Contract. The Consultant/ Bureau will carry out inspection of the works to confirm their conformity to the Contract specification/quality.

The Competent Authority shall be entitled at any time to inspect and examine any works intended to be executed or materials intended to be used/ installed either at the factory, godown or at any place(s) where these are lying or from which these are being obtained and the Contractor shall give such facilities as may be required for such inspection and examination.

The Competent Authority shall have full powers to require removal of any or all of the works executed/ installed by the Contractor which are not in accordance with the contract

specifications or which do not conform in character or quality to the samples approved by the Bureau. In case of default on the part of the Contractor in removing the rejected materials/ installations, the Competent Authority of the Bureau shall be at liberty to have them removed by other means. The Competent Authority shall have full powers to procure other proper materials/ installations to be substituted for rejected materials/ installations and in the event of the Contractor refusing to comply, he may cause the same to be executed by other means. All costs, which may attend upon such removal and/ or substitution, shall be borne by the Contractor.

7. Warranty

The Contractor shall be fully responsible for replacement/ rectification of defective works at the time of delivery/ operation and for those works covered under defect liability period, the contractor shall be responsible during the period of such warranty.

8. Time for Completion and Damages for delay

The Contractor has to commence work within 15 days of receipt of the work order and complete the different parts of the work within the schedule given below:

The total time of completion is 60 days from the date of award of work.

Should the work not be completed to the satisfaction of the Bureau within the stipulated period, the contractor shall be bound to pay to the Bureau a sum calculated at the rate of **1% of the contract amount** per week delay subject to a ceiling of **10% of the contract amount** by way of liquidated damages and not as penalty, during which time the work remains un commenced or unfinished after the expiry of the completion date.

9. Risk purchase

In case the Contractor fails to execute the works, the Bureau reserves the right to get it executed from alternate sources at the risk, cost and responsibility of the Contractor.

10. Imposition of fines/ penalty

Suitable fine (to be determined by Competent Authority of the Bureau) will be imposed in case of unsatisfactory quality of work or any damage done to The Bureau's property during the course of work.

11. Indemnity:

The Contractor shall indemnify and keep indemnified the Bureau against all losses and claims for injuries or damage to any person or any property whatsoever which may arise out of or in consequence of the Contract and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation there to under the provisions of various labor laws as amended from time to time.

The Contractor shall indemnify, protect and save the Bureau against all claims, losses, costs

damages, expenses, action suits and other proceeding, resulting from infringement of any patent, marks, copy rights etc., such other statutory infringements.

12. Termination of Contract

The Bureau shall be at liberty at any time to terminate this Contract on giving 24 hours' notice in writing the Contractor for breach of any of the terms and conditions of this Contract for poor quality of the Works, insufficient service or misconduct of the Contractor as to which the decision of the Bureau shall be final and the Contractor shall not be entitled to any change or compensation by reason thereof.

An event of default on the part of the Contractor, which results from the Contractor being unable to fulfill its Service obligations under the Contract, shall be deemed as a serious default, and is said to have occurred due to any of the following causes:

- (a) In the opinion of the Bureau, the Contractor has repudiated the Contract,
- (b) Without reasonable excuse has failed to commence supply of Works or Services in accordance with this Contract, or failed to complete the supply the Works or provide Services within the time stipulated for completion;
- (c) Despite previous warning from the Bureau, in writing, or otherwise persistently or flagrantly neglecting to comply with any of its obligations under the Contract;
- (d) Serious discrepancy in the quality of the Works is noticed during the inspection.
- (e) Delays in delivery and installation beyond a period of 60 days from the scheduled date of delivery/ Installation.
- (f) If the Contractor is in breach of any law or statute governing the supply of Works/ Services;
- (g) The Contractor, in the judgment of the Bureau, has engaged in corrupt or fraudulent practices in competing for or in carrying out the Services under the Contract.
- (h) The Contractor enters into voluntary or involuntary bankruptcy, or liquidation;
- (i) The Contractor becomes insolvent;
- (j) A receiver, administrator, trustee or liquidator is appointed over any substantial part of its assets;
- (k) Any act is done or event occurs with respect to the Contractor or its assets, which, under any applicable law has substantially similar effect to any of the foregoing acts or events;
- (l) The Contractor (in case of a consortium) has modified the composition of the consortium and/ or the responsibility of each member of the consortium without prior approval of the Bureau.

It shall also be lawful for the Bureau to terminate the Agreement at any time if the contract is not being performed as per terms and conditions of the agreement and without being liable for loss or damage which the Contractor may suffer by reason of such termination, by giving the Contractor 15 days' notice in writing by the Bureau for such termination. Any such termination shall be without prejudice to any other right of the Bureau under the Contract.

13. Force Majeure Clause:

If at any time during the continuance of this Contract, the performance in whole or in part by either party of any obligation under this contract shall be prevented or delayed by the reasons of any war, hostility, acts of the public enemy, epidemics, civil commotion, sabotage, fires, floods, explosion, quarantine restrictions, strikes, lockouts or act of God (hereinafter referred to as such acts) provided notice of happening of such event is given by one party to the other within 21 days from the date of occurrence thereof, neither party shall be by reasons of such event, been titled to terminate this contract nor shall either party have any claim for damages against the other in respect of such non-performance or the delay in performance, and deliveries under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, and the decision of the Director General of the Bureau as to whether the deliveries have been so resumed or not, shall be final and conclusive, PROVIDED FURTHER that if the performance in whole or part of any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding 60 days, either party may at its option terminate the contract provided also that the Bureau shall be at liberty to take over from the Contractor at a price to be fixed by Director General, which shall be final, all unused, undamaged and accepted material, bought out components and stores in course of manufacture in the possession of the contractor at the time of such termination or such portion thereof as the Bureau may deem fit excepting such materials, bought out components and stores as the contractor may with the concurrence of the Bureau elect to retain.

14. Confidentiality

The Contractor shall not divulge or disclose proprietary knowledge obtained while delivering Works and services under this Contract to any person, without the prior written consent of the Bureau.

15. Publicity

Any publicity by the Contractor in which the name of the Bureau is to be used, should be done only with the explicit written permission of the Bureau.

16. Disputes & Arbitration

The Bureau and the Contractor shall make every effort to resolve amicably by direct informal negotiation, any disagreement or dispute arising between them under or in connection with the contract.

If a dispute(s) of any kind whatsoever that cannot be resolved the same shall be referred to the Arbitrator, appointed by the Director General of the Bureau. The provisions of the Indian Arbitration and Conciliation Act, 1996 shall apply.

17. Mode of serving Notice

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

All notices shall be issued by the authorized officer of the Bureau unless otherwise provided in the Contract. In case, the notice is sent by registered post to the last known place or abode or business of the Contractor, it shall be deemed to have been served on the date when in the ordinary course of post these would have been served on or delivered to it.

18. Governing language

Governing language for the entire contract and communication there of shall be English only.

19. Law:

The contract shall be governed and interpreted under Indian Laws.

20. Legal Jurisdiction

No suitor other proceedings relating to performance or breach of Contract shall be filed or taken by the Contractor in any Court of law except the competent Courts having jurisdiction within the local limits of Delhi only.

21. Stamp duty:

The Contractor shall bear and pay any stamp duty and registration charges in respect of the Contract.

22. Scope of Work

- a) The scope of the works includes civil/ electrical/ plumbing renovation at 20/9, Site – IV, Industrial Area, Sahibabad, Ghaziabad building of BIS (Ground Floor of Chemical Block) as per technical specifications and bill of quantities at **Appendices 1 to 2**.
- b) The Contractor shall carry out and complete the works in every respect in accordance with this contract, read with this tender document, and in accordance with the directions and to the satisfaction of the Bureau/ Consultant. The Bureau/ Consultant may in their absolute discretion from time to time issue further drawings and or written instructions, details, directions and explanations which are hereafter collectively referred to as “The Bureau/ Consultant instructions” in regards to: -
 - i) The variation or modification of the design, quality or quantity of works or the additions or omissions or substitution of any work.
 - ii) Any discrepancy in the drawings or between the Schedule of Quantities and or Drawings and or specifications.
 - iii) The removal from the site of any materials brought thereon by the Contractor and the substitution of other materials therefore.
 - iv) The removal and/or re-execution of any works executed by the Contractor.
 - v) The dismissal from the works of any persons thereupon
 - vi) The opening up for inspection of any work covered up.
 - vii) The amending and making good of any defects.
- c) The Contractor shall forthwith comply with and duly execute any work comprised in such instructions provided always that verbal instructions, and directions explanations given to the

Contractor or his foremen upon the works by the Bureau/ Consultant shall if involving a variation be confirmed in writing by the Contractor within seven days and not dissented from in writing within a further period of seven days by the Bureau/ Consultant. Such shall be deemed to be Bureau/ Consultant Instructions within the scope of Contract.

23. Drawings and Schedule of quantities.

One complete set of the Drawings and Specifications and schedule of Quantities shall be furnished by the Bureau/ Consultant to the Contractor, and the Bureau/ Consultant shall furnish, within such time as they may consider reasonable one copy of any additional; drawings which in their opinion may be necessary for the execution of any part of the work. Such copies shall be kept on the site of works by contractor and the Bureau/ Consultant shall at all reasonable times have access to the same and they shall be returned to the Bureau/ Consultant after completion of the work.

24. Contractor to provide everything necessary.

- a) The Contractor shall provide everything necessary for the proper Execution of the work according to the intent and meaning of the Drawings. Priced Schedule of Quantities and Specification taken together whether the same may not be particularly shown or described therein provided that the same can reasonably be inferred there from and if the Contractor finds any discrepancy therein he shall immediately and in writing refer the same to the Bureau/ Consultant whose decision shall be final and binding. Figured dimensions shall be followed in preference to scale.
- b) In case of water from any source other than municipal or ground water provided by the Bureau, the Contractor shall get it tested at his own cost and use it only after specific written permission from the Bureau/ Consultant. The Bureau shall not charge the Contractor for his own unrented ground. The Bureau shall on no account be responsible for the expense incurred by the Contractor for hired ground or water obtained from elsewhere.
- c) The Contractor shall supply, fix and maintain at his cost, during the execution of any works all the necessary centering scaffolding staging, planking timbering, strutting, shoring pumping, fencing, boarding watching and lighting by night as well as by day, required not only for the proper execution and protection of the said work, but also for the protection of the public and the safety of any adjacent roads, streets, cellars vaults, pavements, walls houses, buildings and all other erections, matters or things and the Contractor shall take down and remove any or all such centering, scaffolding, staging planking, timbering strutting showing etc., as occasion shall require or when ordered so to do and shall fully reinstate and make good all matters and things disturbed during the execution of the works to the satisfaction of Bureau/ Consultant .

25. Authorities, Notices and patents.

- a) The contractor shall conform to the provisions of any Acts of the Legislature relating to the works, and to the Regulations and Bye-laws of any Authority, and of any Water, Lighting and other companies and/ or Authorities with whose systems the structure is proposed to be connected, and shall, before making any variations from the drawing or specifications that

may be necessitated by so conforming give to the Bureau/ consultant written notice, specifying the variation proposed to be made and the reason for making it, and apply for instructions thereon.

- b) The contractor shall arrange to give all notice required by the said acts, regulations or byelaws to be given to any authority, and to pay to such authority, or to any public officer all fees that may be properly chargeable in respect of the works, and lodge the receipt with the Bureau/ consultant.
- c) The contractor shall indemnify the Bureau/ consultant against all claims in respect of patent rights, and shall define all actions arising from such claims before any such infringement and receive their permission to proceed and shall himself pay all royalties, license fees, damages, costs and charge of all and every sort that may be legally incurred in respect thereof.

26. Setting out works.

The contractor shall set out the works and shall be responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions and alignment of all parts thereof. If at any time any error shall appear during the progress of any part of the work the contractor shall at his own expense rectify such error, called upon, to the satisfaction of the Bureau/ consultant.

27. Contractor immediately to remove all offensive matter.

All soil, fifth or other matter of an offensive nature, taken out of any trench sewer, drains, cesspool or other place shall not be deposited on the surface, but shall be at once carted away by the contractor to some tip or place provided by him.

28. Material and workmanship to conform to Description.

All materials and workmanship so far as procurable be of the respective kinds described in the tender document and in accordance with the Bureau/ consultant instructions and the contractor shall upon the request furnish them with all invoices, accounts receipts and other vouchers to prove that the materials comply therewith.

29. Access.

The Bureau/ consultant shall at all reasonable times have free access to the work and or to the workshops, factories or other places where materials are being prepared or constructed for the contract and also to any places where the materials are lying or from which they are being obtained and the contractor shall give every facility to Bureau and their representative necessary for inspections and examinations and test of the materials and workmanship. Except the representative of public authorities no person shall be allowed on the work at any time without the written permission of the Bureau/ consultant.

If any work is to be done at the place other than the site of the works the contractor shall obtain the written permission of the Bureau/ consultant for doing so.

30. Supervision by trained and qualified workmen.

The contractor shall give all necessary personal superintendence during the execution of the work and as long thereafter as the Bureau/ authorized representative may consider necessary until the expiration of the 'Defect Liability Period'. The contractor shall also during the whole time the works are in progress employ qualified work persons approved by the Bureau/ consultant who shall be constantly in attendance at the site/building while the men are at work. Any directions, examinations, instructions or notices given by the Bureau/ consultant to such trained work person shall be deemed to be given to the contractor. The contractor shall deploy a suitable number of supervisors as per requirement at site and as per the Bureau's instructions.

31. Authorized officer of the Bureau.

The authorized officer of the Bureau as per **Annexure 7** shall have power to give notice to the contractor or to his trained work person of non-approval of any work materials and such work shall be suspended or the use of such materials shall be discontinued until the decision of the Bureau/ consultant is obtained. The work will from time to time be examined by the Bureau/ consultant, but such examinations shall not in any way exonerate the contractor from the obligations to remedy any defects, which may be found to exist at any stage of the work or after the same is completed.

32. Dismissal of workmen.

The contractor shall on the request of the Bureau/ consultant, immediately dismiss from the works any person employed thereon who may, in their opinion, are deemed unsuitable or incompetent or who may misconduct himself, any such person shall not be again employed or allowed on the works without the permission of Bureau/ consultant.

33. Assignment.

The whole of the works included in the Contract shall be executed by the contractor and the contractor shall not directly or indirectly transfer, assign or underlet the contract or any part, share or interest therein nor shall he take a new partner without the written consent of the Bureau/ consultant, and no subletting shall relieve the Contractor from the full and entire responsibility of the Contract or from active superintendence of the work during its progress.

34. Schedule of quantities.

The Schedules of quantities unless otherwise stated shall be deemed to have been prepared in accordance with the method of measurement mentioned in the Specifications, and shall be considered to be approximate and no liability shall attach to the Bureau/ consultant for any error that may be discovered therein.

35. Variation in scope of works:

The contractor may when authorized, and shall when directed, in writing by the Bureau/ consultant add to, omit from, or vary the works shown upon the Drawings or described in specification or included in the priced schedule of quantities, but the contractor shall make no additions, omission or variations without such authorization or direction.

No claim for any extra shall be allowed unless it shall have been executed under the provisions of the Clause or by the authority of the Bureau/ consultant herein mentioned, any such extra is herein referred to as an authorized extra. No variations, i.e., additions, omissions or substitutions, shall vitiate the contract.

If at any time after acceptance of the tender Bureau shall decide to abandon or reduce the scope of work for any reason whatsoever and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the work. Further, the contractor shall not have any claim for compensation be reason of an alteration having been made in the original specifications, drawings, designs and instructions which shall involve any curtailment of the work as originally contemplated.

36. Damage to persons and property insurance in respect of.

The Contractor shall at his own expense carry and maintain insurance with reputed insurance companies to the satisfaction of the Bureau as under:

a) Insurance of works:

The Contractor shall take full responsibility for loss, damage and care of plant and works until it is delivered to site, constructed, erected, commissioned and taken over by Bureau. Without limiting such responsibility, the contractor shall in the interest of the work insure the plant and work for their full value plus ten percent until they have been taken over. Such insurance shall cover the equipment and works against loss, damage or destruction by fire, earthquake, theft or any other cause, throughout the duration of the contract period or extended contract period.

b) Insurance of employees:

The Contractor shall accept full and exclusive liability for the compliance of all obligations and responsibilities imposed by the Employees State Insurance Act, 1948 and any liability or penalty which may be imposed by the Central, State or Local Authorities due to the reason of violation by the contractor or sub-contractor of the Employees State Insurance Act, 1948. The Contractor shall agree to fulfill the requirement of the Employees State Insurance Corporation and maintain the declaration forms and all such forms, which may be, required in respect of the contractor's, sub-contractor's employees who are employed in the work provided for or those covered by E.S.I.C. from time to time under the agreement. The Bureau shall retain such sum as may be necessary from the total contract value until the contractor shall furnish satisfactory proof that all contributions as required by the Employees State Insurance Act, 1948 have been paid by him.

c) Workmen's Compensation:

Insurance shall be affected for all the Contractor's employees engaged for this contract. The Contractor shall also carry and maintain all other insurance, which may be required under any law or regulations from time to time. He should also carry and maintain any other insurance, which may be required by the Bureau.

d) **Transit Insurance:**

The cost of transit insurance relating to the items to be transported by the contractor to the site of work shall be borne by the contractor and the quoted price shall be inclusive of this cost.

e) **Loss or damage and Indemnity Agreement:**

The contractor shall be responsible during the progress of work as well as maintenance period for any liability imposed by law for any damage to work or any part thereof or to any of the material or other things including those of Bureau used in performing the work or for injury to any person or persons or for any property damaged in or outside the site. The contractor shall indemnify and hold the Bureau authorized representatives harmless against all liabilities, claims, loss or injury, including costs, expenses and attorney's fees incurred in the defense of same, arising from any allegation whether groundless or not, of damage or injury to any person or property resulting from the performance of the work or from any material used in the work or from any condition of the work or work site or from any cause whatsoever during the progress and maintenance of the work.

f) **Third party insurance:**

Before commencing the execution of the works the Contractor, but without limiting his obligations and responsibilities, shall insure against his liability for any material or physical damage, loss or injury which may occur to any property, including that of the Bureau, or to any person, including any representative of the Bureau, by or arising out of the execution of works or in the work being carried out by the owner, by or arising out of the provision of clause 17. Such insurance shall be affected with an insurer and in terms approved by the Bureau.

37. Delay and Extension of time.

If in the opinion of the Bureau/ consultant the work be delayed:

a) By force majeure like

- i) War, hostilities or warlike operations (whether a state of war be declared or not), invasion, act of foreign enemy and civil war
- ii) Rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts
- iii) Strike, sabotage, unlawful lockout, epidemics, quarantine and plague
- iv) earthquake, fire, flood or cyclone, or other natural or physical disaster or

b) By reason of any exceptionally inclement weather or

c) By reason of proceeding taken or threatened by or disputes with adjoining or neighboring owners or public authorities of

d) By delays of other contractor or trade men engaged by the Bureau or the consultants and the work not referred to in the schedule of quantities and/or specification or

- e) By reasons of Bureau/ consultant's instructions
- f) By reason of civil commotion, local combination of workmen or strike or lockout affecting any of the building trades or
- g) From other cause which the Bureau/ consultants may certify as beyond the control of the contractor

The Bureau/ consultant shall make a fair and reasonable extension of time for completion of the contract works.

In case of strike or lockout the contractor shall as soon as may be given written notice thereof to the Bureau/ consultant, but the contractor shall nevertheless constantly use his endeavors to prevent delay and shall do all that may reasonably be required to the satisfaction of Bureau/ consultant to proceed with the work.

38. Failure by contractor to comply with Bureau/ Consultant's instructions.

If contractor after receipt of written notice from the Bureau/ consultant requiring compliance, with such further drawings and/or consultants instructions fails within seven days to comply with the same, the Bureau may pay other persons to execute and such work whatsoever as may be necessary to give effect there to and all costs incurred in connection therewith shall be recoverable from the contractor by the Bureau as a debt or may be deducted by him from any moneys due to the contractor.

39. Labor laws and safety regulations.

- (a) Labor Laws:
 - i) Laborers below the age of 18 years shall not be employed on the work.
 - ii) The contractor shall not pay less than what is specified by the law to laborers engaged by him on the work.
 - iii) The contractor shall, at his own expenses, comply with all labor laws and the Bureau shall not be responsible for any recovery/ penalty imposed by the respective authorities for violating the labor laws.
 - iv) The contractor shall obtain a valid license under the Contract Labor (R&A) Act 1970, and the Contract Labor (Regulations and abolition) Central Rules 1971, before the commencement of the work, and continue to have a valid license until the completion of the work.
 - v) The contractor shall furnish to the Bureau/ Consultant, the details of the workers employed on the works. (Names, addresses, phone numbers, and copies of valid and updated government issued photo ID document (such as Aadhaar Card)).
 - vi) The contractor shall comply with the provisions of the existing rules and regulations relating to labor laws.

- (b) **Minor Accident on Duty:**
For cases of minor accident on duty not covered under compensation by insurance, the contractor shall have to compensate the affected person by reimbursing these medical expenses against submission of actual expenditure document.
- (c) **Provident Fund:**
It shall be solely the Contractor's responsibility to complete all provident fund formalities as per statutory regulations.
- (d) **Safety code**
The contractor shall adhere to safe construction practice and guard against hazardous and unsafe working conditions. While carrying out the work, the contractor should provide for;
- i) Safety of personnel engaged in the construction.
 - ii) Protection and safety of works and materials during their progress.
 - iii) Sanitary and hygienic conditions of working and living for his workers.
- (e) **Use of Safety Gadgets:**
The Contractor shall have to ensure availability and use of all desired safety gadgets like safety belts, helmets, goggles, hand gloves etc.
- (f) **Unsafe working condition:**
If any activity is found to be progressing without proper and complete safety measures (including use of safety gadgets) being implemented, the contractor may be asked to stop the work unless he fulfills the desired safety norms. Such delays shall not be allowed to be considered for extension in duration of the allotted time period.
- (g) **First Aid:**
The contractor shall provide first aid facilities for his employees and those of his sub-contractors. The requisite first aid box and medicines should always be available at work site.
- (h) **Contractor's Barricades:**
The contractor shall erect and maintain barricades required in connection with his operations to guard or protect:-
- i) Excavations
 - ii) Hoisting Areas
 - iii) Areas adjudged hazardous by the Bureau/ authorized representative.
 - iv) Charged electrical panels.
 - v) Bureaus existing property liable to get damaged by contractor's operation.
- (i) **Preservation of peace:**
The contractor shall take precautions to prevent any riotous or unlawful behavior by his workers, for the preservation of peace and protection of inhabitants and the security of property in the neighborhood of the work.

- (j) Wherever statutory liability is attached to the Bureau with regard to any contribution under the labor laws or other statutory provisions, it shall be the duty of the contractor to reimburse the same to the Bureau or Bureau will be entitled to deduct the said amount from the pending bills.

40. Samples and Testing.

- (a) The successful Bidder shall provide sample of all materials for approval, whenever required. The samples shall be submitted for approval well before the commencement of the particular work and give the Bureau/ authorized representative a reasonable time for their comments. All materials to be used in execution of project shall be of first class quality; I.S.I. marked (Where applicable) and shall be approved by Bureau/Consultant before its application.
- (b) The contractor shall be paying all testing charges required for testing of materials and samples as and when taken by Bureau/ Consultant. The Contractor shall arrange necessary labor and transportation to facilitate testing of samples/ materials. Frequency of testing materials/ samples shall be as per related I.S. codes. As mentioned elsewhere in tender documents as well, the Contractor must establish a testing laboratory at site as directed by Consultants/ Owners.
- (c) The work should be carried out in truly professional manner, neatly finished with proper line, level and plumb. Cleanliness and finishing of the job is of utmost importance. Hence the job should be done most carefully with best workmanship. For all finishing jobs samples should be approved from the Bureau/ Consultant before completely executing the work.
- (d) The Bureau/ Consultant should be immediately informed for any discrepancy in drawings, specifications and instructions in the execution of job at site before actual execution of particular item having discrepancy.
- e) Any item found to be having been executed with poor workmanship or materials of inferior quality then the contractor shall have to rectify/ reconstruct the work as specified by Bureau/ Consultant. No extra charge will be admissible in such case. If Contractors fails to do so, the Bureau/ Consultant reserves the right to rectify/ reconstruct the work through some other agency at the risk and cost of contractor

41. Certificate and Payment.

a. Schedule of Rates:

- i) The payments to be made to the contractor for various items of works shall be as per the finalized rates in contractor's bid and the rates of extra items finalized from time to time. The basis of calculation of rates of extra items will be as per CPWD's Analysis of Rates for the scheduled items and Market rates analysis of prevailing market rates for Non-scheduled items.
- ii) The rates finalized in the contractor's bid shall remain firm till the completion of the work including extension of time, if any.

b. Measurement:

Measurements of the various items of the work shall be taken by the Contractor's authorized representative from time to time for maintaining the records and preparing the bills. The Consultant shall verify the measurements jointly with the contractor's representative and submit his recommendation for payment to the Bureau. The Bureau shall be entitled to re-verify the measurement jointly with the contractor's and consultant's authorized representatives.

c. Mode of Measurement:

All measurements shall be in the metric system and in accordance with Indian Standard Specifications IS:1200 and in accordance with standard engineering practice. If the contractor has any objection regarding the measurements then he shall inform the Bureau/ Consultant immediately but not later than 3 days from the date of measurement. The decision given by the Bureau/ Consultant shall be final and binding on the contractor.

d. Mobilization Advance:

The contractor shall be paid an interest-free mobilization advance amounting to 10% of the tendered value against bank guarantee from scheduled bank, the same shall be recovered from contractor's running account bill @ 10% of the total work done till full recovery.

e. Lump sums in Tender:

No Lump sum item in the contract.

f. Running Account Payments to be regarded as advances:

All running account payments shall be regarded as payments by way of advances against the final payment only and not as payment for work actually done and completed, and shall not prelude the requiring of bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the performance of the contract or nor shall it conclude, determine or affect in any way the powers of the Bureau under these conditions or any of them as to the final settlement of the accounts or otherwise, or in any other way vitiate or affect the contract. The final bill shall be submitted by the contractor within one month from the date of actual completion of the work, to the Consultant, otherwise the Consultant's and Bureau's certificate of the measurement and of the total amount payable for the work accordingly shall be final and binding on the Contractor. The payment of final bill shall be done as per clause no.41 h (iv).

g. Payment of Contractor's Bills:

- i. The payment due to the contractor shall be made only in Indian Currency by Crossed Account Payee Cheques or through electronic transfer system (RTGS). The cheque shall be released only against submission of duly signed and revenue stamped receipt.
- ii. The Bureau reserves the right to carry out post payment audit and technical examination of the bills and work executed including all supporting vouchers etc. The Bureau further reserves the right to enforce recovery of over-payment when detected.

Similarly, if any under payment is discovered, the amount shall be paid to the contractor.

- iii. Wherever any claim for the payment against the contractor arises as per the contract, the same may be deducted from the bill of the contractor or from his Performance Security.

h. Billing and terms of payment:

- i. All Bills shall be raised in the name of “**Bureau of Indian Standards, (GSTIN 09AAATB0431G3Z7)**”.
 - i. The contractor shall submit their correct & complete running bills along with detailed measurement Book as supporting documents as per the agreed schedules and actual measured quantities to the Consultant on monthly basis. The running accounts bills should not be less than Rs **15.0** lakhs once in a month. The Consultant after verification of bill as per the Schedule of Item Rates of the order shall forward the bill to The Bureau for release of payment within 30 days. The mobilization advance of 10% of the total work done shall be adjusted against progressive RA bills of the contractor.
 - ii. **Retention amount:** - 5% of the value of work done from each running bill will be retained as retention amount, which shall be released only after the defect liability period of 12 months of date of virtual/ provisional completion of work. No interest shall be paid on the retention amount.
 - iii. **Final Bill:** On completion of work and issuance of virtual/provisional completion certificate by the Bureau (see clause 41 (i)) , the contractor shall submit the final bill with total measurement sheet, at one time and the payment shall be released after checking and necessary corrections/ clarifications if any, required.
 - iv. **Taxes:** The taxes as may be levied by the Government from time to time shall be charged and indicated separately in each bill by the contractor in addition to the charges for work items as per contractor’s bid.
 - v. **TDS:** The payment will be subject to the provisions of the Income Tax Act, 1961 i.e., Tax will be deducted at source with cess/ surcharge, at the prevailing rates, from the gross amount of each bill submitted.
- i) Virtual/ Provisional Completion Certificate & Taking over:**
- When the Contractor successfully completes the works as per the contract, he shall be eligible to apply for provisional completion certificate in respect of the works. The Bureau shall issue to the Contractor the virtual/ provisional completion certificate after verifying from the completion documents submitted by the Consultant and satisfying himself that the work has been completed in accordance with the construction drawings and the contract document. The Contractor, after obtaining the provisional completion certificate, is eligible to present the final bill for the work executed by him under the terms of the contract. The

work will not be considered as complete and taken over by the Bureau until all the temporary works, labor hutments etc. are removed and the work site cleared to the satisfaction of the Consultant.

If the contractor fails to comply with the requirements of the above on or before the date for the completion of the works, the Bureau may, at the expense of the contractor, remove the tools and plants and surplus materials and dispose of the same and the contractor shall pay the amount of all expenses incurred.

42. Unfixed material when taken into account to be the property of Bureau

When in any certificate of which the contractor has received payment the consultant have included the value of unfixed materials intended for and/ or placed on or adjacent to the works such materials shall become the property of the Bureau for any loss or damage to which the contractor shall be responsible and they shall not be removed from the site except for use upon the works without the written authority of the Bureau/ consultant.

43. Defects after completion

The defects, shrinkage, settlements or other faults which may appear within “Defect Liability period” (twelve months after the virtual completion of the works), arising in the opinion of the Bureau/ consultants from material or workmanship not in accordance with the contract, shall upon the direction in writing of the Bureau/ consultants and within such reasonable time as shall be specified therein, be amended and made good by the contractor, at his own cost. In case of default the Bureau may employ and pay other persons to amend and make good such defects, shrinkage settlements or other faults, and all damage, loss and expenses consequent thereon or incidental thereto shall be made good and borne by the contractor and such damage, loss and expenses shall be recoverable from him by the Bureau from any moneys due or that may become due to the contractor.

44. Special Work Instructions and Conditions:

Special attention of the bidders is invited to clauses as under and also to Clause 22 (c) of the Conditions of Contract:

- i. Bidders may note that above work is to be executed in at Ground Floor of Four storey building which is fully occupied and operational. Accordingly, **the execution of work will be done in a phase-wise manner** in such a way that normal functioning of the office is not affected. Such jobs which may disturb normal office works would be executed after office hours or on closed days. **The schedule of working for different areas shall be mutually decided at the time of execution.** All necessary manpower and infrastructure including scaffolding etc shall be provided by the contractor. Nothing extra would be payable on this account.
- ii. The schedule for execution of different parts of the work shall be as follows:

The total time of completion is 60 days from the date of award of work

- iii. A Contractor not meeting requirements as stated above shall inform The Bureau of any changes and deviations in their specifications. The same shall be reviewed by the Bureau and Consultants and decision taken thereof as to the acceptability of the same.
- iv. Electricity & water supply shall be provided by the Bureau free of cost at one point. The contractor shall make his own arrangement for distribution of the same at various work places. The contractor must consider the same while quoting rates.
- v. Arrangement of scaffolding, if required will be done by contractor at his own cost.
- vi. Arrangement for protection/barricading of execution area during the execution will be done by contractor at his own cost.
- vii. **Special care to taken while renovation of toilet blocks. In case water supply is interrupted, the same shall be restored at the earliest by the contractor at his own cost and nothing extra would be payable on this account.**
- viii. **It shall be ensured by the contractor that electrical, internet, telephone or any other services of BIS building is not disrupted due to the subject work. In case the same are disrupted, the services shall be restored at the earliest by the contractor at his own cost and nothing extra would be payable on this account.**
- ix. **The contractor shall remove malba/waste material& disposed at govt. approved dump yard from the site of work regularly.**
- x. **The contractor shall provide temporary Office of suitable size for the purpose of their own working & for the Consultant's staff at his own cost. The structure shall be prefab structure with sandwich panels including electrical & sanitary services. The location shall be finalized as per the direction of officer-in charge of the Bureau.**
- xi. All machinery and tools required for execution of job would be contractor's responsibility.
- xii. **IDLE LABOUR:** Whatever the reasons may be, no claim for idle labor, additional establishment cost of hire and labor charges of tools and plants would be entertained under any circumstances.
- xiii. The contractor shall arrange for shifting/removing of all furniture/ equipment or covering of items with polythene sheets etc. to undertake the work.
- xiv. The Contractor shall execute with the Bureau a **Guarantee for Water Proofing Treatment executed as part of the above work, as per Annexure 9 on a stamp paper of value Rs 50/-.**
- xv. The Contractor shall produce samples before procurement of the material for approval of the Bureau, before execution for all materials required for works. The list of approved makes of

material is attached at Appendix 1. In respect of materials for which approved makes are not specified as above, the same shall be decided by the Bureau and sample got approved from Bureau before procurement.

- xvi. All the piping work for plumbing/firefighting work shall be pressure tested as per CPWD specifications /IS codes. The pressure of pipes shall be got checked by Bureau/Consultant before plastering or refilling the pipe trenches.
- xvii. All the warranties of various equipment's shall be as per manufacturer's warranty schemes & shall be transferred in the name of the Bureau.
- xviii. **All bidders are expected to visit and inspect site conditions further to which only they should quote their best prices. For any clarifications on site clearances, material movement, material stores required at site etc., Pl contact: Sh. Ritesh Baranwal, AD (A&F), Central Laboratory, Sahibabad, Ph No.- 0120-4177104 (Ext- 104), Mob- 9717545588.**

Section 5: अनुबंध /ANNEXURES

Annexure1

FORM OF BANK GUARANTEE BOND FOR PERFORMANCE SECURITY

1. In consideration of Bureau of Indian Standards (hereinafter called 'The Bureau') having agreed to exempt _____ (hereinafter called "the said Contractor(s)') from the demand under the terms and conditions of an Agreement dated _____ made between _____ and _____ for _____ (hereinafter called "the said Agreement of Performance Security for the due fulfillment by the said Contractor (s) of the terms and conditions contained in the said Agreement, on production of a Bank Guarantee for Rs. _____ (Rupees _____ Only) we, _____ (hereinafter referred to as (indicate the name of the bank) 'the bank') at the request of _____ [(Contractor (s) do hereby undertake to pay the Bureau an amount not exceeding Rs. _____ against any loss or demand caused to or suffered or would be caused to or suffered by the Bureau by reason of any breach by the said Contractor (s) of any of the terms or conditions contained in the said Agreement.

2. We _____ do hereby (indicate the name of the bank) undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Bureau of Indian Standards stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Bureau by reason of breach by the said Contractor (s) of any of the terms or conditions contained in the said Agreement or by reasons of the Contractor (s) failure to perform the said Agreement. Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.....

3. We, undertake to pay to the Bureau any money so demanded notwithstanding any dispute or disputes raised by the Contractor (s) / Supplier (s) in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor (s) / Supplier (s) shall have no claim against us for making such payment.

4. We, _____ further agree that the Guarantee (indicate the name of Bank) herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Bureau under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till the authorized officer of the Bureau certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor (s)

and accordingly of the said Agreement have been fully and properly carried out by the said Contractor (s) and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before thewe shall be discharged from all liability under this guarantee thereafter.

5. We further agree with the Bureau that (indicate the name of Bank) the Bureau shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time to performance by the said Contractor (s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Bureau against the said Contractor (s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor (s) or for any forbearance, act or commission on the part of the Bureau or any indulgence by the Bureau to the said Contractor (s) or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision, have effect of so relieving us.

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

7. We ... lastly undertake not to revoke this (indicate the name of bank) guarantee during its currency except with the previous consent of the Bureau in writing.

Dated the... Day of2018

For.....
(Indicate the name of bank)

Annexure-2

DETAILS TO BE FURNISHED BY THE BIDDERS

1. Name of the Firm/Company:
2. Permanent Address in Delhi/NCR (Proof of address to be enclosed):
3. Telephone No.:
4. Fax No:
5. E-mail:
6. Details of Proprietor/ Partner/ Director:

Name	Address	Qualification and Experience

7. Total experience of the firm in years (enclose scanned copy of certificate of incorporation showing that firm is in existence for at least 5 years):
8. Annual Turnover of the Firm/ Company during previous 3 Financial Years (Scanned copies of Chartered Accountant certified copies of audited balance sheets and Profit and Loss statement to be enclosed):

Financial Year	Annual Turnover (Rs.)	CA Certified copies supporting document as above enclosed (Yes/No)
FY 2015-16		
FY 2016-17		
FY 2017-18		
Average Annual Turnover		

9. PAN Number (Scanned Copy of PAN Card to be enclosed):
10. GST Registration No. (Scanned Copy of Regn certificate to be enclosed):
11. EPF Registration No. (Scanned Copy of Regn certificate to be enclosed):
12. ESI Registration No. (Scanned Copy of Regn certificate to be enclosed):
13. Details of registration with CPWD as Class II Contractor or above (Scanned Copy of registration certificate to be enclosed):

Enclosures to be uploaded with Annex 2:

Scanned copies of:

- i. Proof of address
- ii. Certificate of incorporation
- iii. Chartered Accountant certified copies of audited balance sheets and PL statement of previous three years
- iv. Scanned Copy of PAN Card, GST, ESI, EPF registration certificate
- v. Scanned copy of registration certificate with CPWD as Class II contractor or above

Annexure–3

**Details of building interior works executed during past 3 years for government department/ organization
(Refer Eligibility conditions - Section 1 condition 1 (iii))**

Name of the Bidder:

Sl.No.	Details of work executed	Year in which completed	Name, Address, phone number and email ID of the buyer/customer	Value of the works	Remarks

Note: -Upload copy of completion certificate clearly indicating value of work issued by client, along with Annex 3

Annexure-4

Declaration regarding black-listing and/ or litigations

I/ we hereby declare that our firm/ agency is not black-listed by any Ministry or Department of Central Government/ State Government or PSU or other bodies under the Central Government/ State Government. I/ we further declare that no criminal case is registered or pending against the firm/ company or its owner/ partners/ directors anywhere in India.

Date the.....day of 2018

Annexure 5

DECLARATION FOR WEBSITE DOWNLOADED & NON TAMPERED TENDER DOCUMENT

I/We Director(s)/ Authorized Signatory of M/s -----, hereby declare that I/We

have downloaded the Tender Document from the website **<http://www.eprocure.gov.in>** or **www.bis.gov.in** and I/We have not tampered the tender document issued vide TENDER No: _____ dated: _____,

In case at any stage, if it is found that the information given above is false or incorrect, the Bureau shall have the absolute right to take any action as deemed fit without any prior intimation

Annexure 6

TENDER ACCEPTANCE LETTER

(To be given on Company Letter Head)

Date:

To,

Bureau of Indian Standards

Sub: Acceptance of Terms & Conditions of Tender.

Tender Reference No: _____

Name of Tender / Work: _____

Dear Sir,

1. I/ We have downloaded / obtained the tender document(s) for the above mentioned 'Tender/Work' from the web site(s) namely: www.bis.gov.in OR www.eprocure.gov.in
2. I / We hereby certify that I / we have read the entire terms and conditions of the tender documents from Page No. _____ to _____ (including all documents like annexure(s), appendices (s), schedule(s), etc .), which form part of the contract agreement and I / we shall abide hereby by the terms / conditions / clauses contained therein.
3. The corrigendum(s) issued from time to time by your department/ organizations too have also been taken into consideration, while submitting this acceptance letter.
4. I / We hereby unconditionally accept the tender conditions of above mentioned tender document(s) / corrigendum(s) in its totality / entirety.
5. I / We do hereby declare that our Firm has not been blacklisted/ debarred by any Govt. Department/Public sector undertaking.
6. I / We certify that all information furnished by the our Firm is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then your department/ organization shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.

Annexure - 7
Information for bidders

SNo	Item	Information
1.	Availability of tender documents	30 May 2018 0900 h
2.	Pre-bid Conference	12 June 2018 1100 h
3.	Earnest Money deposit (Demand Draft)	Rs. 68,500/- (@2%)
4.	Performance Security (Bank Guarantee)	Rs. 1,71,300/- (@5%)
5.	Validity of Bids	90 days
6.	Last date of submission of bids	20 June 2018 1000 h
7.	Opening of Bids:	22 June 2018 1100 h at Room 453, PMW Dept, Manakalaya, BIS, 9, BSZ Marg, New Delhi
8.	Authorized Officer on behalf of the Bureau for this tender/contract	Head, PMW Department, BIS

ANNEXURE 8:

CONTRACT AGREEMENT

This Contract agreement made this _____ day of _____ at -

Between

_____ (Name and address of Bureau) (hereinafter called "the Bureau")
which term or expression unless excluded by or repugnant to the context or the meaning thereof,
shall be deemed to include its successors and permitted assigns, **OF THE ONE PART,**

And

(Name and address of contractor) (Hereinafter called "the Contractor" which term or expression
unless excluded by or repugnant to the context or meaning thereof, shall be deemed to include its
successors and permitted assigns, **OF THE OTHER PART**

And Whereas

The Bureau is desirous that the Contractor executes

_____ (Name and identification number of Contract, Scope of Work, and Time for Completion)
(hereinafter called "the Works") and the Bureau has accepted the Bid by the Contractor for the
execution and completion of such Works and the remedying of any defects therein, at a contract
amount of

Rs..... (In words Rupees....).The
contract amount shall be inclusive of all taxes and duties viz and Insurance.

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expression shall assume the same meanings as are
respectively assigned to them in the Conditions of Contract hereinafter referred to and they
shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Bureau to the Contractor as hereinafter
mentioned, the Contractor hereby covenants with the Bureau to execute and complete the
Works and remedy the defects therein in conformity in all aspects with the provisions of
the Contract.

3. The Bureau hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and in the remedying the defects wherein the Contract amount or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.
4. The following documents shall be deemed to form and be read and construed as part of this Contract Agreement, Viz:
 - a. Work order
 - b. Letter of acceptance
 - c. Notice to proceed with the works
 - d. Contractor's Bid
 - e. Conditions of contract
 - f. Specifications of works
 - g. Drawings;
 - h. Financial bid for each subheads with schedule of rates.
 - i. Any other documents listed in the tender document as forming part of the contract.

Order of Precedence

The following order of precedence shall prevail for interpretation of the Contract document read in conjunction with addenda/corrigendum issued, Agreed points after Techno-Commercial discussions, Letter of Acceptance and Contract Agreement.

- a) Description in Bill of Quantities
- b) Conditions of Contract and Annexure hereto
- c) CPWD specifications and Technical Specifications
- d) Drawings

In witness whereof the parties have caused this Agreement to be duly executed the day and year first above written.

The Common Seal of

Was hereunto affixed in the presence of:

Signed Sealed and Delivered by the said

Binding Signature by and on behalf of the Bureau _____

Binding Signature by and on behalf of the Contractor

In the presence of

Witness:

Witness:

(Signature)

(Signature)

Name of Witness _____

Name of Witness _____

Address _____

Address _____

Annexure 9

GUARANTEE FOR WATER PROOFING TREATMENT

This agreement made this _____ day of two thousand and seventeen between M/S_____ (hereinafter called the Contractor of the one part) and Bureau of Indian Standards (hereinafter called the other part).

Whereas this agreement is supplementary to the contract (hereinafter called the Contract) dated.....made between the Contractor of the one part and The Bureau of the other part, hereby the contractor, Inter alia, undertook to render the buildings and structures in the said contract recited, completely water proof.

And whereas the Contractor agreed to give a guarantee to the effect that the said structure will remain water proof for ten years to be reckoned from the date after the period prescribed in the contract expires. During this period of guarantee the Contractor shall make good all defects and for that matter, shall render the building water proof at his cost to the satisfaction of the Bureau / Consultant calling upon him to rectify the defects failing which the work shall be got done by the Department by some other Contractor at the Contractor's cost and risk and in the latter case the decision of the Bureau / Consultant as to the cost, recoverable from the Contractor shall be final and binding.

That if the Contractor fails to execute the water proofing treatment or commits breaches hereunder then the Contractor will indemnify principal and this successors against all loss, damage, cost expenses or otherwise which may be incurred by him by reason of any default on the part of the Contractor in performance and observance of this supplemental agreement. As to the amount of loss and/or damage and/or cost incurred, the decision of the Bureau will be final and binding on the parties.

Binding Signature by and on behalf of the Bureau _____

Binding Signature by and on behalf of the Contractor _____

In the presence of

Witness:

(Signature)

Name

Address

Witness:

(Signature)

Name of Witness

Address

Annexure 10: Checklist of documents

12.1 Technical Bid:

- a) Scanned copy of Check-List of all the documents (as per format at **Annexure 10**);
- b) Scanned copy of EMD Draft. (Scanned copy to be uploaded and original to be submitted physically within date mentioned at **Section I**)
- c) Scanned copy Details of the firm(s) and scanned copies of following supporting documents (**As per Annexure-2**)
 - i. Proof of address
 - ii. Certificate of incorporation
 - iii. Chartered Accountant certified copies of audited balance sheets and PL statement for last 3 financial years
 - iv. Scanned Copy of PAN Card, GST, ESI, EPF registration certificate
 - v. Scanned copy of registration certificate with CPWD as Class III Contractor or above
- d) Scanned copy of details of building interior works executed during past 3 years for government department/organization with scanned copies of completion certificate clearly indicating value of work issued by client (**As per Annexure-3**);
- e) Scanned copies of declarations regarding black-listing and/or litigations (**As per Annexure-4**), and Website Downloaded & Non-tampered Tender Document (**As per Annexure 5**) and Tender Acceptance Letter (**As per Annexure 6**)

12.2 Financial Bid

- a) Price bid in the form of **BOQ template** BOQ_XXXX.xls available along with this tender document on CPPP website <https://eprocure.gov.in/eprocure/app> (Bidders to download this BoQ_XXXX.xls as it is and quote their offer/rates in the permitted column and upload the same in the commercial bid)

Annexure 11

Instructions for Online Bid Submission:

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More information useful for submitting online bids on the CPP Portal may be obtained at: <https://eprocure.gov.in/eprocure/app>.

REGISTRATION

- 1) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: <https://eprocure.gov.in/eprocure/app>) by clicking on the link “**Online bidder Enrollment**” on the CPP Portal which is free of charge.
- 2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
- 3) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.
- 4) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / nCode / eMudhra etc.), with their profile.
- 5) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC’s to others which may lead to misuse.
- 6) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token.

SEARCHING FOR TENDER DOCUMENTS

- 1) There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal.
- 2) Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective ‘My Tenders’ folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
- 3) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

PREPARATION OF BIDS

- 1) Bidder should take into account any corrigendum published on the tender document before submitting their bids.

- 2) Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
- 3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.
- 4) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use “My Space” or “Other Important Documents” area available to them to upload such documents. These documents may be directly submitted from the “My Space” area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

SUBMISSION OF BIDS

- 1) Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- 2) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
- 3) Bidder has to select the payment option as “offline” to pay the tender fee / EMD as applicable and enter details of the instrument.
- 4) Bidder should prepare the EMD as per the instructions specified in the tender document. The original should be posted/couriered/given in person to the concerned official, latest by the last date of bid submission or as specified in the tender documents. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.
- 5) Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BoQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BoQ file, open it and complete the white colored (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.
- 6) The server time (which is displayed on the bidders’ dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
- 7) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit

encryption technology. Data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers' public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.

- 7) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- 8) Upon the successful and timely submission of bids (i.e. after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
- 9) The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

ASSISTANCE TO BIDDERS

- 1) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

APPENDIX-1
TECHNICAL SPECIFICATIONS FOR INTERIOR FURNISHING WORKS

GENERAL

1. For all items of work described in the Bill of quantities, the work shall be carried out strictly in accordance with description in General Specifications, particular BOQ specifications and drawings. The description, drawings and specifications shall be taken complementary to each other and shall form part of this contract.
2. In case items are not exhaustively described in paras described above, the general specifications of CPWD in respect of material & workmanship shall be followed for which nothing extra shall be paid.
3. The quoted rates shall be deemed to include all necessary hardware, tools & plants, props, material, labour, duties, taxes, insurance premium etc., all needed to make the individual item functional, to the complete satisfaction of the Engineer-in-charge, whether specifically mentioned in the individual item or not.
4. **Scope of Work**
The Scope of Work for buildings under this contract includes for full and final and entire completion of all works including all internal services in all respects described in General Specifications, particular specifications and as shown on drawings forming part of the contract.
5. Although all the details of construction have been by and large covered in these documents, any item or detail of construction not specifically covered but obviously implied and essential to consider Civil works and all internal services complete and functional, shall be deemed to have been covered in the item rate quoted. The tenderer may however, consider a minimum level of specifications conforming to IS Code or National Building Codes to cover these missing details.
6. **Approved Samples of Materials:** The contractor shall produce samples of all materials at least four weeks before incorporation in the work and shall obtain approval of these in writing from the Engineer-in-charge, before he places bulk order for the materials. Materials to be incorporated in the work shall conform to latest relevant ISI specifications, ISI marked goods where manufactured shall be used. (This will apply to the materials where specific brand, names of manufacturer not stipulated) where brand, names are given then the material should be out of the brands, names as specified.
7. **Slopes :** Adequate slope shall be provided in areas where there is likelihood of ingress of water such as toilets, balconies verandah, terraces, top of chajjas, window cills, plinth protections etc. though these may not be expressly shown in drawings.
8. **Curing:** Exposed surfaces of all cement works viz. Cement concrete, brick work, flooring, plastering, pointing and the like shall be cured by keeping surface adequately and continuously wet as directed by the Engineer-in-charge for at least seven days. Cost for this shall be deemed to be included in the percentage quoted against the respective schedule.
9. **Bar Chart:** Contractor shall submit Bar Chart to the Engineer-in-charge and Project Manager, Gail for the entire work in the contract.
10. The above bar chart shall be submitted by contractor within one week of acceptance of contract. Bar chart as submitted shall be scrutinized by the Engineer-in-charge and Project Manager. Mutually agreed Bar chart shall be finalized within 7 days of submission by the contractor. The contractor shall carry out the changes as suggested by Architect/BIS and Project Manager. The mutually agreed Bar chart shall be signed by contractor, Engineer-in-charge and Project Manager. This shall be binding on contractor for progressing the work for completion by due date.
11. **Standard of Work:** To determine the acceptable standard of workmanship and also to decide if any variations are required in the layout of internal services or finishes, the contractor shall execute on samples for areas as required.
12. The samples shall be put up for inspection and approval and specific dates put up in the bar-chart mentioned above for each of the following

13. All items of works, services and finishes such as floors, internal plaster, joinery including all fittings and hardware, sanitary fittings, plumbing, electrification, entire kitchen and toilet fittings, wall finishes and painting etc. shall be completed in all respects before putting up for inspection and approval.
14. All materials fittings/ fixtures to be incorporated in the sample rooms conforming to specifications makes and brands as given in the Contract Agreement shall be got approved at least one week before they are required at site for incorporation. The order should be placed by the contractor in such a way that they can be procured in time and incorporated in the samples to be made. All samples shall be jointly approved by Project Manager, Architect/ BIS and Engineer-in-charge and record of approval stage wise duly signed and dated shall be kept by the Engineer-in-charge.
15. The Project manager, wherever mentioned shall be the project manager appointed by the client, who would be in charge of the project.
16. The contractor must clearly understand that this project involves coordination with different agency working at a time, hence immaculate planning and co-ordination with the Engineer-in-charge and other agency shall be needed and the contractor must ensure that his team consists of qualified and compatible engineers. Certain decisions may be taken on the site and shall need to be documented and dealt with accordingly.

Material

FLOORING & DADO

WORKS FLOORING:

Floor shall be provided inside the rooms, corridors, toilet, stairs, landings, terrace etc. Floor shall be laid to level and/or to slope as required and directed by Engineer-in-charge. Floor shall be carried through all the doors and other openings and over dwarf walls. Exposed edge of floors and steps provided up to floors shall be finished in the same manner as for top surfaces. Skirting shall match with the floor finish. The floor finishes shall be provided as described in schedules.

SUB FLOORING:

- a) **For ground floor :** Sub floor (base concrete under floor finish) lean concrete in 1:4:8) 1 cement : 4 coarse sand and 8 stone aggregate 40mm nominal size) shall be laid over a layer of fine sand at ground floor only.
- b) **For upper / basement Floors:**
 - i) Sunken . lower portion of slabs : Sub base shall be in lean concrete in 1:4:8 (1 cement : 4 coarse sand and 8 brick ballast 40mm nominal size).
 - ii) Other Floors: Lean concrete 1:5:10 (1 cement : 5 coarse sand : 10 brick aggregate 40 mm nominal size) laid over RCC slab wherever as required or as directed.

PLAIN CEMENT CONCRETE FLOORING:

- a) 40 mm thick concrete floor 1:2:4 (1 cement: 2 coarse sand: 4 stone aggregate 12.5 graded). The top surface shall be worked with leveled with screening board to leave slightly rough surfaces.

Glazed Ceramic Tile in Dado for Toilets & Kitchens:

- a) Glazed tiles shall be minimum 6 mm thick of first quality and from approved manufacturer and shall conform to IS 15622. The tiles shall be free from cracks, twist uneven edged and other defects. The rear face of tiles shall be grooved and / or resist to provide on adequate key for the cement plaster. The cement plaster shall be minimum 12 mm thick 1:3 (1 cement: 3 coarse sand) and shall be roughened with wire brushes or by scratching diagonal at close in troubles. The tiles should be soaked in water washed clean and a coat of cement slurry applied liberally at their leak of tiles and set in the bedding mortar including painting with white cement mixed with pigment. The tiles shall be tamped and corrected the proper plane and lines. The tiles shall be laid in the required pattern. The joints shall be neat & fine. After laying tiles shall be thoroughly washed and cleaned to the satisfaction of the Engineer-in-charge.

- b) Size, color and height for tiles for different areas shall be as per schedule and instructions of Engineer-in-charge.

Italian Marble Flooring:

The best quality Pre polished Italian marble stone from approved quarry shall be machine cut and machine polished as specified in respective items and shall be of specified thickness and of approved quality and size, free from cracks and flakes and shall be uniform colour, with straight edges. The sides of machine cut and machine polished stones shall have perfect right angles and surface smooth. The stone slabs shall be laid and finished on bedding of cement mortar 1:4 (1 cement: 4 coarse sand) 20 mm (average) thickness. The flooring work will be inclusive of 100mm high skirting which flushed with the wall & with a 5mm high groove above it. The Italian marble skirting is laid on min 20mm thick cement mortar of ratio 1:3 (1 cement: 3 coarse sand) and joined with white cement slurry mixed with matching colour pigment, to match the shade. The finished stone surface thus laid to the required degree as approved by the Architect/BIS. Rate shall be inclusive of p.o.p protection, cleaning of the floor and disposal of debris from site, in all respects, up to final handover of the site. The tolerance of the stone slab should be followed as per the Granite stone item.

Ceramic Tile Flooring

The tiles shall be of approved make and shall generally conform to IS: 15622. They shall be flat, and true to shape and free from blisters crazing, chips, welts, craling or other imperfections detracting from their appearance.

The tiles shall be square 400 x 400 or 300 x 300 mm or as directed by the Engineer-in-charge. The thickness of the tiles shall be as per manufacturers specification of proved make & brand. The length of all four sides shall be measured correct to 0.1mm and average length breadth shall not vary more than 0.8mm from specified dimension. The variation of individual dimension from average value of length / breadth shall not exceed 0.5mm. Tolerance in thickness shall be 0.4mm.

Preparation of Surface and Laying

- a) Base concrete or the RCC slab on which the tiles are to be laid shall be cleaned, wetted and mopped. The bedding for the tile shall be with cement mortar 1:4 (1 cement : 4 coarse sand) or as specified. The average thickness of the bedding shall be 12mm.
- b) Mortar shall be spread, tamped and corrected to proper levels and allowed to harden sufficiently to offer a fairly rigid cushion for the tiles to be set and to enable the mason to place wooden plank across and squat on it.
- c) Over this mortar bedding neat gray cement slurry of honey like consistency shall be spread at the rate of 3.3 kg of cement per square meter over such an area as would accommodate about twenty tiles. Tile shall be soaked in water washed clean and shall be fixed in this grout one after another, each tile gently being tapped with a wooden mallet till it is properly bedded and in level with the adjoining tiles. The joints shall be kept as thin as possible and in straight lines or to suit the required pattern.
- d) The surface of the flooring during laying shall be frequently checked with a straight edge about 2 m long, so as to obtain a true surface with the required slope.
- e) Where full size tiles cannot be fixed these shall be cut (sawn) to the required size, and their edge rubbed smooth to ensure straight and true joints. Tiles which are fixed in the floor adjoining the wall shall enter not less than 10mm under the plaster, skirting or dado.
- f) After tiles have been laid surplus cement slurry shall be cleaned off.

Pointing and Finishing

The joints shall be cleaned off the grey cement slurry with wire / coir brush or trowel to a depth of 2mm to 3mm and all dust and loose mortar removed. Joints shall then be flush pointed with white cement added with pigment; if required to match the colour of tiles. The floor shall then be kept wet for 7 days. After

curing, the surface shall be washed and finished clean. The finished floor shall not sound hollow when tapped with a wooden mallet.

GRANITE WORKS

- a) The granite stone should be from south Indian quarry. The granite stonework shall, in general, be carried out as per the CPWD Specifications. The specifications for dressing, laying, curing, finishing, measurements, rate etc. for the granite stone flooring shall be same as that of works for the Marble flooring, skirting and risers of steps under Flooring Sub Head of the CPWD Specifications. The wall lining 1 veneer work with granite stone shall be as per the CPWD Specifications for Marble work Sub Head.
- b) Granite stone tiles and slabs shall be pre polished (mirror polished), eggshell polished, flame finished or given any other surface treatment as specified, as per the I drawings and as directed by the Engineer-in-charge.
- c) Machine polishing and cutting to required size shall be done with water (as lubricant) only. Sawing shall also be done preferably with water as lubricant but as a special case, the Engineer-in-Charge may permit at his discretion, oil or kerosene as lubricant subject to all kerosene or oil in the body and surface of tiles / slabs being thoroughly dried in ovens. Tiles I slabs with stains or patches due to the use of oil or otherwise, either before or after installation, shall be rejected or shall be replaced by the Contractor at his own cost. Nothing extra shall be payable on this account.
- d) Granite stone slabs shall be individually packed in cardboard paper. These shall be handled carefully to prevent any damage .The stone slab procured shall be free of any surface defect or any edge damage. The damaged stones shall not be allowed to be used in the work. So the Contractor shall procure additional such quantities, to cover such contingencies. However nothing extra shall be payable on this account. The stone slabs shall not be waxed or touched up with dyes / colours.
- e) The granite stone slabs to be procured for the work shall match the samples shown to the Contractors before submission of the tenders. Before starting the work, the Contractor shall procure and submit the samples of granite stone slab (matching to the samples shown to the Contractors before submission of the tenders) for the approval of the Engineer-in-charge. The samples shall be submitted along with the following details:
 - i) Three representative samples for each type of granite stone specified.
 - ii) Details of physical characteristics such as dimensional tolerances (within the specified limits), water absorption, compressive strength, Mohs Hardness, Specific gravity with reference to IS or International standards.
 - iii) Source of supply and confirmation of availability in full quantity and uniformity of colour, tone and textures.
 - iv) Company profile of suppliers.
 - v) Procedure for fixing including samples of fixtures such as clamps, pins, dowels etc. samples for the various types of the granite stones shall be final and binding on the Contractor. No claim of any kind whatsoever shall be entertained from the Contractor on this account. The Contractor shall then procure and get the mock up prepared at site of work for approval of quality of workmanship and the granite stone as specified. The mock up shall be prepared in lift lobby, toilet etc. on one of the floors. The size of the stones shall be as per the Architect/BIS drawings. If the quality of the workmanship and the material is as per the required standards, the mock up shall be allowed as part of the work and measured for payment and shall not be dismantled. Otherwise, it shall be dismantled by the contractor as directed by the Engineer-in-Charge and taken away from the site of the work at his own cost. Nothing extra shall be payable on this account.
- f) The entire supply for each type of granite stone slab shall be procured from one location (in one quarry), and supplied preferably, in one lot to keep variations to the minimum. The Contractor shall also segregate and sort the slabs according to colour, shade, texture and size of grains etc. to keep variation(s) in stones used at any one floor to the minimum. Any slab with variation in the colour, shade, texture and size of grains etc., not acceptable to the Engineer-in-Charge, shall not be used in the work and shall be removed and replaced by the Contractor. Nothing extra shall be payable

on these accounts. Also no claim of any kind shall be entertained from the Contractor on this account.

- g) The stone work may be required to be carried out in patterns, design and / or in combination with granite stones of different colour and shade with or without borders and in combination of different stone slabs / ceramic tiles for which nothing extra shall be payable. The stones shall be provided in sizes and shapes as per the Architect/BIS drawings and wastages and incidental costs, if any, shall be deemed to be covered in the cost of the relevant items. Nothing extra shall be payable on this account. For the purpose of payment, the actual area of each type of granite stone provided and fixed shall be measured separately under the relevant items.
- h) The following tolerances shall be allowed in the dimension of granite stone slab:
- | Slabs: | Tolerance: |
|--------------------------|------------------|
| a) Length | $\pm 1\text{mm}$ |
| b) Width | $\pm 1\text{mm}$ |
| c) Thickness | $\pm 1\text{mm}$ |
| d) Angularity at corners | $\pm 0.25\%$ |

The stones (slab and tiles) not meeting the above tolerance limits shall be rejected and not permitted to be used in the work. Nothing extra shall be payable on this account.

- i) Stones slabs shall have uniform thicknesses within the tolerance limits and linear items like treads, sills and jambs, coping, risers, urinal partitions, kitchen / wash basin platforms, vanity counters, facias and other similar locations etc. shall have calibrated thickness i.e. exposed edges shall have uniform thickness throughout the length of the work.
- j) The flooring work shall be carried out as per the Architect/BIS drawings in design and pattern (geometric, abstract etc.) and in linear and/ or curvilinear portions and in combination with stones of different colour and shade and ceramic tiles etc. For the flooring portions curved in plan, the stone slabs (at the edge) shall be cut to the required profile and shape as per the Architect/BIS drawings. Nothing extra shall be payable on this account and any consequent wastages and incidental charges on such accounts shall be deemed to be included in the cost of such items. For the purpose of payment, the actual area of each type of granite stone shall be measured separately under the relevant items.
- k) For the steps (risers and treads) in the linear profile, the granite stone shall be provided in single pieces up to 2.0m as per the Architect/ BIS drawings, unless otherwise specifically permitted by the Engineer-in-Charge. Wherever required the joints shall be provided as per the Architect/ BIS drawings. Nothing extra shall be payable on this account.
- l) For the granite stone work in treads and risers of steps at the entrance to the building (except landing portion at plinth level) from the ground to the plinth level of the south atrium, the curvilinear profile of the steps shall be provided in smooth circular profile as per the Architect/ BIS drawing, using tread stones curved in profile (in plan, with two edges in curved profile and other two edges non parallel straight lines) and riser stones curved in profile (in elevation, with stone slab face in curved profile) to match the profiles of the steps shown in the Architect/ BIS drawings. Based on the Architect/ BIS drawings and the actual dimensions at site, the contractor shall first prepare shop drawings/ templates for the stones with curved profiles, sizes and shapes as required for risers as well as treads, so that on jointing and fixing the stones, the smooth curvilinear profile of risers and treads for the steps is achieved. However, the length of the granite stone slabs shall generally be not less than 1.2 meters unless otherwise approved by the Engineer-in-charge specifically to match the Architect/BIS details. The rate shall include any consequent wastage, incidental cost involved in this work, pop protection, cleaning of the floor and disposal of debris from site, in all respects, up to final handover of the site. For any other portion of the granite stone flooring including in the curvilinear portions of the building in plan, nothing extra shall be payable on account of carrying out the work in curvilinear portion as per the Architect/BIS drawings.
- m) The granite slabs used for providing and fixing in the sills, soffits and jambs of doors, windows, ventilators and similar locations shall be in single piece unless otherwise directed by the Engineer-in-Charge. Wherever stone slab other than in single piece is allowed to be fixed, the joints shall

be provided as per the Architect/BIS drawings and as per the directions of the Engineer-in-charge. In the cabin areas, the joints in sills shall preferably be provided in line with the partition wall. Depending on the number of joints, as far as possible, the stone slabs shall be procured and fixed in slabs of equal lengths as per the Architect/BIS drawings and as directed by Engineer-in-charge.

- n) While fixing the granite slabs in sills, soffits and jambs of doors, windows, ventilators etc., rebates shall be made by overlapping the stones at the required places for fixing shutters for doors, windows and ventilators etc. as shown in the Architect/BIS drawings and as per the directions of the Engineer - in-charge. Epoxy based adhesives shall be used for fixing the granite stones to each other, as per the manufacturer's recommendations. The authorized overlap as per the Architect/ BIS drawings or as directed by the Engineer -in- Charge shall be measured for payment under the same item. However, any extra mortar thickness required due to the overlap arrangement shall be deemed to have been included in the rate of this item. Nothing extra shall be payable on this account. However, the cut exposed edges of the granite stones shall be polished/ moulded as per the Architect/BIS drawing and such cost shall be payable under the relevant item.
- o) The granite stone slab shall be fixed over low level storage cabinets using necessary adhesive as per the manufacturer's specification. The stone shall have uniform thickness and shall be provided in sizes as per the Architect/BIS drawings. The stone slab shall have uniformly leveled surface after fixing. All the joints shall be finished smoothly in a workmanlike manner.
- p) The edge moulding/ nosing polishing to the cut exposed edges of the granite stone slab to be used in flooring, skirting, dado, sills, jambs, soffits on top of the storage cabinets, risers, treads etc. shall be provided in a workmanlike manner as per the Architect/ BIS drawings and shall be payable under relevant items. The skirting in the staircase area will be 150mm high & flushed with the wall with 5mm thick groove above it. The laying pattern of skirting will be as per Architect/ BIS drawings.

VITRIFIED TILE FLOORING & DADO WORKS:

- a) Vitrified tiles, of 1st quality, of approved manufacture with size of as specified of required colour and shade (pastel shades) shall be used in the work. The tiles shall be in glazed or matt finish as specified. The tiles shall conform to IS 15622 I EN 176 'Group 81a. However, the dimensional tolerance of the vitrified tiles shall be $\pm 0.10\%$ in length, $\pm 1.0\%$ in thickness, $\pm 0.1\%$ in rectangularity, $\pm 0.1\%$ in surface flatness.
- b) The Contractor shall procure and submit the samples of the tiles, of required colour, shade, design & make, for the approval of the Engineer-in-charge prior to the execution of the item. The mock up, protection etc. shall be as specified above for the granite stone work.
- c) The entire material shall be procured preferably, in one lot from one manufacturer to avoid any variation in the colour, shade and design of the tiles. Any tile with variation in the colour, shade and design, not acceptable to the Engineer-in-Charge, shall not be used in the work and shall be removed and replaced by the Contractor. Nothing extra shall be payable on this account.
- d) The Contractor shall obtain and submit to the Department the manufacturer's certificate for compliance of the material as per the manufacturer's specifications and also a copy of the manufacturer's test report for the record.
- e) The tiles shall be transported to site well packed in boxes. These shall be handled carefully to prevent any damage. The tiles procured shall be free of any surface defect, edge damage and any other such defects. The defective/ damaged tiles shall not be allowed to be used in the work. So the contractor shall procure additional quantity of tiles to cover such contingencies. However nothing extra shall be payable on this account.
- f) The work shall be carried out as per the Architect/ BIS drawings and as per the directions of the Engineer-in-Charge. The work may be carried out in design and pattern in linear as well as curvilinear portions of the building, as per the Architect/ BIS drawings. Nothing extra shall be payable on account of any wastage, incidental costs etc.

- g) The flooring/ dado should be set out such that the perimeter corner tiles are in excess of half a tile so that the edge panels on both the sides are of equal sizes, as far as possible. The tiles shall be cut to required size and shape in a workman like manner but with all precautions as per the manufacturer's specifications. The vitrified tiles skirting is 100mm high & is flushed with the wall & with a 5 mm thick groove above the skirting with water absorption less than 0.08% & confirming to IS 15622 of approved make in all colours & shades, laid on min 12mm thick cement mortar 1:3 (1 cement : 3 coarse sand) and joined with white & ready mixed matching pigment .
- h) The floor tiles shall be laid to required pattern with or without 3 mm spacer as recommended by the manufacturer, as specified by Engineer-in-charge. After allowing 3 to 4 days wet curing, the joints shall be filled with polymer modified cementitious grouts with polymer modified cementitious adhesive of equivalent approved brand and with pigments of approved colour and shade as directed by the Engineer -in-charge. The excess grout shall be wiped off with a damp sponge after fifteen minutes of application.
- i) Adequate care shall be taken before installation as well as afterwards till handing over the building for occupation. The flooring shall be free of any scratches, stains etc. at the time of handing over. Abrasive cleaners shall not be used to clean the marks.
- j) The preparation of base surface, laying, measurements, rates, frequency of testing shall in general be as that of Glazed tile flooring & dado as per CPWD Specifications.
- k) For the purpose of payment, actual area of the vitrified tile flooring work shall be measured in sqm correct to two decimal places. No deduction shall be made for joint width between the adjacent tiles. The rate also includes all the charges for labour, material, T&P, Cutting tools/machines consumables etc required for job, p.o.p protection, cleaning of the floor and disposal of debris from site, in all respects, up to final handover of the site.

FALSE CEILING

POP

False Ceiling

- a) The thickness of POP ceiling shall be 10mm & will include all the curves, coves, etc as per Architect/BIS design. The frame work shall be treated with one coat of primer or zinc coating of grade 350 as per IS 277 and shall be true to planers or slopes as specified.
- b) The joints in the expanded metal shall be provided only under the main steel frame work. The plaster of Paris shall be of calcium sulphate semi-hydrate variety, its fineness shall be such that when sieved through a sieve of IS sieve designations 0.075mm for 5 min after drying the residue left on it shall not be more than 1% by weight. It shall not be too quick setting. Initial setting time shall not be less than 13 min. The average compressive strength of material determined by testing 5 cm cubes after removal from mould. After 24 hours and drying in an oven at 40 °C till weight of the cubes is constant, shall not be less than 84 Kg/sq.m.
- c) The material will be mixed with water to a workable consistency; plaster of Paris shall be applied to the underside of expanded metal in suitably sized panels and finished to a smooth surface by steel trowels. The finished surface shall be smooth and true to planed slopes or curved as required.

Mineral

fiber Ceiling

The Mineral fiber ceiling should be a recessed visible grid and a tegular edge design, creating a ceiling with a shadow effect that accentuates each tile and partially conceals the grid system. The visible surface of each tile should be 7mm below the grid.

- a) **ACCESSIBILITY:** The tiles should be easily demountable. Minimum demounting depth according to installation diagram.
- b) **Light Efficiency:** White 010, nearest NCS color sample S 0502- Y, 84% light reflectance (of which more than 99% is diffuse reflection)
- c) The system should be consists of connect grid system , with an approximate weight of 2.5 kg/m² , manufactured room high density glass wool, The visible surface should be coating and the back of the tile is covered with glass tissue. The edges are painted. Measurements: Length and breadth of the plan area of the finished work shall be measured correct to a centimeter. No deduction shall be made for openings provided nor shall extra payment be made either for any extra material or labour involved in such openings. Rate shall include provision of access panel with MDF panel, rate to include decorative work with such or raised levels in false ceiling. Rate shall include all scaffolding staging etc.

Aluminum / GI perforated Metal Ceiling system

The metallic ceiling shall have regular beveled/plain edge powder Coated aluminum / GI ceiling tiles In size 600mm x 600 mm x 0.6 mm & color RAL 9003 white & having perforation of 1.8 dia circle with a backing of factory pressed black non woven tissue the epoxy powder coat should electro statically be applied in a controlled environment and then be baked to achieve the perfect fusion with the metal surface to be laid on to be exposed grid system 24mm comprising main runner, cross tees and wall angles. for installation to comprise intermediate channel of size 45mm x 0.55mm thk with two flanges of 15mm each suspended at 1200 mm clipped to spring runner, bracket and connectors for spring runners securely fixed to structure using GI soffit cleats fixed to ceiling with 6mm dia and 50mm long dash fasteners, 4mm GI adjustable rods with galvanized level clips spaced at 1200mm center along with the runner by approved suspension and bracket and connectors for spring runners. Wall angles 19mm X 22mm with clips to be secured to the wall at 450mm maximum center to the successful completion of the job to the satisfaction of the Engineer-in-charge. The rate shall be inclusive of making openings for light fittings, grills, diffusers, cutouts, wastage and necessary hardware etc.

Demountable Aluminum Ceiling

- a. The ceiling should be laid in true horizontal level with Concave and Convex demountable ceiling panels made of aluminum of nominal size 600mmx900mmx1.0mm (actual size:607x911x1.0mm) having a perforated (micro perforation with 2.5mm dia holes and 22% open space and 12.8mm border) surface and having Fire Performance CLASS A (ASTM E 84) and an NRC of 0.7 suitable for Green Building application, with Recycled content of 50%. The tile shall have colour as per approval and acoustical fleece glued to the back of the tile shall be laid on hook-on grid systems with hook-on (J-bar) carriers and Alignment (spacer) bars suspended from the structural soffit using a system of threaded rods. The rate shall be inclusive of making openings for light fittings, grills, diffusers, cutouts, wastage and necessary hardware etc all complete as per Engineer-In-charge at site.
- b. Alignment bars will be spaced at every 1200 mm intervals secured to the structural soffit using 6mm (M6) threaded rods in a direction parallel to the length of the curved panels. The hook on carrier bars shall be secured perpendicular to the alignment bars using rivets or nuts at every 911mm intervals. The concave and convex curved panels shall be placed alternatively on the hook-on bars and secured by the special tabs provided on the hook-on carriers. Special perimeter trim (optional) may be fabricated to conceal the carrier bars in the shorter direction of the panel. The rate shall be inclusive of making openings for light fittings, grills, diffusers, cutouts, wastage and necessary hardware etc.

SS metal ceiling

The ceiling should be perforated & laid Clip-in & will consist of 600x600 mm clip in tiles of stainless steel in 0.35 mm thickness with bevel edge in metallic finish with Light Reflectance > 60% and suitable for Green Building application, with Recycled content of 25%.

Installation: To comprise 3000mm long „C“ channels spaced at 1200mm centers securely fixed to the structural soffit by support clamp & approved hangers. The last hanger at the end of each C channel should not be greater than 600mm from the adjacent wall. Use a C-channel connector for splicing two pieces of C-channels. 4000mm Dp-12 Main carriers (spring tee bars) shall be spaced at 600mm centres in a direction perpendicular to the C- channels and shall be secured at every intersection with C channel using a dp-12 hanger. Tiles should be clipped in between two Dp-12 carriers (spring tee bars) from below. Perimeter trims to be of wall angles of white colour secured to walls at 450mm maximum centers. Cut tiles to be secured to the wall angles using a spring clamp. All complete as per Arch Drawing. Rates inclusive of necessary cutouts

Wooden false ceiling

The wooden false ceiling is made of 10mm thk. Commercial ply finished with 4mm thk veneer or 1.5 thick laminate as specified as per Architect/BISure drawing. The Frame work to be made out of 50mm x 50mm kail wood frame, including vertical support and horizontal grid at 450 mm c/c spacing, all frameworks to be painted with antitermite & fire-resistant paint all exposed wood and veneer finish with approved colour & shade of melamine polish. False ceiling frame work shall be hanging with the slab via Ms Frame. Rates including all associated hardware, etc all complete as per Arch Drawing. Rates inclusive of necessary cutouts (for fittings, lights, speakers or AC outlets, installation at all heights and levels, including double scaffolding.

Calcium silicate board false ceiling

The thickness of the false ceiling should be 12.5mm thick conforming to IS: 2095 including providing and fixing of frame work made of special sections power pressed from MS sheet and galvanized in accordance with zinc coating of grade 350 as per IS: 277 and consisting of angle cleat of size 25 mm wide x 1.6 mm thick with flanges of 22 mm and 37 mm at 1200 mm centre to centre one flange fixed to the ceiling with dash fastener 12.5 mm dia x 40 mm long with 6 mm dia bolts to the angle hangers of 25 x 25 x 0.55 mm of required length, and other end of angle hanger being fixed with nut and bolts to GI channels 45 x 15 x 0.9 mm running at the rate of 1200 mm centre to centre and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed The joints between the Calcium silicate board are finished flush and even with jointing compound and tape. Coat of primer suitable for Calcium silicate board after putty including double scaffolding. All complete as directed.

Partitions and cabinet work

General: Partitions, cabinets, etc. shall be fabricated and assembled in the workshop as far as practicable and then brought inside the building ready to set in place. The various members shall be worked in the best manner known to the trade, mortised and tenoned, doweled, blocked and glued together so as to avoid the use of nails as far as possible. The details shall be closely followed, molding clearly cut and miters accurately made. Free edge of shutters, shelves, partitions, sides etc. shall be provided with first class rubber wood edging, glued and nailed in approved manner. Drawer bottoms shall be of 6 mm commercial ply, unless otherwise shown. Drawer front, sides and back shall be of first class Steam Beach wood. The drawers shall slide on SLIDING CHANNELS unless otherwise specified. In partitions 12mm thk commercial ply is to be used to cover the frame work.

Preservative treatment: All wood work in contact with masonry shall be painted with approved asphalt or anti termite & fire retardant coating (Viper or equivalent) before placing. Care shall be taken to keep exposed surfaces clear from tar etc. felt shall be used to isolate wood from masonry wherever practicable. All concealed wood etc. shall be treated fully and liberally with so lignum before placing in position.

Painting and Polishing: All exposed teak faces of partitions, glazing, doors, cabinet work etc. shall be Duco painted/ polished to approved finish. Door shutters, internal faces of cupboards and cabinets etc. shall be enamel painted to get approved finish. Drawer bottoms, sides of drawers, etc. oiling etc. shall be carried out as specified. All the paints & polishes should be of LOW VOC content as per Green building norms

Protection of work: The contractor shall be responsible for the temporary doors and closing in opening necessary for the protection of the work during progress. He shall also provide and maintain any other temporary.

Timber / wood work

General: Specified variety of timber shall be used in the work. The timber shall be sawn in the direction of grains. The sawing shall be truly straight and square.

- i) Timber generally is to be the best of kind, well and properly seasoned, of matured growth, free from worm holes, large loose or dead knots or other defects and sawn i.e., squarely and will not suffer warping, splitting or other defects through improper handling.
- ii) The hardwood is to be well seasoned Hollock, Kail, Marandi or other approved similar locally obtainable hardwood weighing 610 Kg/cum.
- iii) Teak wood would be of best quality from Burmah, Dandeli, and Balarshah, free from soft heart, worm holes and weighing 640 Kg /cum.
- iv) The moisture contents in wood shall be as per the CPWD Specification 1977. The testing of wood shall be carried out as per CPWD Specification 1977.
- v) All Steam Beach wood shall be free from worm holes, soft sap or knots. The wood shall be well seasoned as per IS: 287:1973 with a moisture content of 10%.
- vi) Kailwood shall be of good quality, well seasoned free from defects such as dead knots, cracks, sapwood etc. No individual hard and sound knot shall exceed 6 Sq.cm. In size and the aggregate area shall be more than 1% of the area of the pieces. These shall not be less than 2 growth rings per cm. width in cross-section.
- vii) All dimensions given in the schedule of quantities and drawings are the required finished sizes.
- viii) Timber shall be well seasoned and kiln dried with a moisture content of 12% nominal plus 2% for teak wood. The contractor should get the timber tested for moisture content of wood at his own cost.
- ix) All timber shall be treated with preservatives and fire retardants.

- x) All timber shall be free from worm holes, loose or dead knots or other defects and shall not suffer from warping, splitting or other defects.
- xi) All wood to be used shall be FSC certified.

Commercial Plywood

Plywood to be used shall be grade BWR, i.e., it shall have bounded with BWR (Boiling Water Proof) type synthetic resin adhesive shall be equal or superior quality that is laid down in IS: 303-1960.

The veneers for all grades shall be either rotary cut or sliced. The Veneers shall be sufficiently smooth to permit even spread of glue. The thickness of all veneers shall be uniform, within a tolerance 5%, corresponding veneers on either side of center one shall be of the same thickness and species. The requirement of thickness of the face and core veneers shall be as follows:

- a) In 3 ply board upto 5 mm thick, the combined thickness of the face veneers shall not exceed twice the thickness of the center ply.
- b) In a multiply boards, the thickness of any veneer shall not more than thrice the thickness of any other veneer.
- c) The sum of the thickness of the veneers in one direction shall approx. to the sum of the thickness of the veneers at right angles to them and shall not be greater than 1-5 times this sum except for 3-ply as specified in (a).

Door Shutters – Flush Shutters :

- a) All door shutters shall be 35 mm thick flush door solid core type non-decorative Industrial made conforming to IS – 2202 and ISI certified with block board core (confirming to the requirements as per IS-1659), for which the manufacturer shall produce the necessary evidence. The flush shutters shall be made with internal lipping of hardwood 25 mm thick and both faces commercial ply veneered. Adhesive used shall be phenol formaldehyde synthetic resin conforming to BWP types specified in IS-848-1974.
- b) Contractor shall obtain the approval for the name of the manufacturer of the flush door shutters from the Engineer-in-charge before placing the supply order. While asking for the approval, copy of the “Bureau of Indian Standard” letter under which manufacturer has been authorized to mark the product with ISI marking should be attached. Engineer-in-charge, before giving the approval shall ensure that the validity date of license has not expired.

Testing of Flush Door Shutters:

On receipt of the shutters at site, the Engineer-in-charge shall be entitled to get the samples of door shutters tested in any approved laboratory. From each lot of shutters, one shutter shall be selected at random by the Engineer-in-charge. The cost of the door shutters selected as samples, their transportation to the laboratory and cost of testing by the laboratory shall be borne by the Contractor, and shall be deemed to be included in the quoted rates.

- a) **REBATING:** The shutters shall be single leaf or doubled leafed as shown in the drawings and as directed by Engineer-in-charge. In case of double leafed shutters, the meeting of the stiles shall be rebated by one third the thickness of the shutter.
- b) On all door shutters, laminate, 1.5 mm th. shall be pasted with adhesives as specified by the manufacturers. The laminate shall be as per approved shade & texture, of make
- c) The bottom of shutters shall be 5mm above the finished floor level.
- d) Wherever stainless steel sheeting as a strike plate is mentioned, it shall be pasted with SR 198, along with SS stud screws @ 200 c/c, 50mm inside of all edges. This shall be pasted upto the bottom 1350mm ht. or as shown in the drawing. The SS sheet shall be 0.5 MM th. A sample of a single leaf as well as a double leaf shall be made and got approved from the Engineer-in-charge before

ordering mass production. The sample, once approved shall be retained in the approved materials store under the supervision of the Engineer-in-charge.

- e) Vision panel, wherever needed shall be 5.5mm. th. plain glass of the size as mentioned in the drawings. The panel shall be fixed within the cut-out made from within the door shutter. The cut edges shall be fixed with TW lipping 35 x 8mm. The lipping shall be flushed with the outer edges of the door and the glass fixed in the center of this lipping with quarter round beadings, 15x15 mm.

LAMINATES

- a) Thickness of the laminate to be used shall be 1.5 mm.
- b) Joints in the laminates will not be permitted until and unless the same is unavoidable or is required as per the drawings

Hardware

Extent and intent: The intention of the contract is that that the building as shown shall be completely equipped with required hardware. Any required item not noted or listed shall be finished in a grade equal to and in harmony with similar item listed.

General: All hardware shall be of the best quality of its type and strictly in conformity with the materials and finish described in schedule of hardware. If called upon to do so, the contractor shall arrange to get hardware specially manufactured to the design, requirements and standards laid down by the Architect/BIS.

Samples: Samples of each different item of hardware including screws or any particular item of hardware shall be submitted to the Architect/BIS for approval.

Quality: All hardware shall be of perfect fit, uniform in finish and free from imperfections that affect serviceability or mar the appearance.

Guarantee: The contractor shall be responsible for the proper working of all hardware, for a period of one year from the date of completion of acceptance of the building.

Adhesives

Adhesive shall be Phenol Formaldehyde Synthetic resin conforming to B.W.P. (Boiling Water Proof) type specified in IS: 848-1974. Only synthetic resin adhesive shall be used for bonding cores members to one another, including core frame, and for lipping, glazing frame, Venetian frame and other exposed parts where such binding is done.

Nails, spikes, screws and bolts

Nails, spikes and bolts shall be of the best quality mild steel or wrought and of length and weights approved by the Architect/BIS. Nails shall comply with IS: 1959-1960 or equivalent approved quality samples. Bolts with I.S. or equivalent approved quality samples. Brass headed nails are to comply with B.S. 1210. Wire staplers shall comply with B.S.1494 or equivalent.

Rough Carpentry: Materials unless otherwise called for, all framing and other concealed wood members shall be of first class hard wood.

Workmanship: All carpenter's work shall be done by skilled workmen using proper tools. All joints shall as far as possible, be mortised and tenoned and glued with best quality approved waterproof glue. Where mortise tenon joints are not possible, the joints shall be securely nailed with the longest nails that may be used without splitting the wood. Wherever it is necessary or adequate joints cannot be formed by nailing, the members shall be lapped or jointed by GI straps or extra wood blocks. All joints shall be done with neatness and as approved and directed by the Architect/ BIS.

P.O.P. Punning

General: Plaster of Paris punning (Plaster) is generally applied on already cement plastered surface to give it a smooth and even surface.

Preparation of surface: Projecting burrs of mortar formed during existing cement plaster shall be removed. The surface shall be scrubbed clean with wire brushes. In addition the plastered surface shall be pock marked with painted tool, at spacing of not more than 4 cm centers and depth of pocks to be approx. 3 mm deep. This is to ensure a proper key for the plaster. The surface shall be cleaned of all oil and grease marks etc.

Plaster of Paris: The Plaster of Paris shall be of semi-hydrate variety calcium sulphate. It shall not be too quick setting. Initial setting time shall not be less than 17 minutes.

Application: The material will be mixed with water to a workable consistency. Plaster of Paris shall be applied directly on the wall plasters in suitable sizes panels and finished to smooth surfaces by steel trowels. The plaster shall be applied in such a manner that it fully fills the gaps the thickness over the plastered surface is as specified int. the description of the item. The finished surfaces shall be smooth and true to plane, slopes or curves as required.

Painting

Extent and intent: The contractor shall supply all materials, labour, tools, ladders, scaffolding and other equipment necessary for the completion and protection of all painting work. Painting, as herein specified shall be applied to all surfaces requiring painting throughout the interior and exterior of the building as given in the schedule of finishes or elsewhere. Care is to be taken that all surfaces to be painted are thoroughly cleaned and dry.

Materials: Materials used in the work shall be of manufacture approved by the Architect/BIS/Employer. Ready mixed paints, varnishes, enamels, lacquers, stains, paste fillers, distempers and other materials must be delivered to the job site in the original containers, with the seals unbroken and labels intact. Each container shall give the manufacturer's name, type of paint, colour of paint and instructions for reducing the thinning shall be done only in accordance with directions. Remove rejected materials immediately from the premises.

Colour: All colours, as provided in the colour schedule shall be approved by the Architect/BIS/Employer. The contractor shall mix manufacturer's colours as per Architect/BIS requirements and shall prepare painted samples of the colours selected and submit same for approval by the Architect/BIS. No work is to proceed until the Architect/BIS has given his approval, preferably in writing of the colour samples.

Commencement of work: Painting shall not be started until the surfaces to be painted are in a condition fit to receive painting and so certified by the Architect/BIS. Painting work shall be taken in hand only after all other contractor's work is completed. Building where painting work is to be commenced shall be thoroughly swept and cleaned up before commencement of painting.

- a) White wash shall be provided to over plastered surfaces, if any, as directed by Project Manager and Architect/ BIS.
- b) Dry distemper of approved shade shall be provided to all internal surfaces of all rooms including toilets and kitchen etc. all as directed by Project Manager and Architect/ BIS.
- c) Before application of white wash / distemper the surfaces shall be prepared to clean and even surface.
- d) White wash shall be prepared from lime slacked on site, mixed and stirred with sufficient water to make a thin cream. This shall be allowed to stand for 24 hours and shall be screened through clean cloth. Four kg. of gum dissolved in hot water shall be added to each cubic meter of the cream (115 gm/cft). Blue shall be added to give required whiteness. The approximate quantity of water to be added in making cream shall be five liters per kg. of lime. 10% Zinc Oxide shall also be added to obtain a desired shining in the white wash.
- e) Dry distemper shall be carried out in two or more coats over one coat of approved primer as per manufacturer's instructions to give even shades.

- f) White wash and dry distemper shall be applied in specified coats by using flat brushes or spray pumps. Each coat shall be allowed to dry before next coat is applied, if additional coats than what have been specified are necessary to obtain uniform and smooth finish it shall be given to no extra cost.
- g) The finished dry surface shall not show any signs of cracking and peeling nor shall it come off readily on the hand when rubbed.
- h) All paints have to be low VOC paints and certificates of the same should be provided by the bidder.

CEMENT BASE PAINT

Two or more coats of cement base paint shall be applied to give even shade on all external cement plaster, internal plaster surfaces or parapet surfaces. Soffits of chajja, lintels, beams and cills of external windows. The shades of paint shall be used as approved by the Engineer-in-charge. Each coat shall be cured well by wetting surfaces for at least three days.

Alternatively, white cement slurry shall be used with pigment as required to achieve the desired shade. The white cement slurry shall be such as to provide a spread of 15 Sq.M per bag (50Kg) of white cement.

For all external paints, a patch at least 10 Sq.M. in area has to be done and got approved from the Engineer-in-charge for quality, shade & texture.

ACRYLIC EMULSION PAINT

These paints are to be used on internal surfaces except wooden and steel.

Plastic emulsion paint as per IS : 5411 of approved brand and manufacture and of the required shade shall be used.

Painting on New Surface

- a) The surface shall be thoroughly cleaned and dusted off. All rust, dirt, scales, smoke splashes, mortar droppings 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, before painting is commenced.
- b) Application : The number of coats shall be as stipulated in the item. The paint will be applied in the usual manner with brush, spray or roller. The paint dries by evaporation of the water content and as soon as the water has evaporated the film gets hard and the next coat can be applied. The time of drying varies from one hour on absorbent surfaces to 2 to 3 hours on non-absorbent surfaces.
- c) The thinning of emulsion is to be done with water and not with turpentine. Thinning with water will be particularly required for the under coat which is applied on the absorbent surface. The quantity of water to be added shall be as per manufacturer's instructions. The surface on finishing shall present a flat velvety smooth finish. If necessary more coats will be applied till the surface presents a uniform appearance.
- d) Precautions :
 - i) Old brushes if they are to be used with emulsion paints should be completely dried of turpentine or oil paints by washing in warm soap water. Brushes should be quickly washed in water immediately after use and kept immersed in water during break periods to prevent the paint from hardening on the brush.
 - ii) In the preparation of wall for plastic emulsion paintings, no oil base putties shall be used in filling cracks, holes etc.

- iii) Splashes on floors etc. shall be cleaned out without delay as they will be difficult to remove after hardening.
- iv) Washing of surfaces treated with emulsion paints shall not be done within 3 to 4 weeks of application.

NOTE

The specifications of the various items of the works will be as per latest editions of CPWD specifications for work with all correction slips. In absence of any detailed specifications in CPWD, latest Indian Standard specifications and code of practice shall become applicable. Wherever, these codes are silent, the same shall be governed by sound engineering practice and the decision of EIC in matters of interpretations etc. shall be final and binding on the Contractor. In case of the material supplied by the specialized agencies the material specifications of the same agencies shall be made available with their address and telephone No. by the contractor and shall be used as per the same specification and as per the direction of EIC. If required the contractor shall arranged the inspection/ verification of the items from the Engineer of the expert agency. Item wise detailed technical specifications may be described in the tender to correlate with drawings and BOQ

Polishing works

Spirit polish

Polish: Polishing material shall be prepared by dissolving pure shellac, varying in shade from pale orange to lemon yellow, free from direct and other materials, in methylated spirit at the rate of 0.15 Kg. shellac to 1 litter of spirit. Suitable pigment to achieve the required shade of polish shall be added as directed by the Architect/ BIS.

Preparation of Surface: The surface, cleaned of all dirt etc. shall be rubbed down smooth with sand paper and well dusted. Knots if visible shall be covered with a preparation of red lead and glue size laid on while hot. Holes and indentations shall be given a coat of wood filler made by mixing whiting (ground chalk) in methylated spirit at the rate of 1.5 Kg. of whiting to one litter of spirit. The surface shall again be rubbed down perfectly smooth with fine sand paper and wiped clean.

Application: Three or more coats of polish shall be applied over the above surface, to achieve a finish as approved by the Architect/ BIS. The polish shall be applied with a pad of woolen cloth covered by a fine cloth. The pad moistened with polish shall be rubbed had on the wood surface in a series of overlapping movements, applying the material uniformly over the entire area to give an even finish. Subsequent coats shall be applied in similar manner after the previous coat is allowed to dry. The finishing shall be done with fresh piece of clean fine cloth, damped with methylated spirit and applied by light rubbing. The finished surface shall have a uniform texture and high gloss.

Wax Polishing

Preparation of Surface: The surface to be polished shall have been finished smooth. Knots, cracks and holes on the surface shall be cleaned and filled with wood putty (fine saw dust mixed with bees wax). The fillings when dry shall be rubbed down with a carpenters file and then the entire surface shall be rubbed down perfectly smooth and wiped clean. In no case shall sand papers be rubbed across the grains so that even fine marks are not seen on the surface.

Application: The polish shall be applied evenly with a clean soft pad of cotton cloth in surface is completely and fully covered. The surface is then continuously rubbed till the surface is quite dry. A second and third coat shall be applied in the same manner and rubbed continuously until the surface is dry. The final coat shall then be applied and rubbed until the surface has assumed a uniform gloss and is dry, showing no sign of stickiness. The finished surface shall have a uniform flossy finish as approved by the Architect/BIS.

MELAMINE FINISH

- a. The Melamine finish shall be applied on the French spirit polished surface.

- b. The melamine coat preferable of clearly hard glaze shall be applied with a cloth Pad. The surface shall then be left to dry for at least six hours and further coats are applied with a paint brush. If the duration of gap is more than 24 hours between coats, the previous coat shall be rubbed down with a fine glass paper or a medium grade of steel wool. The matt finish shall be obtained by giving a final coat of clean reseal matt coat.

GENERAL LIST OF CODES, STANDARDS AND SPECIFICATIONS ADOPTED IN THE TENDER DOCUMENTS.

The following IS Codes and CPWD Specifications have generally been adopted in the tender documents. This list however does not limit the use of any other relevant code or standards by the BIS/Architect solely at his discretion either referred to in the tender documents or not, to achieve the desired quality of work. All the codes practice, standards and specifications applicable shall be the latest edition with all correction slips, etc. or as directed by the BIS/Architect

NUMBER/ DESIGNATION	TITLE
<u>CIVIL WORK</u>	
<u>INDIAN STANDARDS</u>	
IRC:383-1970	Coarse and fine aggregate from natural sources for concrete.
IS:456-2000	Code of practice for plain and reinforced concrete
IS:460-1985 (Part-I to III)	Testing Sieves
IS:516-1959	Methods of test for strength of concrete.
IS:1124-1974	Method of test for water absorption, apparent specific gravity and porosity apparent specific gravity and porosity of Natural Building Stone.
IS:1199-1959	Methods of sampling and analysis of concrete
IS:2386-1963	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	Petrographic examination
Part-II)-1973	Determination of water contents
Part-III)- Section-I 1980	Determination of specific gravity. Section-I Fine grained soils.
Part-III)- Section-II 1980	Determination of specific gravity fine medium and coarse grained soils
Part-IV)- 1985	Grain size analysis
Part-V)- 1985	Determination of liquid and plastic limit
Part-VII)- 1980	Determination of water content dry density relation using light compaction.
Part-VIII)- 1983	Determination of water content dry density relation using heavy compaction.
Part-XVI)- 1987	Laboratory determination of CBR
Part-XXVII-1977	Determination of total soluble sulphate.
Part-XXVIII-1974	Determination of dry density of soils in place by the sand replacement methods.
Part-XXIX-1975	Determination of dry density of soils in place by core cutter method.
IS-5640-1970	Method for determining the aggregate impact value of soft coarse aggregate.
IS:6241-1971	Method of test for determination of stripping value of road aggregate.
IS:8112-1989	43 grade ordinary Portland cement
IS:12118-1987 (Part I & II)	Two parts polysulphide based sealants.

INTERIOR WORKS

Wood Work & Hardware

<i>IS No.</i>	<i>Subject</i>
1. IS 204 (Part I)	Specification for tower bolts (ferrous bolt)
2. IS 204 (Part II)	Specification for tower bolts (non ferrous metals)
3. IS 205	Specification for non ferrous metal butt hinges
4. IS 206	Specification for Tee and strap hinges
5. IS 207	Specification for Gate and shutter hook and eye
6. IS 208	Specification for door handles
7. IS 281	Specification for mild steel door bolts for use with pad locks
8. IS 287	Recommendations for maximum permissible moisture contents of timber used for different purpose
9. IS 303	Specification for plywood for general purposes
10. IS 362	Specification for parliament hinges
11. IS 363	Specification for hasps and staple
12. IS 364	Specification for fan light catch
13. IS 401	Code of practice for preservation of timber
14. IS 419	Putty for use on window frames
15. IS 451	Technical supply condition for wood screws
16. IS 452	Specification for door spring rat tail type
17. IS 453	Specification for double acting spring hinge
18. IS 707	Glossary of terms applicable to timber technology and utilization
19. IS 710	Specifications for Marine Plywood
20. IS 723	Specification for steel counter sunk head wire nails.
21. IS 729	Specification for drawer lock, cup board lock and box locks
22. IS 848	Specification for synthetic resin adhesive for plywood (phenoic and amino plastic)
23. IS 851	Specification for synthetic resin adhesive for const. work (non structural in wood)
24. IS 852	Specification for animal glue for general wood work purpose
25. IS 1003 (Part I)	Specification for timber panelled and glazed shutter Part I (door shutters)
26. IS 1003 (Part II)	Specification for timber panelled and glazed shutter Part II (window and ventilator shutter)
27. IS 1141	Specification for code of practice for seasoning of timber
28. IS 1200 Part XIV	Method of measurement of building and civil engg work glazing.
29. IS 1200 Part XII	Wood work and joinery
30. IS 1328	Specification for veneered decorative plywood
31. IS 1341	Specification for steel butt hinges
32. IS 1378	Specification for oxidized copper finishes
33. IS 1566	Specification for hard drawn steel wire fabric
34. IS 1568	Specification for wire cloth for general purpose
35. IS 1658	Specification for hard drawn steel wire fabric
36. IS 1659	Specification for block boards
37. IS 1708 (Part 1 to 18)	Testing of small clear specimen for timber
38. IS 1734	Determination of density and moisture content.
39. IS 1823	Specification for floor door stopper
40. IS 1868	Specification for anodic coating on aluminium and its alloy
41. IS 2046	-do- Decorative thermosetting synthetic resin bonded laminated sheet
42. IS 2095	Specification for gypsum plaster board
43. IS 2096	Specification for asbestos cement flat sheet.
44. IS 2202 (Pt I)	Specification for wooden flush door shutter, solid core type (plywood face panels)
45. IS 2202 (Part II)	-do- (Particle boards and hard board face panels)
46. IS 2209	Specification for mortice lock (Vertical Type)
47. IS 2380	Method of test for wood particle board and board for lignocelluloses material
48. IS 2547	Specification for gypsum plaster
49. IS 2753	Method for estimation of preservatives in treated timber and in treating solutions.
50. IS 2681	Specification for non-ferrous metal sliding door bolts use with pad locks
51. IS 3087	Specification for wood particle boards (Medium density) for general purpose.
52. IS 3097	Specification for veneered particle board
53 IS 3828	Specification for ventilator chain

54 IS 3400 (Part II)	Method of test for Vulcanized rubber (hardness)
55. IS 3400 (Part IV)	Accelerated aging
56. IS 3400 (Part IX)	Density
57. IS 3564	Specification for door closer (hydraulically regulated)
58. IS 3618	Phosphate treatment of iron and steel for protection against corrosion
59. IS 3813	"C" hooks for use with swivels
60 IS 3818	Specification for continuous (Piano) hinges
61. IS 3847	Specification for mortice night latch
62. IS 4835	Specification for polyvinyl acetate dispersion based adhesive for wood
63. IS 4948	Specification for welded steel wire fabric for general use
64. IS 4992	Specification for rebated mortice lock
65. IS 5187	Specification for flush bolts
66 IS 5509	Specification for Fire Retardant Plywood
67. IS 5930	Specification for mortice latch
68. IS 6318	Specification for plastic wire window fasteners
69. IS 6607	Specification for rebated mortice lock (Vertical type)
70. IS 6760	Specification for slotted counter sunk head wood screws.
71. IS 7196	Specification for hold fast
72. IS 7534	Specification for sliding locking bolts for use with pad lock
73. IS 7638	Wood/lignocellulosic based panel products – Method for sampling
74. IS 8756	Specification for mortice ball catch for use in wooden almirah
75. IS 9308 (Part II)	Specification for mechanically extracted coir fibres. (Mattress coir fibres)
76. IS 9308 (Part III)	-do- Decorated coir fibre
77. IS 11215	Moisture content of timber and timber products method of determination
78. IS 12049	Dimensions and tolerance relating to wood based panel materials
79. IS 12406	Specification for medium density fibre board
80. IS 12817	Specification for stainless steel Butt Hinges
81. IS 12823	Specification for wood products –Prelaminated particle Boards
82. IS 14616	Specifications for laminated veneer lumber
83. IS 14842	Specification for coir veneer board for general purposes
85. IS 14900	Specifications for transparent float glass.

Painting & Finishing Work

IS 16(Pt-I)	Shellac : Part : I — Hand Made Shellac
IS 16(Pt-II)	Shellac : Part : II — Machine Made Shellac
2. IS 75	Linseed Oil Raw and Refined
3. IS 77	Linseed Oil Boiled For Paints
4. IS 102	Ready Mixed Paint, Brushing, Red Lead, Nonsetting, Priming
5. IS 104	Specification for Ready Mixed Paint, Brushing, Zinc Chrome, Priming
6. IS 109	Ready Mixed Paint, brushing, priming Plaster to Indian Standard Colour No.361, 631 White and off White
7. IS 117	Ready Mixed Paint, Brushing, Finishing Exterior, Semigloss for General Purposes to Indian Standards Colours.
8. IS 133	Enamel, Interior (a) Under Coating (b) Finishing
9. IS 137	Ready Mixed Paint, Brushing, Matt Or Egg Shell Flat, Finishing Interior to Indian Standard Colour as required
10. IS 158	Ready Mixed Paint, Brushing, Bituminous Black, Lead Free, Acid, Alkali and Heat Resisting
11. IS 217	Specification for Cut Back Bitumen
12. IS 218	Specification for Creosote and Anthracene Oil For Use As Wood Preservatives
13. IS 290	Coal Tar Black Paint
14. IS 337	Varnish, Finishing Interior
15. IS 341	Black Japan, Types 'A', 'B' & 'C'
16. IS 347	Varnish, Shellac for General Purposes
17. IS 348	French Polish
18. IS 419	Putty for Use On Window Frames
19. IS 427	Distemper, Dry Colour as Required
20. IS 428	Distemper, Oil Emulsion, Colour as Required
21. IS 524	Varnish, Finishing, Exterior, Synthetic Air Drying
22. IS 533	Gum Spirit of Turpentine (Oil of Turpentine)

23. IS 712	Specification For Building Limes
24. IS 1200(Pt-XII)	Method of Measurements of Building and Civil Engineering Works : Part : XII — Plastering and Pointing
25. IS 1200(Pt-XIII)	Method of Measurements of Building and Civil Engineering Works : Part : XIII — White Washing, Colour Washing Distempering and Painting of Building Surfaces.
26. IS 1200(Pt-XV)	Methods of Measurements of Building and Civil Engineering Works : Part : XV — Painting, Polishing, Varnishing etc.
27. IS 2339	Aluminium Paint For General Purposes, in Dual Container
28. IS 2547(Pt-II)	Gypsum Building Plasters Pt.II Premixed Light Weight Plasters
29. IS 2932	Enamel, Synthetic, Exterior (a) Undercoating, (b) Finishing
30. IS 2933	Enamel, Exterior (a) Undercoating (b) Finishing
31. IS 5410	Cement Paint
32. IS 5411(Pt-1)	Plastic Emulsion : Paint Part I For Interior Use
33. IS 6278	Code of Practice For White Washing and Colour Washing

Flooring Work

IS 269	Specification for 33 grade ordinary portland Cement
1. IS 455	Specification for portland slag cement
2. IS 1124	Method of test for determination of water absorption, apparent specific gravity and porosity of natural building stones
3. IS 1130	Specification for marble (blocks, slabs and tiles)
4. IS 1200-(Part XI)	Method of measurement of Building and Civil Engineering work (Part 11) paving, floor finishes, dado and skirting
5. IS 1443	Code of practice for laying and finishing of cement concrete flooring tiles
6. IS 3622	Specification for sand stone (Slab & Tiles)
7. IS 5318	Code of practice for laying of hard wood parquet and wood block floors
8. IS 8041	Specification for rapid hardening portland cement
9. IS 8042	Specification for white portland cement
10. IS 8043	Specification for hydrophobic portland cement
11. IS 8112	Specification for 43 grade ordinary portland cement
12. IS 12330	Specification for sulphate resisting portland cement.
13. IS: 13630	(Part-1 to 15) Methods of Testing of ceramic tiles
14. IS 13712	Specification for ceramic tiles; definition, classification characteristic and marking
15. IS 15622	Specification for pressed ceramic tile.
16. IS: 15622	Vitrified tiles for flooring

LIST OF APPROVED MAKES OF MATERIALS (CIVIL)

S.No.	Description	Approved Make / Manufacturers
1.	Silicon Sealant	GE / Wacker / Dow coning
2.	Waterproof Cement paint	Snowcem or approved equivalent
3.	Float Glass	Saint Gobain or Pilkington or AIS
4.	Glass Mirror	Modiguard or Atul
5.	Toughened Glass	GSC or Pilkington or Gold Plus or Asahi
6.	Aluminium structural members	Indalco or Hindalco or Jindal
7.	Fireproof Hardware Fittings	Ingersoll Rand / Godrej
8.	Fire seal	Astroflame UK or approved equivalent
9.	Flush Door Shutters	Green ply/Century/Duro/Archidply
10.	Plywood, Veneer, particle board/Laminate	Green Ply/CenturyArchidply/Duro
11.	Aluminium hardware fitting	Everite
12.	Gypsum board Partition	Lafarge Boral Gypsum / India Gypsum Ltd.
13.	Stainless steel hardware fittings	Godrej/Kich/Doorset
14.	Fire resistant shutter	Sukriti /Navair
15.	Fire resistant glass	Shott
16.	Cement (OPC-43 Grade)	JK/Ultratech/Birla/
17.	Reinforcement steel	Rathi TMT
18.	Structural steel	Tisco/Sail/Rathi
19.	Ceramic Tiles	Somany /Kajaria/Nitco
20.	Vitrified Tile	Somany/Kajaria/Nitco
21.	Gypsum false ceiling	Lafarge Boral Gypsum Or India Gypsum
22.	Mineral Fibre False Ceiling	Armstrong /AMF
23.	Acoustical Ceiling/paneling	Armstrong/Anuton/AMF
24.	Vinyl Flooring	Armstrong /Forbo/Responsive
25.	Paint, Distemper	ICI, Asian, Berger
26.	Compact Laminate cubical	Greenlam /Merino
27.	Admixtures/pigments	Pidilite/FOSROC/Sikka
28.	Waterproofing Compound	Dr. Fixit /FOSROC, or equivalent
29.	PVC water stopper	Sintex Industries Ltd /Superplast / Fixopan
30.	Stainless steel Hardware Fittings	Godrej/Doorset/Ozone
31.	Mortice locks	Godrej/Doorset/Kich
32.	GRC screens	Unistone/Delhi GRC or Equivalent
33.	Modular SS Railing System	Kich JINDAL Stainless Ltd
34.	Modular Furniture	Godrej/Herman Miller/Wipro
35.	uPVC Windows	Fenesta/Rehau/Veka
36.	Polycarbonate sheet roofing	Danpalon/Gallina
37.	Hard wood flooring	Haro/Pergo/

LIST OF APPROVED MAKES OF MATERIALS
PLUMBING WORKS

S.No	Details of equipment/ material	Make/manufacturer
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1.	Ball Cock	Sant / L&T/Audco/prima
2.	Ball valves with floats	Zoloto / Leader / Sant / Jayco /GPA/Audco/ AIP/Prima
3.	Brass stop & Bib Cock	Zoloto / Sant / Jaquar
4.	Butterfly valves	Zoloto/Audco / AIP /Sant
5.	C. I Fitting	RKS / Neco/ RIF/ SKF
6.	C.I Sluice Valve & Non Return Valve	Kirloskar / IVC/ Leader /Zoloto/L&T
7.	C.I Valves (Full way, Check and Globe Valves	Leader / Kirloskar / SKF / Zolto
8.	C.I. Manhole Covers	Neco/R.I.F./B.C./Hepco/SKF/Kajeco
9.	C.P. Fittings Mixer / Pillar taps/ C.P brass angle valve/ Valves Washers, C.P. brass accessories	Jaquar / Kingston/ Hindware
10.	Sanitary Fixtures	Kohler/Jaquar/Hindware or Equivalent
11.	C.P. Waste, Spreaders, Urinal	Jaquar/Kingston
12.	Centrifugally cast C.I Rainwater fitting / Bronze gratings etc.	Sages Metals/ GMGR/ Electro Steel
13.	Centrifugal Pump	Crompton /Kirloskar
14.	Centrifugally casted C.I. Pipes	Neco / Hepco
15.	Cockroach Trap	Chilly/ Player/ Camry
16.	CPVC Pipes & Fittings	Flowguard/ Astral/ Ashrivad/ Jain Supreme
17.	Flush Valves	Jaquar / Gem
18.	G.I. Fittings	R/Unik/Zoloto/K.S./Sun/Swastik
19.	G.I. Pipes	Jindal / Tata / Prakash Surya / SAIL
20.	Grab bars and Disabled Hardware	Dorma / Ozone/ D-line
21.	Gunmetal Valves / C.P brass angle valve	Zoloto / Leader / Kilburn / Sant / Kartar/ AIP/ Audco
22.	Hand Drier	Kopal / Utech Systems / Euronics Automat
23.	Liquid Soap Dispenser	Chilly/Euronics/Camry/Utec/Kopal

LIST OF APPROVED MAKES (FOR FIRE FIGHTING WORKS)

Engineer-in-Charge reserve the right to select the any of the brand out of the Brands listed in list of approved makes. Contractor to obtain written approval of Brand and model prior to procurement of material.

SL. NO.	MATERIALS	BRAND NAME
1.	M.S. PIPES	JINDAL HISSAR / SURYA PRAKASH / TATA
2.	G.I. PIPES	JINDAL HISSAR / SURYA PRAKASH / TATA
3.	GUN METAL BALL VALVES	ZOLOTO / AIP /HONEYWELL
4.	BUTTERFLY VALVES / WAFER TYPE NRV	ZOLOTO / AIP /HONEYWELL
5.	SUCTION STRAINER	LEADER / SANT / AIP

6.	FIRE HYDRANT LANDING VALVES, FIRE BRIGADE CONNECTION (ISI MARKED)	MINIMAX / NEWAGE / SUPEREX
7.	FIRE HOSE PIPES, FIRST AID HOSE REEL (ISI MARKED)	MINIMAX / NEWAGE / SUPEREX
8.	BRANCH PIPE, NOZZLE AND COUPLINGS	MINIMAX / NEWAGE/ SUPEREX
9.	FIRE EXTINGUISHERS	MINIMAX / SUPEREX/EVERSAFE
10.	PUMPS	KIRLOSKAR / MATHER & PLATT /BEACON
11.	MOTORS	KIRLOSKAR / SIEMENS /CROMPTON
12.	STARTERS	GE POWER / L & T CONTROL & SWITCHGEAR
13.	PRESSURE SWITCH	DANFOSS / SWIZER / INDFOSS
14.	PRESSURE GAUGE	H. GURE / FIEBIG / EMERALD
15.	ELECTRICAL CONTROL PANEL	AS PER APPROVED BY CPRI
16	MS CONDUITS	AKG/BEC/SURYAPRAKASH
17	FIRE ALARM PANEL/MANUAL CALL BOXES AND HOOTER	AGNI SURAKSHA/AGNI QUARTZ/BOSCH

NOTE :

The Contractor shall produce samples before procurement of the material for approval of the BIS/Architect, at-least one month before execution for all materials required for works. **In respect of materials for which approved makes are not specified as above, the same shall be decided by the BIS/Architect and sample got approved from BIS/ Architect before procurement.**

The Contractor shall produce samples before procurement of the material for approval of the BIS/Architect for all materials required for works. The material of makes out of the above shall be used on the work.

TECHNICAL SPECIFICATIONS

INTERNAL ELCTRIFICATION WORKS

1.0 TECHNICAL SPECIFICATION

1.0 GENERAL

The electrical Installation works shall be carried out in accordance with relevant Indian Standard Code of Practice for Electrical Installation. Electrical Installation work shall also be in conformity with National Electrical Code with up to date amendments. All electrical work shall be carried out in accordance with the provision of Indian electricity Act 1910 & Indian Electricity Rules 1956 amended up to date. The work shall also conform to Indian Standard Code of Practice for the type of work involved. It shall also be in conformity with regulations and requirements of the local electricity Supply Authority and Fire insurance regulations so far as these become applicable to the installation. Electrical work shall be carried out as per following CPWD general Specifications for Electrical works.

Part I - Internal Work - 2013 (amended up to date)

Wherever this Tender Specifications call for a higher standard of material and or workmanship than those required by any of the above mentioned regulations and specifications then the technical specifications given hereunder shall take precedence over the said regulations and standards.

2.0 WIRING (LIGHT/ POWER)

2.0.1 A point (other than socket outlet point) shall include all work necessary in complete wiring to the following outlets from the controlling switch.

- a. Ceiling rose or connector (in the case of points for ceiling / exhaust fan points, prewired light fittings, and call bells).
- b. Ceiling rose (in case of pendants except stiff pendants).
- c. Back plate (in the case of stiff pendants).
- d. Lamp holder (in the case of goose neck type wall brackets, batten holders and fittings which are not prewired).

2.0.2 Scope

Following shall be deemed to be included in point wiring:

- a. Conduit / channel as the case may be, accessories for the same and wiring cables between the switch box and the point outlet, loop protective earthing of each fan / light fixture.
- b. Where False ceiling is provided, the point shall be upto the false ceiling level and wiring shall be done upto the point without any joints. Connectors shall be provided at the fitting. Flexible conduit shall be used and couplers shall be provided to connect the rigid conduit with the flexible conduit. Connectors shall be provided at the fitting.
- c. Loop wiring in rigid / flexible conduit (flexible conduit min 1.6mm thick with couplers).
- d. All fixing accessories such as clips, screws, Phil plug, rawl plug etc. as required.
- e. Metal or PVC switch boxes for control switches, regulators, sockets etc. recessed or surface type, and PVC white covers over the same.
- f. Outlet boxes, junction boxes, pull-through boxes etc. but excluding metal boxes if any, provided with switchboards for loose wire / conduit terminations.

- g. Any special block required for neatly housing the connector in batten wiring system.
- h. Control switch or MCB, as specified.
- i. 3 Pin or 6 Pin socket, ceiling rose or connector as required. (2 Pin and 5 Pin socket outlet shall not be permitted).
- j. Connections to ceiling rose, connector, socket outlet, lamp holder, switch etc.
- k. Bushed conduit or porcelain tubing where wiring cables pass through wall etc.
- l. Interconnecting wiring between switches within the switch box on the same circuit.

2.0.3 Point wiring for socket outlet points

- a. The light (6A) point and power (16A) point wiring shall be measured on linear basis, from the respective tapping point of live cable, namely, switch box, another socket outlet point, or the sub distribution board as the case may be, up to the socket outlet.
- b. The metal / PVC box with cover; switch / MCB, socket outlet and other accessories shall be measured and paid as a separate item.
- c. The power point outlet may be 16A / 6A six pin socket outlet, where so specified in the tender documents.

2.04 Group control Point wiring

- a. In case points with more than one point controlled by the same switch, such points shall be measure in parts i.e (a) from the switch to the first point outlet as one point and (b) for the subsequent points, the distance from that outlet to the next one and so on, shall be treated as separate point.
- b. No recovery shall be made for non provision of more than one switch in such cases.

2.1 WIRING SYSTEM

- a. Wiring shall be done only by the looping system. Phase / live conductors shall be looped at the switch box. For point wiring, neutral wire / earth wire looping for the 1st point shall be done in the switch box; and neutral / earth looping of subsequent points will be made from point outlets.
- b. In wiring, no joints in wiring will be permitted any where, except in switch box or point outlets, where jointing or wires will be allowed with use of suitable connector.
- c. The wiring throughout the installation shall be such that there is no break in the neutral wire except in the form of linked switchgear.

d. COLOUR CODING

Following colour coding shall be followed in wiring:

Phase	:	Red / Yellow / Blue. (Three phase wiring)
Live	:	Red (Single phase wiring)
Neutral	:	Black
Earth	:	Green.

- e. Termination of circuit into switchboard circuit will consist of phase / neutral / earth wire. Circuit will terminate a switch board (first tapping point, where from point wiring starts) in following manner

Phase wire terminated in phase connector.
Neutral wire terminated in neutral connector.
Earth wire terminated in earth connector.

The switchboard will have phase neutral and earth terminal connector blocks to receive phase / neutral / earth wire.

2.1.0 Passing through Walls or Floors.

- a. When wiring cables are to pass through a wall, these shall be taken through a protection (steel) pipe of suitable size such that they pass through in a straight line without twist or cross them on either Steel or other approved material.
- b. All floor opening for carrying any wiring shall be suitable sealed after installation.

2.1.1 CAPACITY OF CIRCUITS

- a. Lighting circuit shall feed light / fan / call bell points. Each circuit shall not have more than 800 Watt connected load or more than 10 points. However in case of CFL points where load per point may be less, number of points may be suitably increased.
- b. Power circuit in non-residential building will have only one outlet per circuit.
- c. Load more than 1 KW shall be controlled by suitably rated MCB and cable size shall be decided as per calculations.

2.1.2 SOCKET OUTLETS

- a. Socket outlets shall be 6A 3 Pin, 16A 3 Pin or 16 / 6 Amp 6 Pin. The third pin shall be connected to earth through protective conductor (loop-earthing). 2 Pin or 5 Pin sockets are not permitted.
- b. Connecting conductors of electrical appliances with socket outlets shall be of flexible type with an earthing conductor for connection to the earth terminal of plug and the metallic body of the electrical appliance.
- c. Sockets for the power outlets of rating above 1 KW shall be of industrial type with associated plug top and controlling MCB.
- d. Shutter type (interlocking type) of sockets shall be used unless otherwise specified.
- e. Every socket outlet shall be controlled by a switch or MCB, as specified. The control switch / MCB shall be connected on the 'live' side of the line.
- f. Unless and otherwise specified, the control switches for the 6A and 16A socket outlets shall be kept along with the socket outlets.

2.1.3 CABLES

- a. Copper conductor cable will be used for sub main / circuit / point wiring or as specified in BOQ
- b. Multi-strand flexible FRLS sheathed copper conductor shall be used for sub main/circuit/point wiring.
- c. Minimum size of wiring:
 - Light Point Wiring : 1.5 / 2.5 Sq.mm (As Per BOQ)
 - Power Point Wiring : 4.0 Sq.mm

Power wiring for Hand Drier and Geyser : 6.0 Sq.mm

Power circuit wiring more than 1 KW wire size shall be as per calculation.

d. Insulation:

Copper conductor wire shall be multi stranded PVC insulated, Fire retardant, low smoke (FRLS) type.

2.2 WIRING ACCESSORIES

2.2.1 Control Switches for Point:

- a. Control switches (single pole switch) carrying not more than 16A shall be modular type. The switch shall be 'On' when the knob is down.
- b. Modular type switches of reputed make along with matching mounting boxes shall be used in non-residential buildings and residential quarters of all types. Modular type sockets, stepped type fan regulators shall be used. All such boxes, switches and accessories shall be of same make of modular switch manufacturer.
- c. It is recommended to provide double pole MCB in proper enclosure as power outlet for window type AC units, geysers etc.

2.2.2 Switch Box:

Switch box shall be hot dip galvanized, factory fabricated suitable in size for surface / recess mounting and size for accommodating the required number of switches and accessories (where required to be used for applications other than modular switches / sockets).

2.3 METALLIC CONDUIT WIRING SYSTEM

Conduits

- a. All rigid conduit pipes shall be of steel and ISI marked. The wall thickness shall be not less than 1.6 mm (16 SWG) for conduits up to 32 mm dia and not less than 2 mm (14 SWG) for conduits above 32 mm dia. These shall be solid drawn or seamed by welding, and finished with galvanized or stove enameled surface.
- b. The maximum number of PVC insulated cables conforming to IS: 694-1990 that can be drawn in one conduit is given in table I, and the number of cables per conduit shall not be exceeded. Conduit sizes shall be selected according to in number of runs wires and its size.
- c. No steel conduit less than 20 mm in diameter shall be used.

2.3.1 Conduit Accessories

- a. The conduit wiring system shall be complete in all respects, including their accessories.
- b. All conduit accessories shall be of threaded type, and under no circumstances pin grip type or clamp grip type accessories shall be used.
- c. Bends, couplers etc. shall be solid type in recessed type of works and may be solid or inspection type as required, in surface type of works.

- d. i) Saddles for surface conduit work on wall shall not be less than 0.55 mm (24 gauges) for conduits up to 25 mm dia and not less than 0.9 mm (20 gauges) for larger diameter. The corresponding widths shall be 19 mm and 25 mm.
- ii) The minimum width and the thickness of girder clips used for fixing conduits to steel joists, and clamps shall be as per Table II.

2.3.2 Outlets

- a. The switch box or regulator box shall be made of metal on all sides, except on the front. In the case of CI boxes, the wall thickness shall be at least 3 mm and in case of welded mild steel sheet boxes, the wall thickness shall not be less than 1.2 mm (18 gauge. for boxes up to a size of 20 cm x 30 cm, and above this size 1.6 mm (16 gauge) thick MS boxes shall be used. The metallic boxes shall be painted with anticorrosive paint before erection.
- b. i) Outlet boxes shall be of one of the size, covered in the Schedule of Rates (Electrical), Part – I Internal 2014 or as per manufacturer of modular switch/ socket to be used.
- ii) Where a large number of control switches and / or fan regulators are required to be installed at one place, these shall be installed in more than one outlet box adjacent to each other for ease of maintenance.
- c. An earth terminal with stud, 2 metal washers and terminal block shall be provided in each MS box for termination of protective conductors and for connection to socket outlet / metallic body of fan regulator etc.
- d. A metal strip shall be welded / screwed, to the metal box to support tumbler type of control switches, sockets and / or fan regulators in flush pattern wherever required.
- e. Clear depth of the box shall not be less than 60 mm and this shall be increased suitably to accommodate mounting of fan regulators in flush pattern.
- f. The fan regulators can also be mounted on the switch box covers, if so stipulated or directed by the Engineer-in-charge.

3.0 SUBMAIN WIRING

Mains and sub-main cable/wire shall be of the rated capacity and approved make. Every main and sub-main shall be drawn into an independent adequate size conduit. Draw boxes of adequate size shall be provided at convenient locations to facilitate easy drawings of the sub-main and main cables/wires. An independent earth wire of proper rating shall be provided for every sub-main. Single-phase sub main shall have single earth wire whereas three-phase sub main shall be provided with two earth wires. Earth wire shall be bare copper conductor.

Where mains and sub-mains cables are connected to switchgear, sufficient extra lengths of sub mains cable shall be provided to facilitate easy connections and maintenance. For termination of cables crimping type cable socket / lugs shall be provided. Same colour code as for circuit wiring shall be followed.

3.1 LOAD BALANCING

Balancing of circuits in three-phase installation shall be planned before the commencement of wiring and shall be strictly adhered to.

3.2 COLOUR CODE FOR CIRCUIT & SUBMAIN WIRING

Colour code for circuit & sub main wiring installation shall be Red, Yellow and Blue for three phases & Black for neutral.

3.3 VERTICAL ACCESS UNIT

The vertical access unit shall be L – Shaped for carrying of cables from under floor to surface of wall or in partition / modular furniture and shall be triple compartment. Vertical access unit shall be of same finish and material as of under floor ducting.

Maximum number of PVC insulated 650 / 1100 V grade copper conductor cable/wires conforming to IS: 694 – 1990 that can be drawn in various sizes of conduit is given in the table appended below.

Nominal cross-sectional area of conductor in Sq.mm	20 mm		25 mm		32 mm		38 mm		51 mm		64 mm	
	S	B	S	B	S	B	S	B	S	B	S	B
1	2	3	4	5	6	7	8	9	10	11	12	13
1.50	5	4	10	8	18	12	-	-	-	-	-	-
2.50	5	3	8	6	12	10	-	-	-	-	-	-
4	3	2	6	5	10	8	-	-	-	-	-	-
6	2	-	5	4	8	7	-	-	-	-	-	-
10	2	-	4	3	6	5	8	6	-	-	-	-
16	-	-	2	2	3	3	6	5	10	7	12	8
25	-	-	-	-	3	2	5	3	8	6	9	7
35	-	-	-	-	-	-	3	2	6	5	8	6
50	-	-	-	-	-	-	-	-	5	3	6	5
70	-	-	-	-	-	-	-	-	4	3	5	4

NOTE:

1. The above table shows the maximum capacity of conduits for a simultaneous drawing in of cables.
2. The columns headed 'S' apply to runs of conduits which have distance not exceeding 4.25 meters between draw in boxes and which do not deflect from the straight by an angle or more than 15 degrees. The columns headed 'B' apply to runs of conduit, which deflect from the straight by an angle of more than 15 degrees.
3. Conduit sizes are the nominal external diameters.

4.0 WIRING (DATA)

4.1 CABLE CONTAINMENT

Data cabling shall be installed in metal cable trays and conduits that are approved for use with Category 6 data cables and installed in accordance with the manufacturer's requirements to avoid electromagnetic interference from adjacent cabling. Conduit/ cable trays for data cabling shall be at least 300 mm away from the electrical conduits.

All receptacles are required to be mounted in flush mounted wall boxes, placed as required by the Interior Designer, Back-of-House drawings and Consultant drawings as appropriate. In some Back-of-House locations, power skirting may be considered, providing it meets Category 6 requirement.

Data cabling consists of Category 6, 10 base-T, 4-pair unshielded twisted pair cabling, and fiber optic cable approved by hardware supplier/Engineer-in Charge.

All terminations, cable patch panels, data jacks, patch cables and accessories must conform rigidly to Category-6 requirements, as well as Asynchronous Transfer Mode (ATM) requirements. It is essential that the cable specifications are rigidly applied, and that the installation is carried out by an electrician familiar with data wiring installations. The wiring installation shall be carried out in coordination with the selected hardware vendor, using the specifications herein as a guideline. The wiring installation shall be installed and tested for compliance with IEEE 802.3 and CSIPR 22 / EN 55022.

4.2 WIRE MANAGEMENT

All peripheral connections must be made using RJ 45 (ISO 8877) data jacks. The computer room and all secondary switch locations shall be provided with Category 6 patch panels that satisfy the following criteria:

- Sufficient RJ 45 receptacles to facilitate port replication for active network equipment. Integrated racks to support network equipment, power supplies / cable supports.
- Kitchen printer connections may sometimes be connected together in daisy chain configuration, but only when indicated on an approved drawing.
- Connections between data jacks / computer room or between data jacks and secondary switch locations shall be made using continuous Category 6, UTP cable.

4.3 CATEGORY 6 UTP CABLE

The cable shall be 0.57mm dia solid copper conductors, insulated with HDPE. All conductors shall be conferred with a low smoke halogen jacket. It shall be possible to obtain transmission rate of 1000 mbps up to 100m.

Pair Assembly

The cable shall be restricted to four pair size to support a broad range of applications. The pair twists of any pair shall not be exactly the same as any other pair. The pair twist lengths shall be selected by the manufacturer to ensure compliance with the cross talk requirements of this standard.

Color Codes

The color codes shall be shown below:

Conductor Identification	Color Code	Abbreviation
Pair 4	White-Brown Brown	(W-BR) (BR)

Cable Diameter

The diameter of the jacketed cable shall be less than 6.35 mm.

DC Resistance

The resistance of any conductor, measured in accordance with ASTM D 4566 shall not exceed 28.6 ohms per 1000 ft.

5.0 WIRING (TELEPHONE)

- 5.1** All concealed / surface installation including the conduit run above the false ceiling space shall be heavy gauge black enameled MS unless otherwise specified and directed by Engineer -in Charge. The Make & specification for materials & installation shall be same as described .All relevant clauses shall e applicable for telephone system as applicable. The conduit for telephone system shall be laid minimum 300 mm away from the power conduit. Care shall be taken that telephone conduits are not laid in close proximity of electrical conduits. Wherever telephone conduits cross power conduits, they shall be at right angle, to each other. All telephone conduits shall be earthed.

Size of Cable

Conduit Size

Up to 5 pair single cable	25 mm
Above 5 pair up to 10 pair single cable	32 mm
Above 10 pair up to 20 pair single cable	32 mm
2 Nos. 2 pair	25 mm
3 to 5 Nos. 2 pair	32 mm
6 to 10 Nos. 2 pair cable	32 mm

The size of conduit shall depend upon no of wires to be drawn. However minimum size of conduits shall be 25 mm.

All telephone wires shall be 0.60 mm diameter annealed tinned copper conductor PVC insulated and PVC sheathed cables. All telephone cables inside the building shall be unarmored & each outlet shall be wired with 2 pair cables from tag-Block unless otherwise specified separately. From main tag block to sub tag block cabling shall be done with suitable size of telephone-unarmored cable in conduit / pipe / cable trays. Telephone cables from MDF/ Tag Block to Tag Block passing through open area shall be armoured cable laid underground as per specification.

- 5.2** All concealed boxes and wiring accessories shall be of G.I as described in the electrical wiring section shall be used for telephone wiring also. The boxes/main junction box shall be suitable for wall mounting having opening for cable/conduit entry. All PVC cable shall enter the telephone junction box from the bottom through brass cable glands and enough cable length shall be available for termination. Each PVC cable serving the telephone socket shall be marked for identification. Junction boxes shall be fully enclosed, kept tight with lockable-hinged doors. Boxes shall be zinc anodized type & it make as of socket /outlets.

Prior to the system installation the contractor shall consult telephone department/ service provider for their requirements and notify the Engineer-in-Charge. All equipments like tag blocks wires shall be as per approved makes.

5.3 SUPPLY OF MATERIALS:

Exclusions:

- a) Telephone Exchange & Telephone instruments
- b) Main incoming cable.

Rest all material for distribution of telephone system as covered on BOQ shall be in the Contractors scope.

The telephone outlet shall be plug-in (clip on) type socket outlet. The switch plate shall be similar to the electrical wiring devices.

6 L.T. PANEL

6.1 GENERAL

Main L.T. Panel shall be indoor type, metal clad, floor mounted, free standing, totally enclosed, extensible type, air insulated, cubicle type for use on 415 Volts, 3 phase, 50 cycles system with a fault level withstand of 31 MVA / 35 MVA RMS symmetrical as specified in BOQ. Main L.T. Panel shall be provided with required Hardware such as control cabling, contactors, and timers etc. to achieve the Electrical interlocking.

6.2 STANDARDS

The equipment shall be designed to conform to the requirements of:

- a. IS: 8623 – Factory Built Assemblies of switchgear and control gear.
- b. IS: 4237 – General requirements for switchgear and control gear for voltages not exceeding 1000 Volts.
- c. IS: 2147 – Degree of protection provided by enclosures for low voltage switchgear and control gear.
- d. IS: 375 – Marking and arrangement of bus bars.
- e. Individual equipment housed in the Main L.T. Panels shall conform to the following IS Specification.
- f. Air circuit breakers/moulded case circuit breaker IS: 13947 (Part-II) and IEC 947 (2).
- g. Fuse switch and switch fuse units – IS: 13947 (Part – III) and IEC 947 (3).
- h. HRC fuse links – IS: 13703
- i. Current Transformer – IS: 2705
- j. Voltage Transformer – IS: 3156
- k. Indicating Instruments – IS: 1248
- l. Integrating Instruments – IS: 722
- m. Control Switches and Pus Buttons – IS: 6875
- n. Auxiliary Contactors – IS: 13947 (Part – 4 / Sec. – 1) and IEC 947 (4 / 1)
- o. Relay – IS: 3231

7.0 DISTRIBUTION BOARDS

Distribution Board shall be double door type with extended loose wire box at the top and suitable for flush installation. All distribution boards shall be of three phases (415 Volts) or single phase (240 Volts) type with incoming isolator or MCB and / or ELCB as in Schedule of quantities. Distribution

boards shall contain plug in or bolted type miniature circuit breaker mounted on bus bars. Miniature circuit breakers shall be quick make and quick break type with trip free mechanism. MCB shall have thermal and magnetic short circuit protection. MCB shall conform to IS 8828 – 1978, IEC – 898. Bus bars shall be of electrolytic copper. Neutral bus bars shall be provided with the same number of terminals, as there are single ways on the board, in addition to the terminals for incoming mains. An earth bar of similar size as the neutral bar shall also be provided. Phase barrier shall be fitted and all live parts shall be screened from the front. Ample clearance shall be provided between all live metal and the earth case and adequate space for all incoming and outgoing cables. All distribution board enclosures shall be powder coated. A circuit identification card in clear plastic cover shall be provided for each distribution board.

- 7.1** Distribution Board with single-phase outgoings requirement shall be Horizontal type. Distribution Board with three-phase outgoings requirement shall be Vertical type including Per Phase Isolation kit. Distribution Board installed in indoor dry locations shall conform to IP – 42. Distribution Board installed in outdoor and wet locations shall conform to IP – 65.

Miniature Circuit Breakers for lighting circuits shall be of “C” Curve, where as the circuits feeding discharge lamps (SON-T, HPMV or HPSV) halogen lamps, all power outlet points, equipment / machinery shall be of “D” Curve types. All miniature circuit breakers shall be of 10 KA rated rupturing capacity.

- 7.2** Distribution board shall be provided with Isolator MCB type / MCB / earth leakage circuit breaker as mentioned in drawings and BOQ. Earth leakage circuit breaker shall be current operated type and of sensitivity not less than 300 mA unless otherwise stated. RCBO / RCCB shall be mounted within distribution board box for single-phase distribution board while in three-phase distribution board RCBO / RCCB shall also be mounted within distribution board. Distribution board, Isolator / RCCB / RCBO's and MCB's used shall be of same manufacturer. Standard size DB box manufactured by approved manufacturer shall be used. In case size specified in BOQ is not standard size of manufacturer, in that case next standard size distribution board box shall be used with incoming and outgoing MCB as specified in BOQ. Additional cutout / space for outgoing MCB shall be plugged with blank plates.

Other specification shall be similar to LT Panel under para10

8.0 LIGHT FIXTURES

8.1 SCOPE:

Scope of work under this section shall include supply inspection / testing at suppliers / manufacturers premises at site, receiving at site, safe storage, transportation from point of storage to point of erection, erection and commissioning of light fittings, fixtures and accessories for back of the house area including all necessary supports, brackets, down rods and painting etc. as required.

8.2 STANDARDS:

The lighting and their associated accessories such as lamps, reflectors, housings, ballasts etc., shall comply with the latest applicable standards, more specifically the following:

Electric light fittings General and Safety requirements	IS - 1913
Industrial lighting fittings with metal reflectors-	IS - 1777
Decorative lighting outposts-	IS – 5077
Flood lights	IS – 10322
	(Part-5, Section 5)

Luminaries for street lighting	IS – 10322
Bayonet lamp holders	IS – 1258
Bi-pin lamp holders for tubular- fluorescent lamps	IS – 3323
Ballasts for use in fluorescent light fittings	IS – 1534
Starters for fluorescent lamp	IS – 2215
Ballast for HP MV lamps	IS – 6616
Capacitors for use in fluorescent, HPMV & LP	
Sodium Vapour lamps circuits	IS – 1569
Tubular Fluorescent lamps	IS – 2418
High pressure mercury vapour lamps	IS – 9900
Tungsten filament general electric lamps	IS – 418

8.3 LIGHT FITTINGS-GENERAL REQUIREMENTS

- a. Fittings shall be designed for continuous trouble free operation under atmospheric conditions without reduction in lamp life or without deterioration of materials and internal wiring. Outdoor fittings shall be weather-proof and rain proof.
- b. Fittings shall be so designed as to facilitate easy maintenance including cleaning, replacement of lamps / starters etc.
- b. Each fitting shall have a terminal block suitable for loop out connection by 1100V PVC insulated copper conductor wires up to 4 Sq.mm. the internal wiring should be completed by the manufacturer by means of standard copper wire and terminated on the terminal block.
- c. All hardwares used in the fitting shall be suitably plated or anodized and passivated.
- d. Earthing Each lighting fitting shall be provided with an earthing terminal. All metal or metal enclosed parts of the housing shall be bonded and connected to the earthing terminal so as to ensure satisfactory earthing continuity throughout the fixture.
- e. Painting/Finish All surfaces of the fittings shall be thoroughly cleaned and degreased and the fittings shall be free from scale, rust, sharp-edges, and burrs.
- f. The housing shall be stove-enameled or anodized as required. The surface shall be scratch resistant and shall show no sign of cracking or flaking when bent through 90 deg. over 12 mm dia mandrel.

8.4 LED Lighting

8.4.1 Feature of LED Lighting:

- a. Energy saving
- b. Long life
- b. Rugged and Durable
- c. Smaller lighting Fixture
- d. Environment friendly- no mercury.
- e. Instant starting.
- f. Dimmable for automation.
- g. Available in different colours.

8.4.2 Design Parameter for selecting source of lighting while designing lighting of building/campus: Following parameters be kept in view while deciding the suitable light source for indoor lighting:-

- a. CRI of the source.
- b. Usable lumen per watt of fitting.
- c. Glaring index of fixture.
- d. Life of the lamp.

8.4.3 Following technical parameters of LED, T5, CFL, HPSV and metal halide lamp are brought out:-

	LED(warm white)	LED(cool white)	T5 Lamp	CFL Lamp	HPSV Lamp	Metal Halide Lamp
CRI	80-85	75	85	85	22	60-90
Efficacy in lm/w	80	132	90	70	95-110	65-70
Usable lm/w	55-65	>100	75-85	50-60	55-65	35-40
Life(Hrs)	50K+	50K+	30K	8-10K	24K	10K-20K

8.4.4 LED lighting has become efficient (luminous efficacy) and with good CRI over HPSV lamp as well as metal halide lamp, hence it can be used for outdoor lighting applications which are being done by HPSV and metal Halide lamps.

8.4.5 In indoor applications down lighter, task lighting etc. where CFL luminaries are being used, the luminous efficacy of the LED luminaries is comparable and due to higher life can be used for such applications.

8.4.6 Since light output and life of LED is dependent on the driver current and junction temperature, Indian standards for the LED are now available and luminaries efficacy and life cycle of T5 lamp selectively for indoor applications in business/ institutional building only with prior approval of Chief engineer concerned as consideration of CRI in these areas is of prime importance. Chief Engineer may approve the type and make of LED fitting keeping in view of the specific applications and IS.

9.0 ENERGY CONSERVATION

9.1 Lighting controls

9.1.1 Lighting Dimming

Interior lighting systems in buildings larger than 500 Sqm shall be equipped with an automatic/dimmable control device. Within these buildings, all office areas, all meeting and conference rooms shall be equipped with Occupancy sensors.

9.1.2 Lighting control Devices

- a. Switch dim equator

2, 4-and 8-fold devices with independent channels for switching and dimming. 1-10V control outputs each used for maximal 100 mA control load. Independent, potential free relays outputs. 6 mm² terminal with universal head screws for load outputs. Rated current 16A –AX1, 10 AX

- b. Power Supply

Power Supply should be 320 mA, MDRC with integrated choke for supplying a bus line system voltage with two-coloured status indicator and wide range input from 85...265 V AC, 50/60 Hz.

c. Control element

Integrated KNX bus coupler with labeling field rocker switch left/ right (switching/ dimming/ blind/ value sender/ light scenes/ fan function) to control up to 13 IR channels (RC5).

d. IP Interface

The IP Interface can program EIB/KNX devices via the LAN using the ETS 3.0d (or higher). The device uses the EIBnet/IP protocol (Tunneling) and can serve as an interface for a visualisation. For operation an additional 10 to 30V DC supply is necessary.

LIST OF APPROVED MAKES – ELECTRICAL ITEMS

SL No.	ITEMS	APPROVED MAKES
1.	PVC pipes and accessories	Precision/BEC/AKG
2.	Copper multi-strand wires	Polycab/Finolex/KEI/Skytone
3.	Switches/Sockets/TV Socket etc. (modular)	NorthWest/Anchor(wood/Roma)/Legrand (Myrius)
4.	MCB/ELCB/RCCB/D.B/ MCCB	Legrand/Siemens/Group Schneider/hager
5.	Industrial sockets	Clipsal/Legrand/Crompton
6.	Fan Regulator	NorthWest/Anchor(wood/Roma)/Legrand (Myrius)
7.	UG Cables	Polycab/ Skytone /Finolex/KEI
8.	Cable glands	Dowels/Siemens/Comet
9.	Cable Jointing	Raychem/CCI-Xicom/Cabseal/M seal/Denson
10.	Ceiling Fan/Exhaust fan	Crompton/Bajaj/Havells/Orient
11.	Light Fixture	Philips/Crompton/Bajaj/Wipro
12.	Telephone Wire/cables	Finolex/Skytone/National
13.	Cable Tray & Raceways (Factory Fabricated)	legrand/venus/Steelways.
14.	Network Cable	D Link/Digi Link/Avaya/Systemec
15.	EPABX	Avaya/Coral/NEC/LG Aria/Siemens
16.	Telephone Instrument	BPL/Tata/Siemens
17.	Lighting Dimming Control	ABB/Schneider/Hager

NOTE :

The Contractor shall produce samples before procurement of the material for approval of the Bureau, at-least one month before execution for all materials required for works. In respect of materials for which approved makes are not specified as above, the same shall be decided by the Bureau and sample got approved from Bureau before procurement. The material of makes out of the above shall be used on the work.

“Approved equivalent” shall be taken to mean a variety/brand approved by the Bureau.

APPENDIX 2 – BILL OF QUANTITIES

Validate

Print

Help

Item Rate BoQ

Tender Inviting Authority: HEAD PMWD BIS

Name of Work: CIVIL / ELECTRICAL / PLUMBING WORK AT 20/9, SITE – IV, INDUSTRIAL AREA, SAHIBABAD, GHAZIABAD OF BIS (Ground Floor of Chemical Block)

Contract No: PM/B/61/T1

Name of the Bidder/ Bidding Firm / Company :	
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PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Item Code / Make	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	13	53	55
1	General Repair, Toilet Block and Sanitary Fittings	itemcode1					
1.01	Demolishing brick work in cement mortar manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge.	itemcode2	40.00	cum		0.00	INR Zero Only
1.02	Demolishing/ Dismantling of wooden doors / Windows / Ventilation windows including and glass and glass panels (steel or wood) shutter including chowkhats, architrave, holdfasts etc. complete and stacking within 50 metres lead:	itemcode3	24.00	Nos		0.00	INR Zero Only
1.03	Disposal of building rubbish / malba / similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all leads including all lifts involved.	itemcode4	60.00	cum		0.00	INR Zero Only
1.04	Brick work with bricks machine moulded conforming to IS:4139, class designation 10 average compressive strength in superstructure above plinth level at Ground floor in Cement mortar 1:4 (1 cement : 4 coarse sand).	itemcode5	50.00	cum		0.00	INR Zero Only
1.05	Half brick masonry with bricks of class designation 7.5 in superstructure with Cement mortar 1:4 (1 cement :4 coarse sand) at all floor levels.	itemcode6	50.00	sqm		0.00	INR Zero Only
1.06	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry.	itemcode7	50.00	sqm		0.00	INR Zero Only
1.07	15mm cement plaster on rough side of single or half brick wall of mix 1:4 (1 cement : 4 fine sand)	itemcode8	300.00	sqm		0.00	INR Zero Only
1.08	20mm cement plaster mix 1:4 (1 cement : 4 fine sand)	itemcode9	300.00	sqm		0.00	INR Zero Only
1.09	Providing and fixing up to floor five level precast cement concrete string or lacing courses, copings, bed plates, anchor blocks, plain window sills, shelves, louvers, steps, stair cases, etc., including hoisting and setting in position with cement mortar 1:3 (1 Cement : 3 coarse sand), cost of required Centering complete. 1:1.5:3 (1 cement : 1.5 coarse sand(zone-III) : 3 graded stone aggregate 20mm nominal size).	itemcode10	25.00	cum		0.00	INR Zero Only

1.1	Making connection of drain or sewer line with existing manhole including breaking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) cement plastered on both sides the drain etc. complete : floating coat of neat cement and making necessary channels for the drain etc. complete : For pipes 250 to 300 mm diameter	itemcode11	2.00	each		0.00	INR Zero Only
1.11	Providing & laying PCC in average 75mm thickness to raise the floor level by 350mm (+/- 100mm as per drawing) and to conceal the existing exposed water supply lines on toilet after filling the concerned area with light weight foam concrete blocks.	itemcode12	25.00	sqm		0.00	INR Zero Only
1.12	Providing & fixing white colour wall hung toilet with soft close seat and cover of size 560x365x355mm of Kohler / Jaguar or equivalent make complete as per the direction of the Officer in charge	itemcode13	3.00	each		0.00	INR Zero Only
1.13	Providing and fixing wash basin with C.I. brackets, 15 mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require: Stainless Steel AISI-304(18/8) Wash basin 530x345 mm with single 15 mm C.P. brass pillar tap	itemcode14	4.00	each		0.00	INR Zero Only
1.14	Providing and fixing one piece construction white vitreous china squatting plate with an integral longitudinal flushing pipe, white P.V.C. automatic flushing cistern, with fittings, standard size G.I. / PVC flush pipe for back and front flush with standard spreader pipes with fittings, G.I clamps and C.P. brass coupling complete, including painting of fittings and cutting and making good the walls and floors etc. wherever required : Range of two squatting plates with 5 litre P.V.C. automatic flusing cistern.	itemcode15	3.00	each		0.00	INR Zero Only
1.15	Providing & fixing hand shower (health faucet) with metal hose & holder in polish chrome of Kohler / jaguar or equivalent make complete as per the direction of the Officer in charge	itemcode16	3.00	each		0.00	INR Zero Only
1.16	Providing and fixing white vitreous china flat back half stall urinal of size 580x380x350 mm with white PVC automatic flushing cistern, with fittings, standard size C.P. brass flush pipe, spreaders with unions and clamps (all in C.P. brass) with waste fitting as per IS : 2556, C.I. trap with outlet grating and other couplings in C.P. brass, including painting of fittings and cutting and making good the walls and floors wherever required : Range of two half stall urinals with 5 litre P.V.C. automatic flushing cistern	itemcode17	2.00	each		0.00	INR Zero Only
1.17	Providing and fixing white vitreous china battery based infrared sensor operated urinal of approx. size 610 x 390 x 370 mm having pre & post flushing with water (250 ml & 500 ml consumption), having water inlet from back side, including fixing to wall with suitable brackets all as per manufacturers specification and direction of Engineer-in-charge.	itemcode18	2.00	each		0.00	INR Zero Only
1.18	Providing & fixing bottle trap of approved quality and make as per the direction of Engineer-in-charge	itemcode19	4.00	each		0.00	INR Zero Only
1.19	Providing & fixing CP single lever Lavatory faucet or single hole single lever basin mixer with lever handle without drain of Kohler / Jaguar or equivalent make complete as per the directions.	itemcode20	4.00	each		0.00	INR Zero Only
1.2	Providing and fixing C.P. brass angle valve for basin mixer and geyser points of approved quality conforming to IS:8931 15mm nominal bore	itemcode21	20.00	each		0.00	INR Zero Only

1.21	Providing & fixing Titan series modular toilet / restroom cubical partition in 12mm thick marino or equivalent make compact Laminate of overall height 2100mm (including a gap of 150mm from the ground) with door size 600mm having size as per drawing attached with all accessories like SS top rail, hinge, SS privacy thumb turn occupancy indicator, coat hook, door knob, SS adjustable legs, SS - U&F channel, SS door stopper channel, SS screws & inserts (SS grade 304 satin finish) rubber door stopper lining complete as per the directions of the Officer in charge	itemcode22	4.00	each		0.00	INR Zero Only
1.22	Providing & fixing automatic hand dryer of make Euronics / Aircare / or equivalent good quality make with speed upto 60M/S and minimum 1200 watts power in stainless steel body, complete as per the directions of the Officer/ officer in charge.	itemcode23	2.00	Nos		0.00	INR Zero Only
1.23	Providing & fixing of manual type tissue paper dispenser of Kimberley clark / Aircare or equivalent quality make in ABS body complete as per the directions of the Officer/ officer incharge.	itemcode24	2.00	Nos		0.00	INR Zero Only
1.24	Providing & fixing manual push type soap dispenser of Kohler / Kimberley clark / Aircare / or equivalent quality make with capacity of 1000ml in ABS body complete as per the directions of the Officer or officer in charge.	itemcode25	2.00	Nos		0.00	INR Zero Only
1.25	Providing & fixing CP brass toilet paper holder of approved quality and make as per the directions of the Officer in charge	itemcode26	3.00	each		0.00	INR Zero Only
1.26	Providing and fixing mirror of superior glass (of approved quality) and of required shape and size with plastic moulded frame of approved make and shade with 6 mm thick hard board backing : Rectangular shape 1500x450 mm	itemcode27	10.00	sqm		0.00	INR Zero Only
1.27	Demolishing cement concrete manually/ by mechanical means including disposal of material within 50 metres lead as per direction of Engineer - in - charge.	itemcode28	5.00	Cum		0.00	INR Zero Only
1.28	Demolishing R.C.C. work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material within 50 metres lead as per direction of Engineer - in-charge	itemcode29	10.00	Cum		0.00	INR Zero Only
2	False Ceiling, Partitions and Doors	itemcode30					
2.01	Providing and fixing as per design, armstrong pre coated (exposed portion only) GIT grid system in 600x600mm module which includes providing and fixing wall angle along the perimetre of the room with help of wooden plug and wooden screws at 300mm centres then suspending the main tee of the size from the roof with the help of 4mm rod one side with metal fastener and other side with J bolt connected with main T at 1200mm c/c . 1200mm cross tee is then interlocked into the pre-cut slots in the main tees at 600mm centers in direction perpendicular to the main tee to make a grid of 600x1200mm. finally 600mm cross tees are then interlocked into the pre-cut slots in the 1200 mm tees at 600mm centres and in direction parallel to the main tee cross tees having length more than 600mm are to supported independently, 16mm thick armstrong fine fissure square edge tile-16mm thick tiles of size 595x594 mm shall be placed into the grid size of 600x600 mm .	itemcode31	300.00	sqm		0.00	INR Zero Only
2.02	Providing and fixing panelling or paneling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (area of opening for panel inserts excluding portion inside grooves or rebated to be measured). Panelling for panelled and glazed shutters 25mm to 40mm thick: Pre-laminated with decorative lamination on both side exterior Grade - I MDF Board 12 mm thick conforming to IS:14587	itemcode32	60.00	sqm		0.00	INR Zero Only

2.03	Providing and fixing Pre-laminated medium density fibre board exterior grade (Grade-I) IS:14587:1998 marked, to frame, backing or studding with screws etc. complete (Frames, backing or studding to be paid separately). Pre-laminated with decorative lamination on both side exterior Grade - I MDF Board 12 mm thick conforming to IS:14587	itemcode33	30.00	sqm		0.00	INR Zero Only
2.04	Providing and fixing in position ply paneling made out of frame work of 47 x 47mm M.S. tubes of 18 G thickness fixed to floor placed at 450/600mm (max.) c/c vertical and horizontal supported from existing wall/floor with appropriate and necessary dash fasteners to ensure stability. 50mm thick glass wool wrapped in tissue paper duly filled before ply paneling, the paneling consists of 12mm commercial ply with 4mm thick teak veneer, all teak wood section / teak veneer to be melamine polished and all frame of M.S. work to be properly welded including one coat of primer and one coat of synthetic enamel paint complete in all respects as per detailed drawings and as directed by the concerned official	itemcode34	30.00	sqm		0.00	INR Zero Only
2.05	Providing & fixing double skinned fixed partitions wall with doors or openings wherever required fabricated out of 65mmx50mm Champ wood frame as horizontal & vertical sections @ 450mm c/c duly coated with wood primer to be fixed with wooden plugs, fixing 12mm thick water proof ply on both sides (duro / green or equivalent make) of the partition, finally fixing 1.0mm thick laminate on both sides of the partition with adhesive of approved brand providing 1mm thick groove at all joints or wherever required as per the drawings supplied and as per the instructions of the EIC. Double skin partition to be raised upto a height of 1200mm (or as per drawing)from the floor and the rest of the height upto as per drawing or ceiling height to be enclosed with 6mm thick glass factory made duly edge polished & finished with silicon filling and all required steel patch fittings if or wherever required to hold or join each panel, the surrounding area around all glass panes to be in 35mm x 15mm thick wooden sections clad with 12mm ply and finally finished in matching 1.0mm thick laminate complete with all required teak beadings.	itemcode35	70.00	sqm		0.00	INR Zero Only
2.06	Providing & fixing Stainless steel paneling in horizontal band shape all along the corridor walls in 230mm height in SS 304 grade 22 gauge thick machine moulded on all bends fixed with adhesive on 19mm thick BWP block board duly cut in size and fixed on fastners with all exposed edges finished and fixed with 4mm teak lipping finished with wood primer before fixing SS sheet.	itemcode36	50.00	Mtr		0.00	INR Zero Only
2.07	Providing 20mm thick plaster of paris (gypsum anhydrous) ceiling up to height of 5m above floor level including coves & moulding as per sample approved consisting of frame work made of special sections power pressed from MS sheet with galvanized coating consisting of ceiling angle hanger of 20x20x0.5mm thick of required length 1 and fixed to ceiling with dash fastener and other end with hanging arrangement G.I channels 45x25x0.9mm, 5 nos member running to which ceiling section 0.5mm thick bottom rail of 80mm with tapered flange of 26mm each fixed with self tapping screws running in a direction perpendicular to G.I channel fixed with self tapping screws @ 400c/c and perimeter angle 20x20x0.5mm fixed to wall with rawl plugs @ 900mm c/c. Providing & fixing stainless steel grade 304 wire gauge with wire of dia 0.5mm mesh fixed to wedge shaped ceiling section i/c cutting & making smooth surface with scaffolding etc. all complete as per directions of Officer in charge	itemcode37	50.00	sqm		0.00	INR Zero Only

2.08	Providing and Fixing 35mm thick BWP flush doors cladged and pasted with 1mm designer laminate on either sides with 38mmx4mm thick real wood margin on all sides fixed with new hinges, push button round locks in stainless steel finish and all other required hardwaresviz door closer etc; all complete ready to use	itemcode38	15.00	sqm		0.00	INR Zero Only
2.09	Providing and fixing aluminium die cast body tubular type universal hydraulic door closer (having brand logo with ISI, IS : 3564, embossed on the body, door weight upto 35 kg and door width upto 700 mm), with necessary accessories and screws etc. complete.	itemcode39	3.00	each		0.00	INR Zero Only
3	Flooring and Wall Tiles	itemcode40					
3.01	Providing and fixing 1st quality ceramic glazed wall tiles conforming to IS:15622 (thickness to be specified by the manufacturer), of approved make,in all colours, shades except burgundy, bottle green, black of any size as approved by Officer-in-Charge, in skirting, risers of steps and dados, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete (for toilet & kitchen walls area) Rate minimum Rs.65/Feet	itemcode41	120.00	sqm		0.00	INR Zero Only
3.02	Providing & laying vitrified floor tiles in different Sizes (thickness specified by the manufacturer) With water absorption less than 0.08% & confirming To IS:15622 of approved make, in all light colours & Shades, laid over average 20mm thick cement mortar In ratio 1:4 including grouting with white cement and Matching pigments etc. complete. Rate Minimum Rs. 65 /feet	itemcode42	325.00	sqm		0.00	INR Zero Only
3.03	25 mm wooden planking, tongued and grooved in flooring, including fixing with iron screws complete with : Second class teak wood	itemcode43	50.00	sqm		0.00	INR Zero Only
3.04	Providing and fixing M.S. angle 50x50x5 mm to act as nosing with lugs of M.S. flat 10x5 mm, 10 cm long, forked at end 60cm apart (minimum three lugs to be provided), including necessary welding and applying a priming coat of approved primer on exposed surface etc. complete.	itemcode44	50.00	kg		0.00	INR Zero Only
4	Painting	itemcode45					
4.01	Providing & applying plaster of paris putty 2mm Thickness (3 coats) and Putty (Birla/JK) over plastered surface to prepare the surface Even & smooth to take painting work.	itemcode46	600.00	sqm		0.00	INR Zero Only
4.02	Applying one coat of water thinnable cement primer of approved brand and manufacture on wall surface : Water thinnable cement primer	itemcode47	600.00	sqm		0.00	INR Zero Only
4.03	Painting with synthetic enamel paint, having VOC (Volatile Organic Compound) content less than 150 grams/ litre, of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour. Two coats	itemcode48	600.00	sqm		0.00	INR Zero Only
5	Plumbing & Drainage	itemcode49					
5.01	Excavating trenches of required width for pipes, cables, etc., including excavation for sockets and dressing of sides, ramming of bottoms, depth upto 1.5m including taking out the excavated soil and then backfilling the soil as required in layers, not exceeding 20cm in depth including consolidating each deposited layer by ramming, watering, etc., and disposing of surplus soil as directed within a lead of 100m. All kind of soils (Pipes exceeding 80mm dia but not exceeding 300 mm dia).	itemcode50	50.00	cum		0.00	INR Zero Only

5.02	Providing, and fixing CPVC PIPES of Astral or Supreme having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fittings including fixing the pipe with clamps at 1M spacing. This includes jointing of pipes and fittings with one steps CPVC solvent cement and testing of joints complete as per direction. Concealed work including cutting the chases and making good the walls. 20mm nominal outer dia pipe	itemcode51	80.00	RMT		0.00	INR Zero Only
5.03	Providing, and fixing CPVC PIPES of Astral or Supreme having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fittings including fixing the pipe with clamps at 1M spacing. This includes jointing of pipes and fittings with one steps CPVC solvent cement and testing of joints complete as per direction. Concealed work including cutting the chases and making good the walls. 25mm nominal outer dia pipe	itemcode52	20.00	RMT		0.00	INR Zero Only
5.04	Providing, and fixing CPVC PIPES of Astral or Supreme having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fittings including fixing the pipe with clamps at 1M spacing. This includes jointing of pipes and fittings with one steps CPVC solvent cement and testing of joints complete as per direction. Concealed work including cutting the chases and making good the walls. 32mm nominal outer dia pipe	itemcode53	20.00	RMT		0.00	INR Zero Only
5.05	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge. External work 40 mm nominal outer dia Pipes	itemcode54	90.00	RMT		0.00	INR Zero Only
5.06	Providing, fixing UPVC Pipes for drainage: (including fixing of required M.S. clamps, bends and providing lead caulked joints to pipes and fittings complete). 40 mm dia soil pipe	itemcode55	15.00	RMT		0.00	INR Zero Only
5.07	Providing, fixing UPVC Pipes for drainage: (including fixing of required M.S. clamps, bends and providing lead caulked joints to pipes and fittings complete). 75 mm dia soil pipe	itemcode56	120.00	RMT		0.00	INR Zero Only
5.08	Providing, fixing UPVC Pipes for drainage: (including fixing of required M.S. clamps, bends and providing lead caulked joints to pipes and fittings complete). 110 mm dia soil pipe	itemcode57	60.00	RMT		0.00	INR Zero Only
5.09	Providing and fixing 110mm UPVC Nahani Trap.	itemcode58	4.00	Nos		0.00	INR Zero Only
5.1	Providing and fixing 125mm S.S. grating over Nahani Trap.	itemcode59	4.00	Nos		0.00	INR Zero Only
5.11	Providing and fixing CP Brass BIB COCK size 15 mm of approved make	itemcode60	8.00	Nos		0.00	INR Zero Only
5.12	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete : 15 mm nominal bore	itemcode61	4.00	Nos		0.00	INR Zero Only
5.13	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete : 20 mm nominal bore	itemcode62	3.00	Nos		0.00	INR Zero Only
5.14	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete : 25 mm nominal bore	itemcode63	3.00	Nos		0.00	INR Zero Only
5.15	Providing & fixing unplasticied PVC connection pipe with brass unions 60cm length and 20mm nominal bore as per the direction of the Officer in charge	itemcode64	15.00	each		0.00	INR Zero Only
5.16	Providing & fixing anti cockroach floor drain cardinetc complete	itemcode65	6.00	each		0.00	INR Zero Only
6	Electrical Items	itemcode66					

6.01	Wiring for Light/ Fan/ 6 amp point along with earth wire with the following sizes of FRLS PVC insulated ISI mark copper conductor, single core cable in surface/ recessed Rigid plain conduits(medium) ISI marked (IS: 9537) 2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	itemcode67	400.00	RMT		0.00	INR Zero Only
6.02	Wiring for 16amp point along with earth wire with the following sizes of FRLS PVC insulated ISI mark copper conductor, single core cable in surface/ recessed Rigid plain conduits(medium) ISI marked (IS: 9537) 2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	itemcode68	300.00	RMT		0.00	INR Zero Only
6.03	Wiring for 16amp point/ AC etc along with earth wire with the following sizes of FRLS PVC insulated ISI mark copper conductor, single core cable in surface/ recessed Rigid plain conduits(medium) ISI marked (IS: 9537) 2 X 4 sq. mm + 1 X 4 sq. mm earth wire	itemcode69	250.00	RMT		0.00	INR Zero Only
6.04	Wiring for 16amp point/ AC etc along with earth wire with the following sizes of FRLS PVC insulated ISI mark copper conductor, single core cable in surface/ recessed Rigid plain conduits(medium) ISI marked (IS: 9537) 2 X 6 sq. mm + 1 X 6 sq. mm earth wire	itemcode70	125.00	RMT		0.00	INR Zero Only
6.05	Supplying and fixing of following ways surface/ recess mounting, vertical type, 415 V, TPN MCB distribution board of sheet steel, dust protected, duly powder painted, inclusive of 200 A, tinned copper bus bar, common neutral link, earth bar, din bar for mounting MCBs (but without MCBs and incomer) as required. (Note : Vertical type MCB TPDB is normally used where 3 phase outlets are required.) 12 way (4 + 36), Double door	itemcode71	1.00	Nos		0.00	INR Zero Only
6.06	Providing and fixing following rating and breaking capacity and pole MCCB with thermomagnetic release and terminal spreaders in existing cubicle panel board including drilling holes in cubicle panel, making connections, etc. as required. 250 A, 25 kA,TPMCCB	itemcode72	3.00	Nos		0.00	INR Zero Only
6.07	Supplying and fixing following rating, four pole, 415 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required. 40 A	itemcode73	30.00	Nos		0.00	INR Zero Only
6.08	Supplying and fixing following rating, four pole, (three phase and neutral), 415 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. 40 A	itemcode74	3.00	Nos		0.00	INR Zero Only
6.09	Supply and Fixing of 6 pin 16/6 amp 240 volt weather proof power switch socket switch complete with all accessories as per specifications and as required.	itemcode75	80.00	Nos		0.00	INR Zero Only
6.1	Supply and Fixing of 6 pin 6 amp 240 volt weather proof power switch socket switch complete with all accessories as per specifications and as required.	itemcode76	100.00	Nos		0.00	INR Zero Only
6.11	SITC of 36 watts LED down lighter(clear white) of size 600x600mm direct in the false ceiling recessed type including testing & commissioning complete as required (Phillips/Leolux/wipro/Max or equivalent make) as per design	itemcode77	30.00	each		0.00	INR Zero Only
6.12	Supply, Installation, Testing & commissioning (SITC) of up to 300mm plastic body fresh air fan (with louver shutter) in the existing opening i/c making the hole to suit the size of the above fan making good the damages connection, testing , commissioning etc. as reqd. Make: Havells or Crompton or equivalent	itemcode78	4.00	each		0.00	INR Zero Only
6.13	Supply and fixing of compact type mirror light fitting suitable for energy efficient 12 watt LED lamp alongwith all accessories i/c S/F 1 No 7 watt LED lamp directly on wall connection etc as reqd. Make Havells or Phillips or equivalent	itemcode79	4.00	each		0.00	INR Zero Only

