

YOUTH HOSTELS ASSOCIATION OF INDIA

5, NYAYA MARG, CHANAKYAPURI, NEW DELHI

Tel : 07827999000,

E-mail : info@yhaindia.org

TENDER DOCUMENT

(CIVIL, WATER SUPPLY, SANITARY & ELECTRICAL WORKS)

1 OF 2

FOR

THE CONSTRUCTION OF RESIDENTIAL HOSTEL

FOR

YOUTH HOSTELS ASSOCIATION OF INDIA AT GOPALPUR

ARCHITECTS & CONSULTANTS

ACE ASSOCIATES

C/o- Er. Biraja Prasad Patra,

Gandhi Nagar-Ist Line extn.,

Berhampur-760001,

Dist. Ganjam

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ISSUED TO _____

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Youth Hostels Association of India Delhi

Tender Notification

Sealed tenders in duplicate are invited by the Youth Hostels Association of India, Delhi from reputed Contractors having good financial and technical reputation in the field of construction of multi-storeyed building and preferably registered with OPWD, CPWD, Railway, P & T or equivalent for the following work at Plot No. 217/445 and Khata No. 23/205 of Mouza: Udayapur, Gopalpur Town, Odisha.

1	Name of work	Construction of International Youth Hostel, Gopalpur-on-Sea
2	Estimated Cost	Rs. 2.96 crores
3	Period of Completion	18 months
4	EMD	Rs. 1.5 Lakhs
5	Cost of Tender Document	Rs. 2,000.00 (Non Refundable)
6	Date of issuing Blank Tender	31st October, 2022
7	Last date & time for submission of Tender	15th November, 2022 by 5.00 p.m.
8	Date & time of opening of Technical Bid Tenders at YHAI State Office Bangalore	18th November, 2022 at 11.00 a.m.
9	Date & time of opening of Financial Bid	To be intimated to the technically qualified bidders.

The tender document will be available at the Architects Office on working days between 1000 hrs to 1700 hrs from the date as indicated above on production of a) Proof of valid Registration b) Experience certificate c) a DD or Cash of Rs. 2,000.00 (Rupees Two Thousand only) in favour of Ace Associates. The document may be had in person or through duly authorized person or postal requisition. Last date for receiving the tender 15th November, 2022. The downloaded application must be accompanied with the cost of tender document as mentioned above.

The duly filled tender application with requisite documents shall be submitted to **The Youth Hostels Association of India, Odisha State Branch Office at 205 Shubam Arcade, Sushree Lodge Street, Town Hall Road, Berhampur 760 001 Odisha** on or before **15th November, 2022**, only on or before the date mentioned above. Earnest Money will be accepted in the form of Demand Draft drawn only in favour of the **“YOUTH HOSTELS ASSOCIATION OF INDIA” payable at NEW DELHI**

Tender papers and other details will be available at the office of the Architect. Tender will have to be submitted in two covers- Cover I & Cover- II separately and super scribed with the name of work.

Cover I: Cover- I shall be TECHNICAL BID, including all credentials and Earnest Money. This cover shall include organizational profile, financial details, technical details along with original OD certificate and solvency certificate. A covering letter shall be placed in a sealed envelope marked Cover – I.

Cover II: Cover – II shall contain the offered price in prescribed tender documents duly filled, along with duplicate. No condition stipulated in Cover- II other than general rebated shall be accepted.

Tenders in Cover- I & Cover- II shall again be put in a separate sealed cover will be received on or before the date and time mentioned above. **Cover –I** will be opened in presence of the contractors or their representative who may like to be present on the date and time mentioned above. **Time and date of opening of Cover- II of tender will be intimated thereafter to the technically qualified bidder.** The basis of selection shall stress on the technical capabilities of the past performances of the bidders and in that case price may not be the only deciding criterion. The Association reserves the right to reject any or all of the tenders received without assigning any reason thereof.

Conditions:

- Registered contractors should produce copy of registration certificate.
- Tender papers will be issued only to contractors having completed similar nature of work of value not less than Rs. 300 Lakhs OR 2 works of Rs. 200 Lakhs each during last three years.
- Tenders received after due date and time and/on without EMD will be rejected.
- The Association will not be responsible for non or late receipt due to postal transit.
- Sealed Tenders must be addressed to CEO, Youth Hostels Association of India, #5, Nyaya Marg, Chanakyapuri, New Delhi-110021. The Committee Constituted for the selection of contractor may, if required, inspect the works executed by the Tenderers on opening “**Technical Bid**” for technical evaluation.
- The Association reserves the right to accept or reject any tender or request for tender documents without assigning any reason whatsoever.
- The decision of the Committee with respect to competence or otherwise will be final for further processing.
- **Financial Bid** of the tenderers being found competent to execute the subject work and technically qualified alone shall be opened with prior intimation.

Tenderers agreeable to the above conditions shall only apply.

New Delhi Chief Executive Officer

Date

YHAI

INSTRUCTIONS TO TENDERERS

- Each tenderer will be issued with a set of complete Tender Documents generally comprising of Notice Inviting Tender, Form of Tender, and Instructions to Tenderers, Form of Agreement, and General Conditions of Contract, of Contract, Technical Specifications, Bill of Quantities and Tender Drawings. Before Tendering the tenderer shall carefully examine the entire Tender Documents and Bill of Quantities and if there should be or appear to be any ambiguity in or discrepancy between any of these documents, he should immediately refer the matter to the Architect for clarifications.
- Procedure for Submission of Tenderers
- Completed Tender Document (cover I) shall contain the tender document, Earnest money, technical details and other necessary enclosures shall along with covering letter shall be placed in a sealed envelope marked Cover- I (Techno Commercial Bid) mentioning the name of the Tender and addressed to The Chief Executive Officer, Youth Hostels Association of India, #5, Nyaya Marg, Chanakyapuri, New Delhi-110021

The tenderers are expected not to propose any alteration to any of the conditions laid down on the Tender. Stipulated Conditions embodies in the tender shall be binding on the Tenderers. If however, contractors desire to indicate their special conditions/ modifications or inform any assumptions made by them while filling in the tender, they shall submit the same along with the above envelope, marked Cover- I.

- The tenderer shall place the Price duly signed and stamped in a separate envelope marked Cover- II (Price Bid) and addressed to The Chief Executive Officer, Youth Hostels Association of India, #5, Nyaya Marg, Chanakyapuri, New Delhi mentioning the name of the tender.
- Both the Covers marked shall be placed in a common envelope super scribing name of work, due date and addressed to be submitted as per Notice Inviting Tender. Any tender submitted after the due date and time shall be treated as cancelled.
- Any tender which is not accompanied by Earnest Money deposit shall be summarily rejected. No interest shall be paid for the period during which the Earnest Money lies in deposit with the Association.
- Techno-Commercial Bid (Cover- I) will be opened at the time and date mentioned in the tender notification YHAI State Office in Odisha in presence of interested Tenderers or their authorized representatives.
- The tender form and the documents attached to it shall not be detached one form the other and no alteration or mutilation (other than filling in all blank spaces) shall be made in any of the documents attached hereto. Any modification proposed to the entries in the attached documents shall be point out in the covering letter otherwise it shall not be entertained.

- YHAI will not be responsible or pay for any expense which may be incurred or losses to person or property suffered by tenderer in connection with visits for an examination of the site and in the preparation of his tender for submission.
- The tenderer whether or not he submits a tender shall treat the details of the documents as secret and confidential.
- In case the Tenderer does not tender, he shall return the documents by the time mentioned in the instructions for submission of tender.
- YHAI reserves the right to adjust arithmetical or other errors in the tender in a suitable manner. Any adjustments so made shall be stated to the tenderer if the employer shall make an offer to accept the tender.
- Any further information if required may be obtained before submission of tender on application in writing to the Architect/ Association.
- Commencement of Work: The Contractor shall start the work from Monday following the 15th day after the date of written order to commence work. If the contractor, without reasonable or valid reasons, commits default in commencing the execution of the work within aforesaid time notice in writing to the contractor to commence the work or to forfeit the earnest money deposited by him and to rescind the letter of acceptance of tender / work order.
- Value of work tendered may get increased or decreased at the absolute discretion of the Employer in which case all the other terms and conditions of contract shall remain valid and binding notwithstanding such alteration.
- The tenders should quote rates in English in figures as well as in words against each item as mentioned in the bill of quantities.
- The quotation shall be clearly and legibly written. Erasing or over writing shall not be allowed. Corrections in the quotations should be if this becomes; unavoidable, each correction should be signed separately and without ambiguity all pages of tender papers including the tender drawings must be signed by the tenderers.
- Intending tenderers shall deposit a sum of Rs. 1.50 Lakhs (Rupees One Lakhs Fifty Thousand only) in the form of Demand Draft / Bank Guarantee as earnest money in favour of the "Youth Hostels Association of India" payable at New Delhi along with the tender documents.
- Intending tenderers deposited by an unsuccessful tenderer will be refunded on application to the Association as per terms of the conditions of contract.
- A tender once submitted shall not be withdrawn within a period of 60 days from the last day of receipt of the tenders. In the event of the tenders withdrawing his tender before the expiry of four months from the date fixed for receiving the tender, the tender would be cancelled and the Earnest Money forfeited to the Youth Hostels Association of India. Validity of tender the tender submitted shall be value for period of 4 months.
- The period may be extent further if required by the Association by mutual agreement from time to time.
- The successful tenderer will be required to deposit a further sum as security deposit thus making a total security of 2.0% (two percent) of the total contract value. Unless this deposit is made with seven days from the date of the acceptance of the tender, earnest money will be liable to forfeiture and the contract to cancellation. The deposit may be made in the same way as made for the earnest money or by Bank Guarantee issued by a nationalized bank in the form as approved by the Association.

No interest can be claimed for the deposit of earnest or security money, which will be lying with Association.

- YHAI reserves the right to negotiate with the successful tenderer, change, modify or alter the terms of engagement and agreement with mutual consent for the betterment of the project prior to entering into a formal agreement.
- The contractor is asked in writing to take over possession of the site, to that effect shall execute formal contract in quadruplicate in the prescribed tender forms. Requisite stamp paper for execution of the contract, earnest money deposited by him shall be forfeited.
- Early completion of the works is of the greatest importance and the time required for the completion of the work from the date on which the order to commence the work is given to the contractor by the Association, shall be calendar months.
- Water and Electricity: Contractors will be responsible for procuring water required for construction. However, employer may, at their discretion, permit draw water from the existing bore well/ open well/ sump subject to the contractor making his own arrangement for pumps, water line etc, at site. The contractor will not be allowed to take water out of the site.
- Although arrangement as described has been made, the Employer does not guarantee the supply of water which may be required and this does not relieve the contractor of his responsibility in making his own arrangement of time of any compensation arising out of non-supply of water by the Employer.
- Electricity consumption charges as per the OPTCL tariff should be borne by the contractor. It is the responsibility of the contractor to obtain electricity supply to the site. However the employer will assist by signing the forms. The contractor should pay deposit amount. The employer shall reimburse the deposit amount on completion of the work and the contractor shall arrange for transfer of the deposit amount in favour of the Employer.
- Power for construction purposes shall be made available to the contractor at one point within the premises. The contractor shall bear the cost for distribution of power required within
- Following documents shall be deemed to form and be read and constructed as part of the contract:
 - The Complete Tender Documents.
 - All correspondence, by which the contract is added or amended, varied or modified in any way by, mutual consent.
- The YHAI reserves the right to modify scope of work or to delete any or part of the item of work as deem fit in the Association and the YHAI reserves the right to reject any or all the tenders received without assigning any reason.
- **Variation:**
 In case the Architects/ Association thinks proper at any time during the progress of the works any alterations in or omission from the works or any alteration in the kind or quality of the material to be used therein and shall give notice thereof in writing to the contractor the contractor shall after add to or omit from as the case may require in accordance with such notice but the contractor shall not to any work extra to or make any alterations or additions to or omissions from the works or any deviation from any of the provisions of the contract, stipulation, specification or contract drawing without the in writing from Architects and the value of such extras, alterations, additions or omissions shall in all cases be determined by the Architects in consultation with the Association in accordance with the provisions or clause for “Ascertainment of prices for extra etc.” here of and the same shall be added to or deducted from the Contract amount accordingly. A verbal authority or direction

by the Architect / Employer if confirmed by the contractor in writing seven days is deemed to have been given in writing.

The Employer, through the Architects, reserves to itself the right of altering, the drawings and the nature of the work and adding to or omitting any items of work or of having portions of the same carried out departmentally or otherwise and such alterations or variations be carried out without prejudice to this contract.

Bill for extra work should accompany the photocopy of the employer's authority and duly countersigned by the Architects.

The contractor shall give to the Architects before the 10th of every month, a statement in writing of any extra work which may have performed during the preceding month, failing which any claim which he may afterwards make for payment on account of any extra work, will not allowed. The Architects shall have power and authority from time to time and all times to make and issue further drawings and instructions and may make any additions, alterations and omissions in the work after obtaining Employer. No allowance shall be made to the contractor for any increase in measurements or any extra work wherever except upon the written or of the Architects for the same after obtaining approval from the Association.

No deviations from the contract will on any account be allowed unless an order in writing be obtained from the Architects/ Association.

No alteration, omission or variation shall vitiate this contract.

- Canvassing in connection with the tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.
- No tenderer will be considered unless the tender documents are fully and completely filled in. All information that may be asked from a tenderer must be unequivocally furnished. Any tender which is in complete or does not the prescribed conditions or stipulation counter to those laid down therein or in other tender documents, will be liable to rejection at the time of opening or during subsequent scrutiny. No tender based on alternative design shall be entertained and tender with alternative design/ designs shall be summarily rejected.
- The contractors are requested to submit the following documents in duplicate in one cover along with EMD describing the cover as COVER- I – TECHNICAL BID at the time of submission of Tender. The documents shall be attested by the gazetted officer or Government Notary. The Original Documents shall be produced to the Association if required during the evaluation of bids or any time during the period of contract.
 - The contractor has to furnish complete organization profile
 - List of technical personal in the organization.
 - Tentative personal list to be deployed for this work.
 - Experience details
 - List of completed works with completion certificate.
 - List of ongoing projects with details.
 - Financial details with latest three years
 - Audited balance sheet, summary of turnover, Income Tax clearance certificate, PAN Number details.
 - List of Plant & Machineries.

The Chief Executive Officer,
Youth Hostels Association of India

New Delhi

OFFER LETTER FROM THE TENDERER TO YOUTH HOSTELS ASSOCIATION OF INDIA

Name of work: CONSTRUCTION OF RESIDENTIAL HOSTEL AT GOPALPUR - ON - SEA, ODISHA

Dear Sir,

- Having examined the drawings, specifications conditions, form of item rate contract, schedule of quantities relating to the above work and having visited and examined the site of the proposed works and having acquired the requisite information relating thereto as affecting the tender invited by you on behalf of the **Youth Hostels Association Of India**
- I/We, the undersigned, hereby offer to construct, execute and complete the above work to the satisfaction of YHAI on item rate basis in strict accordance with the contract conditions and specifications including securing service connections like water supply, sanitary connection & all applicable NOC's as directed by architects / statutory authorities, for the sum of Rs. _____ (Rupees only) or such other sum as may be ascertained in accordance with the said conditions.
- I/We, undertake to complete and deliver the whole of the works within a period as specified in Appendix-I to the General Conditions of Contracts. I/We shall be under the obligation to pay the sum as stated in the said Appendix for the period that the works shall remain incomplete as compensation subject to the condition of contract relating to an extension of the time.
- In the event of the tender being accepted
 - We do agree to pay to YHAI within FIFTEEN days from the date of acceptance of tender, the sum stated in the said Appendix as initial Security Deposit by demand draft/ bank guarantee.
 - I/We further agree to the deduction of 8% of the value of each interim bill up to the maximum sum stated in the said Appendix as Retention Money.
- We note that earnest money shall be merged with the initial Security Deposit after our tender is accepted and is liable to be forfeited at the discretion of YHAI, in the event of our withdrawing the tender or modifying the tender or in the event of our failure to furnish the initial security deposit. The maximum amount of retention money shall be the total Security Deposit as stated in the said Appendix. I/We do agree that EMD may be forfeited if tender is withdrawn/modified by me/us.

Name and signature of the Contractor with seal.

GENERAL CONDITIONS OF CONTRACT

➤ INTERPRETATIONS

- In construing these conditions, the specifications, the schedule of quantities, tender and Contract Agreement, the following words shall have the meaning herein assigned to them except where the subject or context otherwise requires.
- **Employer or Association:** The term “Employer” “Owner” or "YHAI” shall denote Youth Hostels Association of India located at Nyaya Marg, Chanakyapuri, New Delhi and shall include their assignees and successors and administrators.
- **Architects:** The term "Architects" shall mean M/s. Ace Associates, Gandhi Nagar- 1st lane extension, Berhampur, 760001, ODISHA or in the event of his/their ceasing to be the Architects for the purpose of this contract such other person/s the Employer shall nominate for the purpose.
- **Engineer:** The term "Engineer" shall mean authorized Engineer appointed by Architect or YHAI for day-to-day supervision of works at site as per tender terms.
- **Contractors:** The term "Contractor", "Bidder" or "Tenderer" shall mean _____ (Name and address of Contractor) and his/their heirs, legal representatives, assigns and successors.
- **Site:** The "site" shall mean the site located at Gopalpur-On-sea with plot area mentioned on drawings where the new building is to be constructed as per the sanction plans, working drawings allotted by the Employer for the contractor’s use.
- **Drawings:** "Drawings" means the drawings referred to in the Specification and any modification of such drawings approved in writing by the Engineer and such other drawings as may from time to time be furnished or approved in writing by the Engineer. The work is to be carried out in accordance with drawings, specifications, the schedule of quantities and any further drawings, which may be given by YHAI’s Engineer / Architect during the execution of the work.
- All drawings relating to work given to the contractor together with copy of schedule of quantities are to be kept at site and the Engineer / Architect shall be given access to such drawings or schedule of quantities whenever necessary.
- In case any detailed Working/Fabrication/Shop Drawings are necessary, contractor shall prepare such detailed drawings and/or dimensioned sketches thereof and have it confirmed by YHAI’s Engineer / Architect prior to taking up such work.
- The contractor shall ask in writing for all clarifications on matters occurring anywhere in drawings, specifications and schedule of quantities or to additional instructions at least 10 days ahead from the time when it is required for implementations so that the Employer may be able to give decision thereon.
- “The Works” shall mean the work or works to be executed or done under this contract and shall include materials, apparatus, equipment, plant, fittings and other things for incorporation in the works.

- "Contract" means the contract effected by the contractor's Tender and the Employer's acceptance thereof comprising (in addition to the Tender and Acceptance) the priced bill of Quantities and Schedules, Schedules of particulars (if any), Specifications and Drawings, these
- General Conditions of Contract, Special Conditions contained in or attached to any of the forgoing documents, any alterations agreed in writing between the parties before the formal acceptance of the Tender, all these documents taken together, shall be deemed to form one contract and shall be complementary to one another.
- "Specification" means the specification annexed to or issued with these conditions and includes Indian or British or other approved standard specifications where required by the specification and where such a specification is not available, the specification approved by the Architect and the Engineer.
- "Approved" means approved in writing including subsequent written confirmation of previous verbal approval and "approval" means approval in writing including as aforesaid.
- "The Schedule of Quantities" or "Priced Schedule of Quantities" shall mean the schedule (or bill) of quantities as specified and forming part of this contract.
- "Act of Insolvency" shall mean any act such as defined by the Presidency Towns Insolvency Act, 1909 or in Provincial Insolvency Act 1920 or any amending of the said Acts.
- "Notice in Writing": Or written notice shall mean a notices in written, typed or printed characters sent (unless delivered personally or otherwise proved to have been received) by registered post to the last known 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.
- "Chief Executive Officer": Shall mean Chief Executive Officer, Youth Hostels Association of India or any other officer in his place who shall be the Principal Executive of the Association, Nyaya Marg, Chanakyapuri, New Delhi.
- Clerk of Works: Shall mean the person employed by the Association and approved by the Architects and acting under the orders of the Architects to superintend the works in absence of the Architects.
- "In charge": Shall mean the Engineer employed by the Employer i.e., YHAI and engaged by the Association for the purpose of control and supervision of the work and to issue instructions and make correspondence with the Architects and the contractor on behalf of the Association.
- Words importing persons include firms and Employers, and words importing the singular only include the plural and vice versa where the context so required.

➤ **SCOPE OF WORK:**

- The work consists of Construction of RESIDENTIAL HOSTEL at Gopalpur - on - Sea, in accordance with the "drawings" and "Schedule of Quantities". The civil, water supply, sanitary, electrical, formation of roads, bore wells, rainwater harvesting and pathways etc., are within the scope of this tender.
- It includes furnishing all materials, labours, tools and equipment and management necessary for and incidental to the construction and completion of the work. All work, during its progress and upon completion, shall conform to the lines, elevations and grades as shown on the drawings furnished by the Employer/Architects. detail essential for efficient completion of the work be omitted from the drawings

and specifications, it shall be the responsibility of the contractor to inform the Employer/Architects and to furnish and install such detail with Employer's/Architects' concurrence, so that upon completion of the proposed work the same will be acceptable and ready for use.

- Employer/Architects may in their absolute discretion issue further drawings and/or written instruction, details, directions & explanations, which are, hereafter collectively referred to as "The Employer's instructions" in regard to:
- The variation or modification of the design quality or quantity of works or the addition or omission or substitution of any work.
- Any discrepancy in the drawings or between the schedule of quantities and/or drawings and/or specification.
- The removal from the site of any defective material brought thereon by the contractor and the substitution of any other material thereof.
- The demolition removal and/or re-execution of any work executed by the contractor/s.
- The dismissal from the work of any persons employed there upon.
- The opening up for inspection of any work covered up.
- The rectification and making good of any defects under clauses hereinafter mentioned and those arising during the defect liability period.
- The Contractor shall forthwith comply with and duly execute any work comprised in such Employer's/Architects' instructions, provided always that verbal instructions, directions and explanations given to the contractors or his representative upon the works by the Employer/Architects shall if involves a variation, be confirmed in writing to the contractor/s within seven days. No works, for which rates are not specifically mentioned in the priced schedule of quantities, shall be taken up without written permission of the Employer/Architects. Rates of items not mentioned in the priced schedule of quantities shall be fixed by the employer in consultation with the Architects as provided in Clause "variation".
- The contractor shall set up necessary field testing equipment for day to day testing of materials like slump test for concrete, moulds for preparing concrete cube test samples, grading of coarse and fine aggregates, silt content and bulking of sand etc.
- Regarding all factory made products for which ISI marked products are available, only products bearing ISI mark duly approved by architect/ Association shall to be used in the work.
- The scope of works involves completing the construction of the building fit for occupation, which also involves & means submitting the necessary documents to statutory authorities like Water Supply & Sanitary, Electrical Board Authorities and any such other statutory/ regulatory authorities, arranging for their Inspection of works, rectifications, following up with them for securing their permissions/ clearances no objection certificates, sewerage, water & electrical connections. YHAI shall make necessary payments directly to the concerned authorities on demand & against receipts or reimburse such charges to the contractor on production of demand notices & paid receipts. The successful contractor shall make necessary liaising works including making submission of applications to the statutory authorities and no extra payment will be considered by YHAI for obtaining above mentioned services, clearances & completion certificates.

➤ **TENDERER SHALL VISIT THE SITE**

Intending tenderer shall visit the site and make himself thoroughly acquainted with the local site condition, nature and requirements of the works, availability of specified materials in the tender, facilities of transport condition, effective labour and materials, access and storage for materials and removal of rubbish. The tenderer shall provide in their tender for cost of carriage, freight and other charges as any special difficulties, including police restriction for transport etc., for proper execution of work as indicated in the drawings. The successful tenderer will not be entitled to any claim of compensation for difficulties faced or losses incurred on account of any site condition which existed before the commencement of the work or which in the opinion of the Employer/Architects might be deemed to have reasonably been inferred to be so existing before commencement of work.

TENDERS

- ✓ The entire set of tender paper issued to the tenderer should be submitted duly filled with prices and also signed at appropriate places and every page of the tender document and as detailed in the Instructions to Tenderers.
- ✓ No modifications, writings or corrections can be made in the tender papers by the tenderer, but may at his option offer his comments or modifications in a separate sheet of paper attached to the original tender papers for Associations consideration.
- ✓ The Employer reserves the right to reject the lowest or any tender and also to discharge any or all of the tenders for each section or to split up and distribute any item of work to any specialist firm or firms, without assigning any reason.
- ✓ The tenderer should note that the tender is strictly on the item rate basis and their attention is drawn to the fact that the rates for each and every item should be correct, workable and self-supporting. If called upon by the Employer/Architects detailed analysis of any or all the rates shall be submitted. The Employer/Architects shall not be bound to recognize the contractor's analysis.
- ✓ The works will be paid for as "measured work" on the basis of actual work done on item rate basis and not as "lump sum" contract.
- ✓ All items of work described in the schedule of quantities are to be deemed and paid as complete works in all respects and details including and finishing works involved, directly, related to and reasonably detectable from the drawings, specifications and schedule of quantities and no further extra charges will be allowed in this connection. In the case of lump-sum charges in the tender in respect of any item of works, the payment of such items of work will be made for the actual work done on the basis of lump-sum rates as will be assessed to be payable by the Employer/Architects.
- ✓ The Employer has power to add /to omit any work as shown in drawings or described in specifications or included in schedule of quantities and intimate the same in writing but no addition, omission or variation shall be made by the contractor without authorization from the Employer. No variation shall vitiate the contract.
- ✓ The tenderer shall note that his tender shall remain open for consideration for a period of 60 DAYS from the date of opening of the tender.

➤ **AGREEMENT**

The successful contractor shall sign a Contract Agreement as per enclosed Performa shall pay for all stamps and legal expenses, incidental thereto. The contractor shall submit Indemnity Bond, Guarantee Certificates for specialized works in stamp papers as per YHAI approved Performa.

➤ **PERMITS AND LICENCES**

- ✓ Permits and Licenses for release of materials, which are under Government control, shall be arranged by the contractor. The Employer may render necessary assistance, sign any forms or applications that may be necessary but shall not be responsible for actual procurement or for any delay in procurement.
- ✓ It may be clearly understood that no compensation or additional charges can be claimed by the contractor for non-receipt of any controlled materials in due time on this account or according to his own requirements.
- ✓ The contractor shall at his own cost arrange for storage shed adequate for taking delivery and storing of the quantity of controlled materials released by the authorities or supplied by the Employer. The costs of storing, transporting, etc., of all materials including those under Government control are to be included by the tenderer in his quoted rates.
- ✓ The Employer/Architects shall be indemnified against all Government or legal actions for theft or misuse of controlled materials in the custody of the contractor.

➤ **GOVERNMENT AND LOCAL RULES**

The contractors shall confirm to the provisions of all local Bye-laws and Acts relating to the work and to the Regulations etc., of the Government and Local Authorities and of any company with whose system the structure is proposed to be connected. The contractor shall give all notices required by said Act, Rules, and Bye-laws etc., and pay all fees payable to such authority/authorities for execution of the work involved. The cost, if any, shall be deemed to have been included in his quoted rates, taking into account all liabilities for licenses, fees for footpath encroachment and restorations etc., and shall indemnify the Employer against such liabilities and shall defend all actions arising from such claims or liabilities.

➤ **TAXES AND DUTIES**

The contractor shall pay and be responsible for payment of all taxes, including GST as applicable, duties, levies, royalties, fees, cess or charges in respect of the works including but not limited to sales tax, GST, works contract tax, excise duty and octroi payable in respect of materials, equipment plant and other things required for the contractor. All of the aforesaid taxes, duties, levies, fees and charges shall be to the contractor's account and the YHAI shall not be required to pay any additional or extra amount on this account. Variation of taxes, duties, fees, levies etc, if any, till completion of work shall be deemed to be included in the quoted rates and no extra amount on this account will in any case be entertained. If a new tax or duty or levy or cess or royalty or octroi is imposed under as statue or law during the currency of contract the same shall be borne by the contractor.

➤ **PROVISIONAL SUMS (P S)**

All provisional sums described in the schedule of quantities as P S shall be exclusively allotted to the purchase of materials and not for any handling and fixing to be done by the contractor. Such costs of handling and fixing with profit (including transport charges if required) shall be separately included in the contract price as described in the schedule of quantities. The disposal of the amounts covered under this head will be absolutely at the discretion of the Employer. Contractor is to make payment for these materials to the suppliers on certificate or order issued by the Employer/ Architects and realize them through his bills from the Employer.

➤ **QUANTITY OF WORK TO BE EXECUTED**

The quantities shown in the schedule of quantities are only approximate and are intended to cover the entire new structure indicated in the drawings but the Employer reserves the right to execute only a part or the whole or any excess thereof without assigning any reason therefore.

➤ **OTHER PERSONS ENGAGED BY THE EMPLOYER**

The Employer reserves the right to execute any part of the work included in this contract or any work, which is not included in this contract by other Agency or persons, and contractor shall allow all reasonable facilities and use of his scaffolding for the execution of such work. The main contractor shall extend all cooperation in this regard.

➤ **EARNEST MONEY, SECURITY DEPOSIT & RETENTION MONEY**

- ✓ The tenderer will have to deposit the amount specified in the Tender Notice in the form of Demand Draft only drawn in favour of YHAI, payable at New Delhi at the time of submission of tender as Earnest Money. The employer is not liable to pay any interest on the Earnest Money. The Earnest money of the unsuccessful tenderers will be refunded without any interest soon after the decision to award the work is taken or after the expiry of the validity period of the tender.
- ✓ The successful tenderer to whom the contract is awarded will have to deposit as initial security deposit a further sum to make up 2% of the value of the accepted tender including the Earnest Money. The initial Security Deposit will have to be made within 14 days from the date of acceptance of tender, failing which the Employer at his discretion, without prejudice to any other rights/remedies available under the terms of this Contract may revoke the letter of acceptance and forfeit the Earnest money deposit furnished along with the tender. The initial Security Deposit will not yield any interest & shall be held at YHAI end for the duration of the contract period. It shall be refunded to the contractor without any interest within fourteen days after the issue of certificates of virtual completion, after deducting any sum due from the contractor on any account under this contract.
- ✓ Apart from the initial security deposit made as above, retention money shall be deducted from progressive running bills at 8% of the gross value of each Running bill to make the total retention money of net 10 %.
- ✓ Fifty percent (50%) of the retention amount will be refunded to the contractor upon completion of the project and balance 50% after deducting any sum due from the contractor on any account under this contract, 14 (fourteen) days after the end of defects liability period provided he has satisfactorily carried

out all the work and attended to all defects in accordance with the conditions of the contract. No interest is allowed on retention money.

➤ **CONTRACTOR TO PROVIDE EVERYTHING NECESSARY**

- ✓ The contractor shall provide everything necessary for the proper execution of the work according to the intent and meaning of the drawings, schedule of quantities and specifications taken together whether the same may or may not be particularly shown or described therein provided that the same can reasonably be inferred there from and if the contractor finds any discrepancies therein he shall immediately and in writing, refer the same to the Employer/ Architects whose decision shall be final and binding. The contractor shall provide himself for ground and fresh water for carrying out of the works at his own cost. The Employer shall on no account be responsible for the expenses incurred by the contractor for hired ground or fresh water obtained from elsewhere.
- ✓ The rates quoted against individual items will be inclusive of everything necessary to complete the said items of work within the contemplation of the contract, and beyond the unit price no extra payment will be allowed for incidental or contingent work, labour and/or materials inclusive of all taxes and duties whatsoever except for specific items, if any, stipulated in the tender documents.
- ✓ The contractor shall supply, fix and maintain at his own cost, for the execution of any work, all tools, tackle, machineries and equipment and 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 safety of any adjacent roads, streets, walls, houses, building, all other erections, matters and things and the contractor shall take down and remove any or all such centering, scaffolding, planking, timbering, strutting, shorting etc., as occasion shall be required or when ordered so to do, and shall fully reinstate and make good all matters and things disturbed during the execution of works to the satisfaction of the Employer/ Architects.
- ✓ The contractor shall also provide such temporary road on the site as may be necessary for the proper performance of the contract and for his own convenience but not otherwise. Upon completion, such roads shall be broken up and levelled where so required by the drawings unless the Employer shall otherwise direct.
- ✓ The contractor shall at all times give access to workers employed by the Employer or any men employed on the buildings and to provide such parties with proper sufficient and if required, special scaffolding, hoists and ladders and provide them with water and lighting and leave or make any holes, grooves etc., in any work, where directed by the employer as may be required to enable such workmen to lay or fix pipes, electrical wiring, special fittings etc. The quoted rates of the tenderers shall accordingly include all these above-mentioned contingent works.

➤ **TIME OF COMPLETION, EXTENSION OF TIME & PROGRESS CHART**

Time of completion:

- ✓ The entire work is to be completed in all respects within the stipulated period stated in the **Appendix-I**. Time is the essence of the contract and shall be strictly observed by the contractor.
- ✓ **Extension of Time:** If in the opinion of the Employer/ YHAI the works were delayed for reasons beyond control of the contractor, YHAI may grant a fair and reasonable of time for completion of the contract work upon written request of the contractor. A hindrance register shall be maintained at site and record causes, duration etc, of such hindrances with due signatures of the Architect/ Association and the contractor which shall need to be produced during the consideration of the extension of time.
- ✓ Request for extension of time, to be eligible for consideration, shall be made by the Contractor in writing within fourteen days of the happening of the event causing delay to the Architect/ YHAI. The Contractor shall also, if practicable, indicate in such a request the total period for which extension is desired, overlapping period, if any, with earlier events causing delays, net extension required.
- ✓ In such case, the Employer may give a fair and reasonable extension of time for completion of work. Such extension shall be communicated to the contractor by the Employer in writing, within one month of the date of such request. Non-application by the contractor for extension of time within time or happening of an event, which will require extension of time, will render the contractor non eligible for seeking extension of time at later date & this shall be binding to the contractor. While granting extension, the Employer shall notify the contractor the period of time extendable considering the genuine reasons of the hindrances caused.
- ✓ For the period in excess of original stipulated period and authorized extension of time (i.e. period not qualifying for levy of liquidated damages), granted by the Employer, the provision of liquidated damages as stated under Clause 16 hereof will become applicable.
- ✓ However, the contract shall remain in force even for the period beyond the due date of completion irrespective whether the extension is granted or not.

➤ **PROGRESS OF WORKS**

During the period of construction the contractor shall maintain proportionate progress on the basis of a Programme Chart submitted by the contractor immediately before commencement of work and agreed to by the Employer/ Architects. Contractor should also include planning for procurement of scarce material well in advance and reflect the same in the programme chart so that there is no delay in completion of the project.

➤ **LIQUIDATED DAMAGES**

- ✓ Time is the essence of the contract. The completion of the building is essential to comply with various requirements of the YHAI contractor shall be aware and take note that non-completion of the building will affect the Associations committed programs and thus the loss by way delayed completion of related works etc, are invaluable and cannot be easily assessed. Therefore, it is part of the agreed terms that in the event of any delay in completion of the work, the Association is liable to charge the contractor without the necessity of providing for any details of such losses suffered by YHAI.
- ✓ Further, If the contractor fails to maintain the required progress in terms of the contract or to complete the work and clear the site on or before the contract or approved extended date of completion, he shall, without prejudice to any other right or remedy of the Employer on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below or such smaller amount as may be fixed by the employer on the contract value of the work for every completed week that the progress remains incomplete.
- ✓ For this purpose the terms contract value shall be value at the contract rates of the work as ordered/ accepted.
- ✓ The Employer shall have the right to adjust, / set-off against any sum payable to the contractor under this or any other contract with the Employer anywhere in India/ outside India.
- ✓ If the contractor fails to complete the works within the time for completion stated in the Appendix / elsewhere or within any extended time under Clause 14(ii) hereof, the contractor shall pay the Employer the sum at the rate of 0.5% (half percent) of the contract value per week of delay subject to a limit of 5% (five percent) of the contract value as” Liquidated damages” for the period during which the said works shall so remain incomplete or the Employer may deduct aforesaid sum towards such damages from any money due to the Contractor. Appendix- I shall also be referred in this regard.

➤ **TOOLS, STORAGE OF MATERIALS, PROTECTIVE WORKS AND SITE OFFICE REQUIREMENTS**

- ✓ The contractor may provide, fix up and maintain in an approved position, proper office accommodation for the contractor’s representative and staff at his own cost. Such offices shall be open at reasonable hours to receive instruction notices or communications and clear away on completion of the works and make good all work disturbed.
- ✓ All drawings maintained on the site are to be carefully mounted on boards of appropriate size and covered with a coat of approved varnish. They are to be protected from ravages of termites, ants, and other insects.
- ✓ The contractor shall provide at his own cost all-artificial light required for the work and to enable other contractors and sub-contractors to complete the work within the specified time.
- ✓ The contractor shall provide suitable temporary shed/enclosures for the watchmen and clear away the same when no longer required and to provide all necessary attendance, lights etc., required.
- ✓ The contractor shall provide at his own cost arrange for temporary latrines for the use of workers and field staff and keep the same in a clean and sanitary condition to the satisfaction of the Public Health

Authorities and shall cause such latrines and soil to be cleared away whenever necessary and shall make good all the works disturbed by these conveniences.

- ✓ Every precaution shall be taken by the contractor to prevent the breeding of mosquitoes on the works during the construction, and all receptacles, cisterns, water tanks etc., used for the storage of water, must be suitably protected against breeding of mosquitoes. The contractor shall indemnify the Employer against any breach of rules in respect of anti-material measures.
- ✓ The contractor shall not fix or place any placards or advertisement of any description or permit the same to be fixed or placed in or upon any boarding, gantry, building structure other than those approved by the Employer.

➤ **PROTECTIVE MEASURES:**

The contractor from the time of being placed in possession of the site must make suitable arrangements for safety and security, lighting and protecting the work, the site and surrounding property till completion of the work and handing over the site at the risk and cost of the contractor, and the Association will not pay for any such services. Contractor shall indemnify the Employer against any possible damage to the building, roads or members of the public in course of execution of the work. The contractor shall provide necessary temporary enclosures, barricading the entire area by using proper MS pipes and corrugated GI sheets up to 3.5 meters high, gates, entrances, etc., for the protection of the men, material and work. Any alteration to this as per the site requirement shall be carried out by the contractor at his own cost. The same shall be removed and made level after completion of the work to the satisfaction of the Association/ Architect.

➤ **STORAGE OF MATERIALS:**

The contractor shall provide and maintain proper sheds for the proper storage and adequate protection of the materials etc., and other work that may be executed on the site including the tools and materials of sub-contractors and remove the same on completion. Sheds for storage of cement should have pucca/ pukka floor raised above the ground.

➤ **TOOLS:**

- ◆ Theodolite levels, prismatic compass, chain, steel and metallic tapes and all other surveying instruments found necessary for the works shall be provided by the contractor for the due performance of this contract as instructed by the Site Engineer/ Architect.
- ◆ All measuring tapes shall be of steel and suitable scaffolding and ladders that may be required for safely taking measurement and shall be supplied by the contractor.
- ◆ The mason and the supervisor on the works shall carry with them necessary instruments like a steel tape, a measuring tape of 30 meters, a spirit level, a plumb bob and a square and shall check the work to ensure that the work is being done according to the drawing and specifications.
- ◆ The Site Engineer/ Architect can use any or all measuring instruments or tools belonging to the contractors as he chooses for checking the works executed or being executed on the contract.

- ◆ The contractor should cover in his rates for making provisions for all reasonable facilities for the use of his scaffolding, tools & plant etc. by subcontractors for their work.

➤ **NOTICE AND PATENTS OF APPROPRIATE AUTHORITY AND OWNERS**

The contractor shall conform to the provisions of any Acts of the Legislature relating to the work, and to the Regulations and Bye-laws of any authorities, and /or any water, lighting and other companies, the structures were proposed to have connection and shall before making any variations from the drawings or specification that may be associated to so conform, give the Employer/Architects written notices specifying the variations proposed to be made and the reasons for making them and apply for instruction thereon. The Employer/Architects on receipt of such intimation shall give a decision within a reasonable time.

The contractor/s shall arrange to give all notices required for by the said Acts, Regulations or Bye-laws 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 work and lodge the receipts with the Employer.

The contractor shall indemnify the Employer against all claims in respect of patent rights, royalties, and damages to buildings, roads or members of public in course of execution of work and shall defend all actions arising from such claims and shall keep the Employer/ Architect saved harmless and indemnified in all respects from such actions, costs and expenses.

➤ **CLEARING SITE AND SETTING OUT WORKS**

The site shown on the plan shall be cleared of all obstructions, grass, plants, loose stone, and materials rubbish of all kinds. All holes or hollows whether originally existing or produced by removal of loose stone or materials shall be carefully filled up with earth well rammed and levelled off as directed at his own cost.

The contractor shall set out the works and shall be responsible for the true and perfect setting out of the work 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 further set out the works to the alternative positions at the site until one is finally approved and the rates quoted in his tender should include for this and no extra on this account will be entertained.

➤ **BENCHES**

The contractor is to construct and maintain proper benches of all the main walls, in order that the lines and levels may be accurately checked at all times.

These benches will consist of Salwood post of adequate length and minimum diameter 75 mm to be driven in the ground at suitable distance as directed encased with brickwork. The wire nails will be driven on the top of Salwood post on the center lines of columns, walls, inside and outside faces of foundation trenches, in order that lines may be stretched between the benches and accurate intersection of excavation. Center line of walls, columns etc., may be clearly indicated and checked at any time if it is so required.

➤ **CONTRACTOR IMMEDIATELY TO REMOVE ALL OFFENSIVE MATTERS**

All soil, filth or other matters of any offensive nature taken out of any trench, sewer, drain, cesspool or other place shall not be deposited on the surface but shall be at once carted away by the contractor to the place provided by him. The contractor shall keep the foundations and works free from water and shall provide and maintain at his own expenses electrically or other power driven and other plant to the satisfaction of the Employer for the purpose, until the building is handed over to the Employer. The contractor shall arrange for the disposal of the water so accumulated to the satisfaction of the Employer and local authority and no claims will be entertained afterwards if he does not include in his rates for the purpose.

➤ **ACCESS**

Any authorized representative of the Employer shall at all reasonable times have free access to the works and/or to the workshop, factories or other places where materials are being prepared or constructed for the work and also to any place where the materials are lying or from where they are being obtained, and the contractor shall give every facility to the Association or their representatives necessary for inspection and examination and test of the materials and workmanship. Except the representatives of the Employer/ Architects no person shall be allowed at any time without the written permission of the Employer.

➤ **MATERIALS, WORKMANSHIP, SAMPLES, TESTING OF MATERIALS**

- ◆ All the works specified and provided for in the specifications or which may be required to be done in order to perform and complete any part thereof shall be executed in the best and approved quality of the respective kinds in accordance with the particulars contained in and implied by the specifications and as represented by the drawings or according to such other additional particulars, and instructions as may from time to time be given by the Employer/Architects during the execution of the work, and to his entire satisfaction.
- ◆ Whenever required by the Employer /Architects the contractor shall have to carry out tests on materials and workmanship in approved materials testing laboratories or as prescribed by the Employer/Architects at his own cost to prove that the materials etc., under test conform to the relevant I.S. Standards or as specified in the specifications. The necessary charges for preparation of mould (in case of concrete cube) and test samples transporting, testing etc., shall have to be borne by the contractor. No extra payment on this account would in any case be entertained.
- ◆ All the materials (except where otherwise described) stores and equipment required for the full performance of the work under the contract must be provided through normal channels and must include charge for import duties, sales tax, octroi and other charges and must be the best of their kind available and the contractor/s must be entirely responsible for the proper and efficient carrying out of the work. The work must be done in the best workman like manner. Samples of all materials to be used must be submitted to the Employer/Architects when so directed by the Engineer/ Architects and written approval from Employer/Architects must be obtained prior to placement of order.

- ◆ During the inclement weather the contractor shall suspend concreting and plastering for such time as the Employer/Architects may direct and shall protect from injury all work when in course of execution. Any damage during constructions, to any part of the work, for any reasons, due to rain, storm, or neglect of contractor, shall be rectified by the contractor, in an approved manner at no extra cost.
- ◆ Should the work be suspended by reason of rain, strike, lockouts or any other cause, the contractor shall take all precautions necessary for the protection of work and at his own expenses shall make good any damage arising from any of these causes.
- ◆ The contractor shall cover up and protect from damage, from any cause, all end work and supply all temporary doors, protection to windows, and any other requisite protection for the execution of the work whether by himself or special tradesmen or subcontractor and any damage caused must be made good by the contractor at his own expenses. **Contractor shall cover the lift well opening from all floors including parking and basements with 19 mm thick ply , with required supports to a minimum height of 1800 mm from respective floor level, properly fixed to side walls as a security measure prohibiting falling of any labours in the lift well. It needs to be covered during construction till the lift does not get installed.**

➤ **REMOVAL OF IMPROPER WORK**

- ◆ The Employer shall during the progress of the work have power to order in writing from time the removal from the work within such reasonable time or times as may be specified in the order of any materials which in the opinion of the Employer/Architects are not in accordance with specifications of instruction, the substitution or proper re-execution of any work executed with materials or workmanship not in accordance with the drawings and specifications or instructions.
- ◆ In case the contractor refuses to comply with the order the Employer shall have the power to employ and pay other agencies to carry out the work and all expenses consequent thereon or Incidental thereto as certified by the Employer/ Architects shall be borne by the contractor or may be deducted from any money due to or that may become due to the contractor. No certificate, which may be given by the Architects, shall relieve the contractor from his liability in respect of unsound work or bad materials.

➤ **SITE ENGINEER**

- ◆ The term 'Site Engineer' shall mean the person appointed and paid by the Employer/Architect to superintend the work. The contractor shall afford the Site Engineer every facility and assistance for examining the works and materials and for checking and measuring work and materials. The Site Engineer shall have no power to revoke, alter, enlarge or relax any requirements of the contract or to sanction any day work, additions, alterations, deviations or omissions or any extra work whatever, except in so far as such authority may be specially conferred by a written order of the Employer/ Architect.

- ◆ The Site Engineer shall have power to give notice to the contractor or to his foreman, of non- approval of any work or materials and such work shall be suspended or the use of such materials shall be discontinued until the decision of the Employer is obtained. The work will from time to time be examined by the Architects, Engineer from the Premises Department of the Employer and the Site Engineer. But such examination shall not in any way exonerate the contractor from the obligation to remedy any defects, which may be found to exist at any stage of the work or after the same is complete. Subject to the limitations of this clause the contractor shall take instructions only from the Architects/Employer.

➤ **OFFICE ACCOMMODATION FOR THE SITE ENGINEER**

- ◆ The contractor shall provide, erect, and maintain at his cost a separate simple watertight office accommodation for the Site Engineer. This accommodation shall be well lighted and ventilated and provided with windows, door with a lock.
- ◆ The Site Engineer's office shall be a minimum of 100 sq. ft. and the contractor shall provide a desk, chairs, drawers for keeping drawings, a cupboard having proper lock and a tack board for displaying drawings the accommodation shall be demolished when directed. The cost of the site office construction shall be borne by the contractor and as per CLAUSE (43 (i)) the cost of the same will not be paid by YHAI separately. Tenderers are advised to quote their rates duly considering this aspect.
- ◆ **Order Book:** The site order book (quarter duplicate copy) shall be maintained at site to record day to day activity at site. The Architect/Association representatives shall record the instructions remarks and with due signature. The contractor representatives should also write their remarks/ action taken against each instruction and submit the respective copies to the Architect/Association for the record. The original copy of the shall be preserve and produce on demand

➤ **CONTRACTOR'S EMPLOYEES**

- ◆ The contractor shall employ technically qualified staff /supervisors for the work who shall be available (by turn) throughout the working hours to receive and comply with instructions of the Employer/Architects. The contractor shall employ in connection with the work, persons having the appropriate skill or ability to perform their job efficiently. The contact details of such staff shall be provided to the Association/Architect for smooth mutual communication of the information/ instructions.
- ◆ No labourer below the age of Eighteen years and who is not an Indian National shall be employed on the work.
- ◆ Any labourer supplied by the contractor to be engaged on the work on day-work basis either wholly or partly under the direct order or control of the Employer or his representative shall be deemed to be a person employed by the contractor.
- ◆ The contractor shall comply with the provisions of all labour legislation including the requirements of the following

The register relating to Labour Act shall be maintained at the site office and the same shall be produced before the concerned authorities during the visit to the site and these registers shall be check by the Architect/Association from time to time.

- The Payment of Wages Act
- Employer's Liability Act
- Workmen's Compensation Act
- Contract Labour (Regulation & Abolition) Act, 1970 and Central Rules 1971
- Apprentices Act 1981
- Any other Act or enactment relating thereto and rules framed there under from time to time.
- Indian Electricity Act (IE Act) and follow the rules.
- The contractor shall keep the Employer saved harmless and indemnified against claims if any of the workmen and all costs and expenses as may be incurred by the Employer in connection with any claim that may be made by any workmen. Contractor shall obtain labour insurance policies before commencement of construction work.
- The contractor shall comply at his own cost with the order of requirement of any Health Officer of the State or any local authority or of the Employer regarding the maintenance of proper environmental sanitation of the area where the contractor's labourers are housed or accommodated, for the prevention of small pox, cholera, plague, typhoid, malaria and other contagious diseases. The contractor shall provide, maintain and keep in good sanitary accommodation and provide facilities for pure drinking water at all times of the use of men engaged on the works and shall remove and clear away the same on completion of the works. Adequate precautions shall be taken by the contractor to prevent nuisance of any kind on the works or the lands adjoining the same.
- The contractor shall arrange to provide first aid treatment to the labourers engaged on the works. He shall within 24 hours of the occurrence of any accident at or about the site or in connection with execution of the works, report such accident to the Employer and also to the competent authority where such report is required by law.

➤ **DISMISSAL OF WORKMAN**

The contractor shall on the request of the Employer immediately dismiss from works any person employed thereon by him, who may in the opinion of the Employer be unsuitable or incompetent or who may misconduct himself. Such discharges shall not be the basis of any claim for compensation or damages against the employer or any of their officer or employee.

➤ **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 sublet the contract or any a part, share or interest therein nor, shall take a new partner, without written consent of the Employer and no subletting shall relieve the contractor from the full and entire responsibility of the contract or from active superintendence of the work during their progress.

➤ **DAMAGE TO PERSONS AND PROPERTY INSURANCE ETC.**

- ◆ The contractor shall be responsible for all injury to the work or workmen, persons, animals or things and for all damages to the structural and/or decorative part of property which may arise from the operations or neglect of himself or of any sub- contractor or of any of his or a sub-contractor's employees, whether such injury or damage arise from carelessness, accident or any other cause whatsoever in any way connected with the carrying out of this contract. The clause shall be held to include interlaid, any damage to buildings whether immediately adjacent or otherwise, and any damage to roads, streets, foot paths or ways as well as damages caused to the buildings and the works forming the subject of this contract by rain, wind or other inclement weather.
- ◆ The contractor shall indemnify the Employer and hold harmless in respect of all and any expenses arising from any such injury or damages to persons or property as aforesaid and also in respect of any claim made in respect of injury or damages under any acts of compensation or damage consequent upon such claim. The contractor shall submit an indemnity bond in the approved Performa (enclosed under Appendix-5) in a stamp paper indemnifying YHAI / Architect from any damages, prosecution, other legal suits and claims arising out of any mishaps occurring at the site due to faulty work, faulty construction and for violating rules and regulations for which the contractor shall be solely responsible.
- ◆ The contractor shall reinstate all damage of every sort mentioned in this clause, so as to deliver the whole of the contract works complete and perfect in every respect and so as to make good or otherwise satisfy all claims for damages to the property or third parties.
- ◆ The contractor shall affect the insurance necessary and indemnify the Employer entirely from all responsibility in this respect. The insurance must be placed with a company approved by the Employer and must be effected jointly in the name of the contractor and the Employer and the policy lodged with the latter. The scope of insurance is to include damage or loss to the works itself till this is made over in a complete state. Insurance is compulsory and must be affected from the very initial stage.
- ◆ The contractor shall also be responsible for anything, which may be excluded from damage to any property arising out of incidents, negligence or defective carrying out of this contract.
- ◆ The Employer shall be at liberty and is hereby empowered to deduct the amount of any damages, compensations, costs, charges and expenses arising or accruing from or in respect of any such claim or damages from any sums due or to become due to the contractor.

➤ **INSURANCE**

- ◆ The Contractor shall, at his own expense insure the works , effect and maintain till the completion of the contract a Contractors All Risks Policy (CAR) for Insurance, with an insurance company approved by the Employer, for the full amount of the contract
- ◆ The scope of the cover shall include fire, lightning, explosion, crashing, aircraft, extinguishing water or other fighting measures, flood, inundation, rain, windstorm of any kind, earthquake, subsidence, landslide, rockslide, bad workmanship, lack of skill, negligence , malicious acts or human error, additional cover for

third party liability and surrounding properties. The CAR shall be held in the joint names of the Employer and the Contractor (the name of the former being placed first in the policy.) with Employer as beneficiary against all risk as per the standard all risk policy for Contractors and deposit such policy or policies with the Employer with 20(twenty days) days from the date of issuing the work order.

- ◆ The Contractor shall also indemnify the Employer against all claims which may be made upon the Employer, whether under the Workmen's Compensation Act or any other statute in force, during the currency of this contract or at Common Law in respect of any employee of the Contractor or of sub-Contractor and shall be at his own expense obtain, effect and maintain until the completion of the Contract a policy of Insurance against such risk in respect of employees of contractor or sub-contractor with an Insurance Company approved by the Employer, a comprehensive policy of Insurance and deposit such policy or policies with the Employer from time to time during the currency of this contract.
 - ◆ In default of the Contractor insuring as provided above, the Employer on his behalf may so insure and may deduct the premiums paid from any money due, or which may become due to the contractor.
 - ◆ The Contractor shall upon settlement by the Insurer of any claim made against the insurer pursuant to a policy taken under this clause, proceed with due diligence to rebuild or repair the works destroyed or damaged. In this event all the money received from the Insurer in respect of such damage shall be paid to the Contractor and the Contractor shall not be entitled to any further payment in respect of the expenditure incurred for rebuilding or repairing of the materials or goods destroyed or damaged.
 - ◆ The Contractor, in case of re-building or reinstatement after damage shall be entitled to such extension of time for completion as the Architect may deem fit, but shall, however, not be entitled to reimbursement by the Employer of any shortfall or deficiency in the amount paid by the insurer in settlement of any claim arising as set out herein.
 - ◆ Without prejudice to his liability under this clause, the Contractor shall also cause all sub-Contractors to effect for their respective portions of the works, similar policies of insurance in accordance with the provisions of this clause and shall produce or cause to produce to the Employer such policies. The Contractor shall not permit a sub- Contractor to commence work at the site unless the said insurance policies are submitted. In the event of failure of the sub-contractor to commence work at the site, the contractor shall be responsible for any claim or damage attributable to the said sub-Contractor.
- **FIRE INSURANCE:**
- ◆ The contractor shall at the time of signing the contract insure the works and keep them insured until the virtual completion of the contract against loss or damage by fire with a company to be approved by the Employer in the joint names of the Employer and the contractor for the full amount of the contract and for any further sum if called upon to do so by the Employer, the premium of such further sum being allowed

to the contractor at an authorized extra. Such policy shall cover the property of the Employer only, fees for assessing the claim and in connection with his services generally therein, and shall not cover any property of the contractor or of any sub-contractor or Employee. The contractor shall deposit the policy and receipts for the premiums with the Employer within twenty one days from the date of signing the contract. In default of the contractor insuring as provided above, the Employer may so insure and may deduct the premiums paid from any money due or which may become due, to the contractor. The contractor shall as soon as any claim under the policy is settled, or the work reinstated by the Insurance Office, should they elect to do so, proceed with all due diligence with the completion of the works in the same manner as though the fire had not occurred and in all respects under the same conditions of contract. The contractor in case of rebuilding or reinstatement after fire, shall be entitled to such extension of time for completion as the Architects in consultation with the Employer deems fit.

- ◆ The amount so due as aforesaid shall be the total value of the works duly executed and of the contract materials and goods delivered upon the site for use in the works up to and including a date not more than seven days prior to the date of the said certificate less the amount to be retained by the Employer (as hereinafter provided) and less any instalments previously paid under this clause. Provided that such certificates shall only include the value of the said materials and good as and from time as they are reasonably, properly and not prematurely brought upon the site and then only if properly stores and / or protected against weather.

➤ **INDEMNITY**

Notwithstanding that all reasonable and proper precautions may have been taken by the contractor at all times during the progress of the work, the contractor shall nevertheless be wholly responsible for all damage, whether to the works themselves, or to the lives, persons, or property of others during the progress of the works and period of maintenance.

➤ **RISK PENDING COMPLETION**

All the works comprised in this contract until handed over to the Architects / Employer, shall stand at the risk of the contractor who shall be responsible and make good at his own cost all loss and damage caused by or due to fire, weather or any other cause, and the contractor shall hand over the works complete in every respect at the termination of the Agreement.

➤ **ACCOUNTS RECEIPTS & VOUCHERS**

The contractor shall, upon the request of the Employer furnish them with all the invoices, accounts, receipts and other vouchers that they may require in connection with the works under this contract, if the contractor shall use materials less than what he is required under the contract, the value of the difference in the quantity of the materials he was required to use and that he actually used shall be deducted from his dues. The decision of the Employer shall be final and binding on the contractor as to the amount of materials the contractor is required to use for any work under this contract.

➤ **OPENING UP WORK**

The contractor shall notify the Architects in writing immediately the trenches of excavations as shown on the Drawings are excavated, or as soon as any ground is out which, from unexpected cause, appears to need immediately attention. Copies of such letters shall be sent to the Association. After notifying the Architects he shall await instructions, which shall be given within seven days of receipt of such notice.

If the contractor puts in any part of the foundations before he has so notified the Architects and received instructions, he shall be liable to reinstate all work that may subsequently, at any time be damaged on account of any defect in or insufficiency of the foundations. The contractor shall at the request of the Architects within such time as the Architects shall name, open up for inspection any other work and should the contractor refuse or neglect to comply with such request, the Employer, through the Architects, may employ other workmen to open up the same. If the said work has been covered up in contravention of the Architects Instructions, or if on being opened, it be found to be not in accordance with the Drawings and Specification or the instructions of the Architects the expenses of opening and covering it up again, whether done by the contractor or such other workmen shall be borne by them be recoverable from the contractor or may be deducted from any money due or which may become due from the Employer to the contractor. If the work has not been covered up in contravention of such instructions and be found in accordance with the said Drawings and specification or instructions then the expenses aforesaid shall be borne by the Employer and shall be added to the contract sum, provided always that in the case of foundation or of any other urgent work so opened up and requiring immediate attention, the Architects shall, within fourteen days after receipt of written notice by registered post from the contractor that the work has been so opened make or cause to be made the inspection thereof and at the expiration of such time if such inspection shall not have been made, the contractor may cover up the same and shall not be required to open it up against except at the expense of the Employer.

➤ **DETERMINATION OF CONTRACT BY THE EMPLOYER**

If the contractor shall have an order for compulsory winding up made on it or pass an effective resolution of winding up voluntarily or subject to the supervision of the Court if so required by the Architects or if the contractor shall suffer execution to be issued against him or shall suffer any payment under this contract to be attached by or on behalf any of the creditors of the contractor or shall assign or sublet this contract without the consent in writing of the Architects first obtained or shall charge or encumber this contract or any payments due or which may become due to the contractor there under or if the Architects shall certify in writing to the Employer that the contractor:

- Has abandoned the contract, or
- Has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for fourteen days after receiving from the Architects/ Employer written notice to proceed, or
- Has failed to proceed with the works with such due diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or

- Has failed to remove materials form the site or to pull down and replace work for seven days after receiving from the Architects written notice that the said materials of work where condemned and rejected by the Architect under these conditions, or
- Has neglected or failed persistently to observe and perform all or any of the acts, materials, or things by this contract to be observed and performed by the contractor for seven days after written notice issued by the Architects to the contractor requiring the contractor to observe or perform the same, or
- Has to determine of good workmanship or in defiance of the Architects' instructions to the contrary sublet any part of the contract, then and in any of the said cases the Employer, any notwithstanding any previous wavier, after giving seven days' notice in writing to the contractor determine the contract but without hereby affecting the power of the Architects or the obligations and liabilities of the contractor the whole or which shall continue in force as fully as if the contract had not been so determined as if the work subsequently executed had been executed by or on behalf of the contractor (without thereby creating any trust in favour of the contractor).
- And, further, the Employer, by his agents or servants may enter upon and take possession of the works and all plant, tool, scaffoldings, sheds, machinery steam and other power utensils and materials lying upon the premises or the adjoining lands or roads, and use the same as his own property or any employ the same by means of his servants and workmen in carrying on and completing the works or by employing any other contractor or other person or persons to complete the works and the contractor shall not in any way interrupt or do any act, matter or thing to prevent of hinder such other contractor or other person or persons employed for completing and finishing or using the materials and plant for the works. When the works shall be completed or as soon thereafter as convenient the Architects shall give a notice in writing to the contractor to remove his surplus materials and plant, and should be contractor to remove his surplus materials and plant and should the contractor fail to do so within a period of fourteen days after receipt of such notice the Employer shall sell the same by public auction and shall give credit to the contractor for the amount realized. The Architects shall thereafter ascertain and certify in writing his hand what amount if any shall be due or payable to or by the Employer for the value of the said and materials so taken possession of by the Employer and the getting the works to be completed and the amount which shall be so certified shall thereupon be paid by the Employer to the Employer to the contractor or by the contractor to the Employer as the case may be and the certified of Architects shall be final and conclusive between parties.

➤ **DAMAGE AND FORFEITURE OF DEPOSIT**

In case of failure on the part of the contractor at any time during the continuance of this contract to comply with any of the conditions herein contained or in case of the breach of any portion of this contract or if the Association shall enter and determine the contract the contractor shall be liable to make good to the Association the difference, if any, between the costs of completion as aforesaid and the costs mentioned in schedule of quantities and all other charges and expenses as shall or may in any way be incurred or sustained and the Association shall be at liberty to retain the said sums from any amount that shall become due and payable to the said contractor and without prejudice hereof the said Association shall be entitled to forfeit the amount deposited by the contractor with the Association and amount retained by the Association under clause

no.46 hereunder or to assess the loss or damages which they have suffered by reason of such failure or breach and to appropriate the said deposit towards such loss or damage without resource to a court of Law and without prejudice to any right of recovery by other means.

➤ **MEASUREMENTS**

Before taking any measurement of any work the Site Engineer or a subordinate deputed by him shall give reasonable notice to the contractor. If the contractor fails to attend at the measurements after such notice or fails to counter sign or to record the difference within a week from the date of measurement in the manner required by the Site Engineer then in any such event the measurements taken by the Site Engineer or by the subordinate deputed by him as the case may be is final and binding on the contractor and the contractor shall have no right to dispute the same.

➤ **PROVISION OF LATRINES, URINALS, BUTS, TEMPORARY OFFICE ETC**

- The contractor shall provide at his own cost, proper latrines and urinals for his workman to the satisfaction of the Association at approved sites in such numbers as the Association may require and shall compel his works people to resort to the use of such latrines and urinals. The said latrines and urinals shall be carefully maintained by the contractors and shall be under the superintendence of the Association/ Architects or his Assistant and the contractor shall be responsible for the payment of the conservancy services and /or Halakhore services to the same. The contractor shall on no account allow any huts erected on any property of the Association to be inhabited after sunset by anyone except the watchman require for the works and none of this employee except such watchman shall sleep at night on any part of the works.
- The contractor shall make his own arrangements for the temporary office and storage space of tools, plants, materials, etc and shall erect and remove on completion any shed which he may have erected for the purpose. The positioning of such sheds and temporary structures are to be previously approved by the Architects/ Employer.
- The contractor shall be allowed rent free the such ground as is available at or near the site of works as in the opinion of the Association may be absolutely necessary for the proper and efficient execution of works and on the completion of works or termination of his contract, he shall clear away all his staging, scaffolding, tools, plant, temporary latrines and urinals. Huts rubbish and other materials within a fortnight and hand over the ground in a tidy and clean condition.

➤ **NO INTEREST PAYABLE**

No claim for interest will be entertained by the Association with respect to the above mentioned deposits or with respect to any money or balances which may be in their hands owing to any dispute between themselves or the Architects and the contractor or with respect to any delay on the part of the Association in making monthly or final payments or otherwise.

➤ **PAYMENTS**

Initial Mobilization Advance: No mobilization advance will be considered by the Association.

➤ **RUNNING BILL PAYMENTS:**

- All bills shall be prepared by the contractor in the form prescribed by the Employer/ Architects. Normally one interim bill shall be prepared each month subject to minimum value for interim certificate as stated in the Appendix-I. The bills in proper forms must be duly accompanied by detailed measurements & test certificate in support of the quantities of work done and must show deductions for all previous payments, retention money, etc.
- The Architects shall issue a certificate after due scrutiny of the contractor's bill stating the amount due to the contractor from the Employer and the contractor shall be entitled to payment thereof, within the period of honouring certificate stated in the Appendix-I.
- The amount stated in an interim certificate shall be the value of work properly executed and material advance upto 75% of invoiced value of materials brought to site for permanent incorporation into the work after preparation of the previous bill less the amount to be retained by the Employer as retention money vide clause 11 of these conditions. Advance paid for materials already incorporated in the work shall be recovered.
- The material advance shall be admissible only on materials, which in the opinion of the Architect, are imperishable in nature, are genuinely required for use in the work in the near future, are of the required quality and are adequately protected against damage, theft, loss etc.
- If the Employer has supplied any materials or goods to the contractor, the cost of any such materials or goods will be progressively deducted from the amount due to contractor in accordance with the quantities consumed in the work.
- All the interim payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed, and shall not preclude 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 due performance of the contract, or any part thereof in any respect or the accruing of any claim, nor shall it conclude, determine or affect in anyway the power of the Employer under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract.

➤ **FINAL PAYMENT**

- The final bill shall be submitted by the contractor to the Architect within one month of the date fixed for completion of the work or of the date of certificate of completion furnished by the Architect and payment shall be made within three months for such of those items and quantities that in the opinion of the Employer, are undisputed.
- For delayed works Liquidated Damages will be applicable as per clause 15.

- The Final Bill shall be accompanied by a "Certificate of Completion" from the Employer/ Architects. Payments of final bill shall be made after deduction of Retention Money as specified in scope of work of these conditions, which sum shall be refunded as stipulated in Scope of Works. The acceptance of payment of the final bill by the contractor would indicate that he will have no further claim in respect of the work executed.

➤ **VARIATION / DEVIATION**

- The Employer shall have powers to order additional /non-tendered items to modify the tendered items, to vary the quantities of tendered items and not to execute certain items. All such orders shall be in writing.
- The rate or price of all such additional items/non-tendered/modified items will be worked out on the basis of rates quoted for similar items in the contract wherever existing or on engineering rate analysis based on prevalent fair price of labour, material and other components as required. The tender rates shall hold good for any increase or decrease in the tendered quantities up to variation of 25%. For variation beyond 25%, the rate may be reviewed based on prevalent fair price of labour, materials and other components as per the rate analysis format given in Appendix-3. The contractor shall submit detailed analysis of rates and supporting documents to the Employer/Architect within 14 days of being directed to execute such items/quantities and the Employer/Architect shall assess the analysis and approve reasonable and justified rate. No such additional or modified items or variation in quantities (except variation in quantities as per approved drawings) shall be executed by the Contractor without prior written approval of the Employer/ Architect.

➤ **SUBSTITUTION**

Should the contractor desire to substitute any materials and workmanship, he/they must obtain the approval of the Employer/Architects in writing for any such substitution well in advance. Materials designated in the Schedule of Quantities and specification indefinitely by such term as "Equal", "Equivalent" or "Other approved" etc. specific approval of the Employer/Architects has to be obtained in writing.

➤ **COMPLETION OF WORK**

- On completion of the work the contractor shall clean all windows, doors, fittings, fixtures etc. of all paint/polish/distemper splashes/dirt/dust etc, if necessary all hardware, clean inside and outside, all floor, stair-cases, and every part of the building and the surroundings. The whole of the work will be thoroughly inspected by the contractor and deficiencies and defects set right. On completion of such inspection the contractor shall inform the Architect/Employer in writing that he has completed the work and it is ready for inspection.
- On receipt of such written intimation from the contractor, the Architect/ Employer shall arrange to inspect the work and certify completion if the work has been completed satisfactorily. If not, the Architect/

Employer shall inform the Contractor the deficiencies/defects in the work and the contractor shall attend to them properly and again intimate the Employer/Architect for further inspection.

- The work shall not be considered as complete until the Employer/Architects have certified in writing that it has been completed satisfactorily without any apparent defects and the Defects Liability Period shall commence from the date of such certificate
- No such certificates shall be issued until the contractor clears away and removes from the site all constructional plant, surplus materials, rubbish temporary works of every kind and leaves the whole of the site and the works clean and in a workman like condition to the satisfaction of the Employer/Architects.

➤ **DEFECTS AFTER COMPLETION**

- The contractor shall make good at his own cost and to the satisfaction of the Employer all defects, shrinkage, settlements or other faults, which may appear within 12 months after completion of the work. In default the Employer may employ and pay other persons to amend and make good such damages, losses and expenses consequent thereon or incidental thereto shall be made good and borne by the contractor and such damages, loss and expenses shall be recoverable from him by the Employer or may be deducted by the employer, in lieu of such amending and making good by the contractor a sum equivalent to the cost of amending such work and in the event of the amount retained being insufficient, recover that balance from the contractor from the amount retained under clause together with any expenses the Employer may have incurred in connection therewith.
- For water proofing works and anti-termite works, the defects liability period will be respective guarantee/warranty period. In case of these works contractor has to submit a Bank guarantee, valid for the guarantee/warranty period, for an amount equivalent to 5% of the cost of such works. Alternately, YHAI shall deduct 5% of the cost of such works and keep in fixed deposit for guarantee/warranty period and return the amount after completion of guarantee/warranty period subject to satisfactory performance of the work during the defect liability period.

➤ **DEFECTS LIABILITY PERIOD**

The contractors shall maintain and keep in thorough repair including stopping leakages of water in any part of the works satisfactorily at their own cost the whole of the works for a period of one year from the date on which the Architects / Employer shall on application in writing from the contractors intimate to them in writing that the said works have been virtually completed and if the contractors shall at any time during the aforesaid period of one year fall to maintain and keep in thorough repairs the said works, the Association may do so at the risk expense and cost of the contractor for the purpose of computing defect liability period, the one year shall be calculated from the date of completion of the entire works,.

➤ **CONCEALED WORK**

The contractor shall give due notice to the Employer/Architects whenever any work is to be buried in the earth, concrete or in the bodies of walls or otherwise becoming inaccessible later on, in order that the work may be inspected and correct dimensions taken before such burial, in default whereof the same shall, at the opinion of the Employer/Architect be either opened up for measurement at the contractor's expense or no payment may be made for such materials. Should any dispute or differences arise after the execution of any work as to measurements etc., or other matters which cannot be conveniently tested or checked, the notes of the Employer/Architects shall be accepted as

➤ **IDLE LABOUR**

Whatever the reasons may be, no claim for idle labour, additional establishment cost of hire and labour charges of tools and plants would be entertained under any circumstances.

➤ **SUSPENSION**

- If the contractor except on account of any legal restraint upon the Employer preventing the continuance of the work or in the opinion of the Employer shall neglect or fail to proceed with due diligence in the performance of his part of the contract or if he shall more than once make default, the Employer shall have the power to give notice in writing to the contractor requiring the work be proceeded within a reasonable manner and with reasonable dispatch, such notice purport to be a notice under this clause.
- After such notice shall have been given the contractor shall not be at liberty to remove from the site of the works or from any ground contiguous thereto any plant or materials to subsist from the date of such notice being given until the notice shall have been complied with. If the contractor shall fall for 7 (seven) days after such notice has been given to proceed with the works as therein prescribe, the Employer may proceed as provided in clause 56 (Termination of Contract by Employer).

➤ **TERMINATION OF CONTRACT BY EMPLOYER**

- If the contractor being a company go into liquidation whether voluntary or compulsory or being a firm shall be dissolved or being an individual shall be adjudicated insolvent or shall make an assignment or a composition for the benefit of the greater part, in number of amount of his creditors or shall enter into a Deed or arrangement with his creditors, or if the Official Assignee in insolvency, or the Receiver of the contractor in insolvency, shall repudiate the contract, or if a Receiver of the contractor's firm appointed by the court shall be unable, within fourteen days after notice to him requiring him to do so, to show to the reasonable satisfaction of the employer that he is able to carry out and fulfil the contract, and if so required by the employer to give reasonable security therefore, or if the contractor shall suffer execution to be issued, or shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the contractor, or shall assign, charge or encumber this contract or any payments due or which may become due to the contractor there under, or shall neglect or fail to observe and perform all or any of the acts, matters or things by this contract to be observed and performed by the contractor within three clear days after the notice shall have been given to the contractor in manner hereinafter mentioned requiring the

contractor to observe or perform the same or shall use improper materials or workmanship in carrying on the works, or shall in the opinion of the employer not exercise such due diligence and make such due progress as would enable the work to be completed within due time agreed upon, and shall fail to proceed to the satisfaction of the employer after three clear days' notice requiring the contractor so to do shall have been given to the contractor as hereinafter mentioned, or shall abandon the contract, then and in any of the said cases, the YHAI may notwithstanding previous waiver, determine the contract by a notice in writing to the effect as hereinafter mentioned, but without thereby effecting the powers of the contract the whole of which shall continue in force as fully as if the contract had not been so determined and as if the works subsequently executed had been executed by or on behalf of the contractor (without thereby creating in favour of the contractor). Further the employer or his agent, or servants, may enter upon and take possession of the work and all plants, tools, scaffolding, sheds, machinery, steam and other power, utensils and materials lying upon premises or the adjoining lands or roads and sell the same as his own property or, may employ the same by means of his own servants and workmen in carrying on and completing the works or by employing any other contractors or other persons or person to complete the works, and the contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other contractor or other persons or person employed from completing and finishing the works. When the works shall be completed, or as soon thereafter as conveniently may be, the employer shall give notice in writing to the contractor to remove his surplus materials and plants and, should the contractor fail to do so within a period of 14 days after receipt by him, the employer may sell the same by Public Auction and shall give credit to the contractor for the amount so realized. Any expenses or losses incurred by the employer in getting the works carried out by other persons or contractors shall be adjusted against the amount payable to the contractor by way of selling his tools and plants or due on account of work carried out by the contractor prior to engaging other persons or contractors or against the Security Deposit.

➤ **ARBITRATION**

- All disputes or differences of any kind whatsoever which shall at any time arise between the parties hereto touching or concerning the works or the execution or maintenance thereof of this contract or the execution of maintenance thereof of this contract or the construction remaining operation or effect thereof or to the rights or liabilities of the parties or arising out of or in relation thereto whether during or after determination foreclosure or breach of the contract (other than those in respect of which the decision of any person is by the contract expressed to be final and binding) shall after written notice by either party to the contract to the other of them and to the Employer hereinafter mentioned be referred for adjudication to a sole Arbitrator to be appointed as hereinafter provided.
- For the purpose of appointing the sole Arbitrator referred to above, the Employer will send within thirty days of receipt of the notice, to the contractor a panel of three names of persons who shall be presently unconnected with the organization for which the work is executed.

- The contractor shall on receipt of the names of aforesaid, select any one of the persons named to be appointed as a sole Arbitrator and communicate his name to the Employer within thirty days of receipt of the names. The Employer shall thereupon without any delay appoint the said person as the Sole Arbitrator. If the contractor fails to communicate such selection as provided above within the period specified, the competent authority shall make the selection and appoint the selected person as the Sole Arbitrator.
 - If the Employer fails to send to the contractor the panel of three names as aforesaid within the period specified, the contractor shall send to the Employer a panel of three names of persons who shall all be unconnected with either party. The Employer shall on receipt of the named as aforesaid select anyone of the person's name and appoint him as the Sole Arbitrator. If the Employer fails to select the person and appoint him as the Sole Arbitrator within 30 days of receipt of the panel and inform the contractor accordingly, the contractor shall be entitled to appoint one of the persons from the panel as the Sole Arbitrator and communicate his name to the Employer.
 - If the Arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever another Sole Arbitrator shall be appointed as aforesaid.
 - The work under the Contract shall, however, continue during the arbitration proceedings and no payment due or payable to the contractor shall be withheld on account of such proceedings. The Arbitrator shall give a separate reasoned award in respect of each dispute or difference referred to him. The venue of arbitration shall be such place as may be fixed by the Arbitrator in his sole discretion.
 - The fees and expenses, if any, of the Arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The Arbitrator may direct to and by whom and in what manner the cost of the reference and of the award including the fees and expenses or any part thereof shall be paid and may fix or settle the amount of costs to be so paid.
 - The award of the Arbitrator shall be final and binding on both the parties. Subject to the aforesaid, the provisions of the Arbitration and Conciliation Act, 1996 or any statutory modification or re-enactment thereof and the rules made hereunder, and for the time being in force, shall apply to the arbitration proceeding under this clause.
- **RECORDS OF CONSUMPTION OF CEMENT & STEEL AND CONSUMPTION NORMS**
- For the purpose of keeping a record of cement and steel received at site and consumed in works, the contractor shall maintain a properly bound register in the form approved by the Association showing columns like quantity received and used in work and balance in hand etc. this register shall be signed daily by the contractor's representative and Association/Architects representative.

- The register of cement and steel shall be kept at site in the safe custody of Architects/ Association Engineer during progress of the work. This provision will not, however, absolve the contractor from the quality of the final product.
- In case cement quantity consumed is lesser as compared to the theoretical requirement such as mix design report obtained by contractor from reputed laboratory, at every change of source for cement, sand and aggregate, the cost of the quantity of cement not so used shall be recovered from the contractor as mentioned in Special Conditions of contract subject to the condition that the tests results (for e.g., compressive strength of concrete) fall within the acceptable criteria otherwise the work shall have to be dismantled and redone by the contractor at no extra cost.

➤ TESTS/RESULTS/SITE REGISTERS ETC.

The Contractor will be required to maintain the following registers at site of work and should produce the same for inspection of the Employer/Architects wherever desired by them.

Type of Register to be maintained

- | | | |
|-----------------------|---|---|
| • Register No. – I | : | Cement |
| • Register No. – II | : | Steel |
| • Register No. – III | : | Materials at Site Account |
| • Register No. – IV | : | Slump Test |
| • Register No. – V | : | Concrete Cube Test |
| • Register No. – VI | : | Hindrance to work |
| • Register No. – VII | : | Running Account Bill |
| • Register No. – VIII | : | Secured Advance on materials held at site |
| • Register No. – IX | : | Memorandum for Payment |

Contractor will have to submit their running account bills on prescribed form.

➤ ESCALATION

- The rate quoted in the tender 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 materials, labour, sales tax, octroi, etc. except for Cement, and Steel used as reinforcement.
- The contract price shall be adjusted for the increase or decrease in cost of cement and steel used as reinforcement in accordance with the following principles:
- The price adjustment shall apply for the work done up to the stipulated date of completion, including authorized extension of time granted to the contractor without levy of compensation, and shall not apply to the work carried out beyond such period for reasons attributable to the contractor.

- The price adjustment shall be applicable only for the civil works and shall not be applicable for the electrical works.
- The price adjustment shall be made during each quarter based on the following formulae.

Adjustment for cement

$V_c = P_c \times Q_c \times (C_i - C_o) / C_o$ Where,

V_c = Increase or decrease in cost of the work due to increase or decrease in cost of cement,

P_c = Base price of cement specified in the Appendix to General Conditions of Contract,

Q_c = Quantity of cement used in the work during the period,

C_o = All India wholesale price index for cement as published by the Economic Advisor to Government of India, Ministry of Industry and Commerce as valid on the last date of submission of tenders,

C_i = All India average wholesale price index for cement as published by the Economic Advisor to Government of India, Ministry of Industry and Commerce for the quarter.

Adjustment for steel used as reinforcement

$V_s = P_s \times Q_s \times (S_i - S_o) / S_o$ Where,

V_s = Increase or decrease in cost of the work due to increase or decrease in cost of steel,

P_s = Base price of steel reinforcement bars specified in the Appendix to General Conditions of Contract,

Q_s = Quantity of steel used in the work including quantity for which secured advance was paid during the period,

S_o = All India wholesale price index for steel (bars and rods) as published by the Economic Advisor to Government of India, Ministry of Industry and Commerce as valid on the last date of submission of tenders,

S_i = All India average wholesale price index for steel (bars and rods) as published by the Economic Advisor to Government of India, Ministry of Industry and Commerce for the quarter.

➤ **PREPARATION OF BUILDING WORKS FOR OCCUPATION AND USE ON COMPLETION**

On completion, the contractor will clean all windows and doors, including the cleaning with oil, if necessary hardware inside and outside, all floors, staircases, and every part of the building. He will leave the entire building neat and clean and ready for immediate occupation and to the satisfaction of the Architect.

➤ **DISPUTES**

All disputes arising out of or in any way connected with this agreement shall be deemed to have been arise in New Delhi and only the court in New Delhi shall have jurisdiction to determine the same.

➤ **WEEKLY PROGRESS REPORTS**

The contractor shall furnish all particulars, for compiling the progress report in the form provided by the Architect, to the Owner of works. Pre-inspection reports, formats asked by architects shall be duly filled by contractor and submitted to architect's office for approval prior to their inspection/ site visit.

Signature of the Contractor

SPECIAL CONDITIONS OF CONTRACT

➤ **GENERAL :**

These Special conditions of Contract shall be read in conjunction with the General Conditions of contract, Specifications of work, Drawings and any other documents forming part of this contract wherever the context so requires.

Not with standing, the sub-division of the documents into these separate sections and volumes every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the contract so far as it may be practicable to do so.

Where any portion of the General Conditions of Contract is repugnant to or at variance with any provisions of the Special Conditions of Contract, then unless a different intention appears, the provisions of the Special Conditions of Contract, shall be deemed to over-ride the provisions of the General Conditions of Contract and shall to the extent of such repugnance, or variance, prevail.

➤ **WHOLE WORK TO BE COMPLETED IN THE SPECIFIED COMPLETION PERIOD:**

The whole work including all extra and additional items if any is to be completed in the completion period stated in Appendix-I and the Contractor will be required, if necessary to work overtime to fulfil the Architect's instruction to complete the work by the Contract date. No extra will be allowed on the Contract Sum for such overtime work.

The Contractor is required to engage well qualified & experienced Class I licensed Electrical contractor with the prior approval of YHAI / Architect for undertaking the electrical works coming under the scope of tender / contract.

The Contractor will be responsible for obtaining all relevant NOCs as directed by architects from concerned authority. All expenses other than legal shall be borne by the Contractor for obtaining above documents from PMC.

➤ **INTERPRETATION OF TERMS:**

Whenever the words "directed", "as required", "selected", or words like effect are used, it is to be understood that the selection, direction or requirement of the Architect are intended.

The words "approved", "satisfactory" or words of like import shall mean "approved by" or "satisfactory to" the Architect, whose approval must first be obtained before the materials ordered or the works to which the words refer to are put in hand.

The word "allow" shall mean that the contractor shall include in his rates for the particular matter referred to.

The words "as described" shall mean the description in the trade preambles, general preambles, specifications, general instructions etc.

➤ **ORDER OF WORK:**

The Architect/ YHAI reserves the right to fix the order in which the various items of work involved in this contract are to be executed and contractor shall comply with the same. There shall be no extra claims on account of this.

➤ **TESTS FOR QUALITY OF MATERIALS AND WORKS:**

The quality of all materials proposed to be used in the works will be as per the relevant Indian Standard Specifications and will be generally in accordance with the provisions of the Technical Specifications.

The Contractor will carry out routine tests on all building materials for ascertaining the various qualities of the same as per the relevant tests procedure on samples collected at regular intervals and submit the reports in triplicate to the Architects.

General guidelines showing the tests required to be carried out on materials and the frequencies of such tests are indicated in "Mandatory Tests" attached to the Technical Specifications of this document. The Architect may at his discretion direct the Contractor to carry out any or all such tests and at intervals shorter or longer than those specified. The lists of preferred materials attached to this document are not exhaustive and the Architect may direct the contractor to carry out tests on other materials not specified in the list. The contractor in all cases will carry out the tests required to be done by him and costs of conducting such tests and furnishing the results will be borne entirely by the contractor. No claim towards reimbursement of such costs or part thereof will be entertained at any time and the rates quoted by the contractor for various items of works will be deemed to be inclusive of such cost.

➤ **SAMPLES:**

Before ordering materials, the Contractor shall get samples or makes of the materials approved from the Architect well in time. If ordered by the Architect, the samples of materials shall be got tested from approved laboratories at the contractor's cost before approval. No claim will be allowed for delay to the progress of work caused by tests. If called upon by the Architect, the contractor shall produce proof for having arranged for the supply of materials well in time.

The contractor shall furnish well in time before work commences, at his own cost, any samples of materials or workmanship that may be called for by the Architect for his approval or rejection and any further samples in case of rejection until such samples approved. Such samples when approved shall be the minimum standard for the work to which they apply. In case of items like suspended ceiling, timber partitions, etc., typical sample panels or prototypes shall be erected in position for approval before undertaking work. Rates quoted shall cover for such preliminary work.

➤ **WORKMANSHIP:**

The work involved calls for a high standard for workmanship combined with speed.

REJECTED WORKMANSHIP OR MATERIALS:

Any workmanship or materials not complying with the specific requirements or approved samples or which have been damaged, contaminated or deteriorated, must be removed immediately from the site and replaced at the contractor's expense, as directed.

DISCREPANCIES:

The several documents forming the contract are to be taken mutually explanatory of one another. In the event of any Errors, Omissions and Discrepancies, the same shall be dealt as under:

In case of errors, omissions and /or disagreement between written and scaled dimensions on the drawings and specifications etc., the following order of precedence shall apply.

Between scaled and written dimension (or description) on a drawing, the latter shall be adopted.

Between the written or shown dimensions in the drawings and the corresponding one in the specification, the former shall be taken as authenticated.

In case of discrepancy between the schedule of quantities, the specifications and /or the drawings, the following order of preference to be observed.

- Description in Schedule of Quantities.
- Drawings
- Technical Specifications
- Indian Standard Specifications of B.I.S.

In case of difference between the rates written in figures and the rate in words, the rates in words shall prevail. In case of omissions and/or doubts or discrepancies in any of the items or specifications, a reference shall be made to YHAI. The contractor shall be held responsible for any error that may occur in the work through lack of such reference and precaution.

QUOTED RATES:

The rates quoted by the contractor shall be held to include for providing and fixing all scaffolding, conveyance and delivery, unloading, carrying in storing, hoisting, all labour, setting, fitting and fixing in position making, setting, cutting, waste, return of packing and all materials and labour and everything else necessary for the proper completion of each item of work to the approval of Architect and for Establishment Charges, overheads and profits. The Contractor shall provide at his expense all labour, materials and things required by the Architect or his representative for testing and measuring the work, for weighing, testing the efficiency of any portion of the work, all planning gangways etc., necessary for affording access to every part of the work. (However in regard to cube tests of concrete provisions made regarding the same under the trade 'Concrete' shall be applicable).

Contractor should note that unless otherwise stated the tender is strictly on item rate basis and his attention is drawn to the fact that rates for each and every item should be correct, workable and self-supporting. The quantities in the Schedule of Quantities approximately indicate the total extent of work but may vary to any extent and may even be omitted. No claim shall be entertained on this account except as provided in clause 35 of the General Conditions.

If called upon by the Architect, detailed analysis of any or of all the rates shall be submitted by the Contractor. The Architect is not bound to recognize Contractor's analysis and reserves the right to reject abnormal high rates quoted by the contractor. In case there are inconsistencies in the rates for items of same such rates shall be considered as the rate for all such items unless Architect finds that there is justification for such inconsistent rates.

The rates of items of works shall include Lesioning charges, supervision charges in applying & securing service connections like water supply, sewerage connection from respective statutory authorities, applying & obtaining occupancy certificate from local authorities and such other permits/ licenses in completing the building fit for occupation. YHAI shall make direct payment to the concerned authorities in getting such permits, licenses, and service connections on demand & against bills, notices. All other incidental charges, Lesioning & supervision charges shall be loaded in the item rates of the tender.

➤ **WATER:**

The rates quoted by the contractors shall include for providing all the water required for the work including that required by special tradesmen and sub-contractors and pay all charges required by local authority or other authorities to get connection. Water must be clean, fresh, pure and free from earth, vegetable or organic matter acid or alkaline substance

in solution or suspension. The contractors must execute any temporary plumbing work and pay all fees and charges. The contractors will be allowed use of any water surplus to requirements of the Employer from any existing well if any on the site, but no guarantee is given that the quantity available would be sufficient. The contractor will make his own arrangements for pumping and storing water. If supply from the Municipality or other bodies be inadequate, the contractor should provide tube well, tanker water duly tested or wells or open well at his own cost. All Health regulations in force shall be strictly observed by the contractor and pay all necessary charges.

➤ **ELECTRICITY:**

The contractor shall arrange with the concerned Electric Supply Authorities for a temporary meter for electric supply to the site and shall provide all temporary wiring, power and lighting points for the whole of the works and clear away when no longer required. He shall pay all charges for same and for current consumed, including the consumed by sub-contractors. YHA shall only sign any application form as owner of the property.

But considering the scanty nature of Electrical supply in rural areas, the contractor is advised to keep a D.G. set of adequate capacity so as to facilitate uninterrupted construction activity despite. The expenditure for diesel & maintenance of the D.G. set as well as the Electrical consumption shall be the responsibility of the contractor at his cost

➤ **SECURITY and PROTECTION:**

All fences, trees, shrubs, grass, lawns and other surfaces about the buildings or approaches thereto, which are required to be maintained are to be kept free from damage due to operations in connection with the work, at contractor's expense.

The Contractor shall, at his expense, protect all projecting sills, jambs, copings, stone or concrete treads and mouldings and all concrete steps, woodwork and joinery and the like from injury during the progress of the work by rough timber casings securely fixed. The contractor shall at his cost protect joinery and make good all damage to same from any cause whatsoever during the performance of the contract and leave perfect to the satisfaction of the Architect at completion. Before giving up possession, the Contractor must see that all doors, windows, and ventilators, etc., work easily and shall make all necessary adjustments.

➤ **MINIMUM WAGES ACT:**

The contractor shall pay rates of Wages and observe hours of work and conditions of employment according to existing rules under Minimum Wages Act. Further, it shall be contractor's responsibility to ensure that he pays his workmen wages which are not lower than the minimum prescribed by the Union Government and State Government in which area this contract is being operated.

➤ **INCOME TAX DEDUCTIONS/ WORK CONTRACTS TAX:**

Appropriate deduction as per relevant Income Tax & works contract tax Rules applicable at the time shall be made on the bills submitted by the contractor and such deducted amounts shall be remitted by the owner with the Reserve Bank of India and State Govt. on behalf of the Contractor as per Rules.

➤ **WORKS AND SITE TO BE KEPT AND DELIVERED UP CLEAN:**

All shavings, cuttings and other rubbish as it accumulates from time to time during the progress of the work and at completion, including that of sub-contractors and special Tradesmen to be cleared and carted away and all materials rejected by the Architect's representative to be removed. Contractor's quoted rates shall allow for these factors.

➤ **USEFUL EXCAVATED MATERIALS:**

Should suitable sand or gravel or Murum or rock be found in the excavation and the contractor be allowed to use the same in the work, he will be required to pay the Employer the full market value of the same. Any sand, gravel, Murum or rock taken from the Excavation will remain the property of the Employer and in the event of it not being allowed to be used in the work, the YHAI's Engineer / Architect reserves the right to dispose it off in any way as ordinary excavated materials.

➤ **TOOLS FOR MASONS:**

Every bricklayer or plasterer on the work shall be provided with suitable level battens, trowels, wooden floats and breaking hammers for cutting brick and templates, to enable him to carry out the work in a neat and workmanlike manner, and each gang of brick layers or plasterer not exceeding six in numbers shall be provided with a suitable measuring rule, a plumb bob, a spirit level and a square in addition to the above mentioned, all to be to the approval of the Architect.

➤ **CONTRACTOR TO ASSIST SITE ENGINEER FOR TAKING MEASUREMENTS:**

The contractor or his representative shall accompany the Site Engineer when required to do so and assist in taking the measurements and shall agree to the measurements recorded on the spot. If the Contractor fails to accompany the Site Engineer or any other person that has been duly authorized by the Architect to take measurements then in such a case the measurements recorded by the Site Engineer or Architect's representative shall be binding on the Contractor. All measuring tapes shall be steel and scaffolding and ladders that may be required for taking measurements shall be supplied by the Contractor, at his expense.

➤ **THEORETICAL CHECK:**

After the completion of the work the theoretical quantity of cement to be used on the work shall be calculated on the basis of standard coefficients. Over the theoretical quantity so calculated shall be allowed a variation upto 5% minus. In the event of it being discovered that the quantity of cement used is less than the quantity ascertained as herein before provided (allowing variations on the minus side as stipulated above), the cost of the quantity of cement not so used shall be recovered from the contractor at double the prevailing market rate.

➤ **SERVICE AND ADVICE BY CONTRACTOR TO EMPLOYER:**

The contractor shall place at the disposal of the Employer the services and the advice of himself and his staff of Engineers, Managers, suppliers/buyers of materials, foreman of trades or to other skilled persons employed by him for conducting the comprised in this contract.

➤ **NO OVER LOADING OF SLABS:**

Floors of buildings under construction shall not be loaded by stacks or materials during construction without the prior approval of the Architect. It is important that no load comes on the reinforced concrete floors until they are at least three weeks old and at no time must be load placed upon them exceed the load for which they are designed.

➤ **RATES TO COVER FOR WORK AT ALL HEIGHTS AND LEVELS:**

The rates quoted by the contractor should cover for work at all heights and levels for all items or work under this contract. Lift of materials will not form any criterion for claiming extra payment.

➤ **ALTERNATIVE ITEMS:**

In regard to alternative and 'rate only' items if any specified in the Schedule of Quantities, Contractor should note that YHAI reserves the right to order the principal item or its alternatives to any extent entirely at YHAI discretion.

➤ **PROVISIONAL ITEMS:**

If ordered by the Architect, Contractor shall be required to carry out provisional sum items at the same conditions and rates as applicable for this contract.

➤ **ATTENDANCE OF SUB – CONTRACTORS:**

CO – ORDINATION: There may be Separate Tenders for any other specialized works / Items if required. The contractor is required to Co-ordinate & co-operate with all other agencies that are awarded with such other works during the entire project execution. Coordination / incidental charges, if any shall be included while quoting the rates for the different items of works as given in BOQ. Few such Special works/ Items are interior works, Lift installation, Fire Fighting System, Generator, & Transformer installation works, Air Conditioning etc. The contractor shall be responsible for the Co-ordination of all the work including that of sub- contractors and nominated sub-contractors, for arranging runs of all services and working to the requirements and layouts of the specialist trades, in all matters necessary for the complete execution of the work.

Rates quoted by the contractor shall be inclusive of all at-enhance on sub-contractors or other contractors nominated by the Architect. Contractor must allow for provision of the use of his scaffolding to sub-contractors and for its retention until such time all relevant sub-contract works are completed. The contractor shall accept liability for and bear the cost of the supply of all necessary water electricity, lighting, watching, etc., for the sub-contractors work. The contractor must allow in his rates for making good any holes and chases left by the sub- contractor or other contractor nominated by the Architect before the builder's work is completed and handed over.

➤ **MEASUREMENTS OF ALL CONCEALED ITEMS TO BE RECORDED PRIOR TO COVERING UP:**

Measurements of all items of work including extra items, if any, such as, work in foundations, including excavations, plinth filling, masonry concrete etc., steel in all R.C.C. works, pipes to be encased etc., shall be got recorded from the authorized Site Engineer by the contractor before they are covered up. Immediately the work is ready for measurements, contractors will give specific notice to Architect and Site Engineer for recording the measurements, the Contractor will refer the matter to the Architect for instructions, but in no case shall cover up the work without his permission.

➤ **OCCUPATION BY EMPLOYER:**

The Employer reserves the right to occupy the works by section as completed, as may be considered by the Architect both practicable and reasonable and without hindrance to the contractor's progress.

➤ **MINIMUM REQUIREMENTS OF THE TECHNICAL STAFF:**

Unless otherwise stated, contractor should note that irrespective of the fact whether the proprietor himself is a qualified Engineer or not he shall appoint a qualified resident Engineer having a recognized Degree in Civil Engineering and a minimum of 2 years' experience on such major construction site/s or a Diploma holder with 5 years' experience on similar works. Failing which YHA shall engage a Civil Engineer on behalf of the contractor and shall deduct a salary amount of minimum Rs.20, 000/- per month from his running bills, from the date of his non-employment of qualified Civil Engineer.

➤ **GUARANTEE FOR SPECIAL WORKS:**

For special works like Anti-termite treatment and water proofing works, guarantee issued by the special agencies who are engaged for such works by the contractor, shall be submitted to the Association for Termite treatment minimum 5 years guarantee and for water proofing of terrace, sump tank, toilets sunken portion, basement floor & wall areas minimum 05

years is insisted. Such guarantees shall be submitted in the approved format of YHAI and the main contractor shall be responsible for any breach in such guarantee terms.

➤ **Plan of Operations:**

- Before commencing the works the Contractor shall supply to the architect for his approval
- Shop Drawings showing the general arrangement of his temporary buildings, access roads and other temporary works.
- General information of all construction, pumping, washing of sand and aggregate, excavation, piling, haulage, erection and other plant and equipment.
- Provisions for dealing with water encountered on the works.
- Order in which the Contractor proposed to executed the temporary and permanent works to be indicated by diagrams and descriptions. This will be subject to adjustment and approval by the Architect.
- A bar chart or Project schedule (MS Project worksheet) indicating the work planning & programming by the contractor

➤ **Blasting:**

- Where blasting has to be resorted to for rock cutting, it shall be the responsibility of the contractor to arrange for the following at his entire risk, cost and responsibility.
- Permission from all the connected public authorities such as Municipal Corporation, Inspector of Explosives, Police, and Highway Authorities etc. shall be obtained.
- Fees, Royalties and any other levies attendant on such blasting work shall be entirely borne by the contractor.
- All precautionary measures such as notices to adjoining property and other agencies working in and around the plot, signalling and watch etc. Shall strictly adhere to according to the various regulations in force.
- All Risk-Insurance in respect of the blasting hazards to men and materials within and in the vicinity of the plot. This insurance shall be apart from the Contractors All-Risk- Insurance Police stipulated under General Conditions unless the Contractor incorporates blasting hazards and its coverage in the said general policy.

SAFETY CODE

➤ **SCAFFOLDS**

Suitable scaffolds shall be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except in the case of short duration work, which can be done safely from ladders. When a ladder is used, it shall be of rigid construction made either of good quality wood or steel. The steps shall have a minimum width of 450 mm and a maximum rise of 300 mm. Suitable hand holds of good quality wood or steel shall be provided and the ladder shall be given an inclination not steeper than 1/4 to 1 (1/4 horizontal and 1 vertical).

Scaffolding or staging more than 4 m. above the ground floor, swung or suspended from an overhead support or erected with sanitary support shall have a guard rail properly bolted, braced or otherwise secured, at least 1 m. above the floor or platform of such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

Working platforms, gangways and stairways shall be so constructed that they do not sag unduly or unequally and if the height of the platform, gangway or stairway is more than 4m, above ground level or floor level, they shall be closely boarded and shall have adequate width and be suitably fenced as described in (ii) above.

Every opening in the floor of a building or in a working platform with suitable means to prevent the fall of persons or materials or railing whose minimum height shall be 1.00m. Whenever there are open excavations in ground, they shall be fenced off by suitable railing and danger signals installed at night so as to prevent persons slipping into the excavations.

Safe means of access shall be provided to all working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 m. in length while the width between side rails in rung ladder shall in no case, be less than 290 mm, for ladder up to and including 3 m. in length. For longer ladders this width shall be increased at least 20 mm for each additional meter of length.

A sketch of the ladders and scaffolds proposed to be used shall be prepared and approval of the Engineer obtained prior to construction.

➤ **Other Safety Measures**

All personnel of the contractor working within the plant site shall be provided with safety helmets. All welders shall wear welding goggles while doing welding work and all metal workers shall be provided with safety gloves. Persons employed on metal cutting and grinding shall wear safety glasses.

Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or the public.

➤ **Excavation & Trenching**

All trenches, 1.25 m. or more in depth shall at all times be supplied with at least one ladder for each 30 m. in length or fraction thereof. The ladder shall be extended from bottoms of the trench to at least 1 m. above the surface of the ground. Sides of trenches which are 1.5m. or more in depth shall be stepped back to give suitable slope or securely held by timber bracing so as to avoid the danger of sides collapsing.

The excavated materials shall not be placed within 1.5 m. of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.

The contractor shall take all measures on site of the work to protect the public from accidents and shall be bound to bear the expenses of every suit, action or other proceedings at law that may be brought by any persons for injury sustained owing to neglect of the precautions and to pay any such persons or which may with the consent of contractor, be paid to compromise any claim by any such person.

➤ **Demolition**

Before any demolition work is commenced and also during the process of the work. All roads open areas adjacent to the work site shall either be closed or protected.

No electric cable or apparatus, which is liable to be a source of danger over a cable or apparatus used by the operator, shall remain electrically charged.

All practical steps shall be taken to prevent danger to persons employed from the risk so over loaded with debris or materials as to render it unsafe.

➤ **Personal Safety Equipment's**

All necessary personal safety equipment like helmets, safety belts etc as considered adequate by the Architect should be kept available for the use of the person employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned.

Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles. Those engaged in white washing and mixing or stacking of cement bags or any materials, which are injurious to the eyes, shall be provided with protective goggles. Those engaged in welding works shall be provided with welder's protective eyesight lids. Stonebreakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals. When workers are employed in sewers and manholes, which are in use, the contractor shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into manholes and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public.

The contractor shall not employ men below the age of 18 years. Women of any age shall not be engaged for the work of painting with products containing lead in any form. Whenever men above the age of 18 years are employed on the work of lead painting the following precautions should be taken. No paint containing lead or lead products shall be used except in the form of paste or ready-made paint. Suitable facemasks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scraped. Overalls shall be supplied by the contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessation of work. When the work is done near any public place where there is risk of accidents all necessary equipment should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.

➤ **Hoisting Machines**

Use of hoisting machines and tackle including their attachments anchorage and supports shall conform to the following standards or conditions.

- a. These shall be of good mechanical constructions, sound materials and adequate strength and free from patent defect and shall be kept in good working condition with necessary preventive maintenance

Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from patent defects.

Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years shall be anchorage of any hoisting machine including any scaffolding without signals to operator.

In case of every hoisting machine and of every chain ring hook, shackle shovel and pulley block used in hoisting or as means of suspension the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

In case of department machines, the safe working load shall be notified by the Engineer. As regards contractor's machines, the contractor shall notify the safe working load of the machine to the Engineer whenever he brings any machinery to site of work and get it verified by the Engineer concerned.

Motors, gearing transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards, hoisting appliances should be provided with such means as will reduced to minimum of risk

of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energized, insulating mats, wearing apparel such as gloves, sleeves and boots as may be necessary, should be provided. The workers should not wear any rings, watches and carry keys or other materials, which are good conductors of electricity.

All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided near the place of work.

These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place at work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.

To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the contractor shall be open to inspection by the Labour Officer, Engineers of the Department or their representatives.

Notwithstanding the above clause from (i) to (xv), there is nothing in these to exempt the contractor from the operation of any other Act or Rule in force in the Republic of India.

Witness:

Address:

Date:

Signature of Contractor

Address:

Project details

- Name of Work : **Construction of Residential Hostel, at Gopalpur**
- Estimated Cost : Rs. 2,96,20,599
- Period of completion : 18 (Eighteen) Months including monsoon
- Earnest Money Deposit : Rs. 1.50 Lakhs
- Defects Liability Period (DLP) : 15 (Fifteen) months from the date of completion of work
- Date of Commencement : Date of commencement shall be:
 - Monday following the 15th day from the date of issue of work order. OR
 - The day on which the contractor receives the possession of the site- whichever is Later OR
 - The contractor is asked in writing to take over possession of the site. OR
 - Ten (10) days from the date of acceptance of Tender.
- Liquidated Damages for Delay : The sum at the rate of 0.5% (half percent) of the contract value per week of delay subject to a limit of 5% (five percent) of the contract value.
- Period of final measurement : 30(Thirty) days from the date of virtual completion and handing over the site.
- Value of work for Interim Certificate : Minimum of Rs.15.00 (Fifteen) Lakhs
- Period of honoring interim Certificate : 15 days from the date of submission of bills in complete form.
- Period of honoring Final Certificate : 3(Three) months from the date of submission of the Final bill in complete form.
- Total Security Deposit (Maximum) : As per clause no. 12 of general conditions of contract.
- Initial Security Deposit : 2% of total contract value including EMD
- Retention Money : 8% of certified value of each Running Bill.
- Basic cost of cement of 50 kg. bag (Pc) : Rs.380.00 / per bag
- Basic cost of steel (Ps) : Rs. 85,000.00/ MT

APPENDIX-2

RUNNING A/C BILL

BILL FORMAT

Name of work :
 Name of owner :
 Name of Contractor :
 Accepted contract amount :
 Date of commencement :
 Date of measurement :
 Stipulated date of completion :
 Insurance valid upto :

- Workmen Compensation Act :
- Contractor's all risk Comprehensive :
- Labour license no. and date & valid upto :
- Serial no. of this bill :
- No. & date of this bill :
- Ref. to agreement no. :
- Earnest money deposit :
- Total retention money excluding :
 ○ E.M. as per contract
- Total retention money excluding :
 which this bill has been prepared

(Date to be mentioned)

Sr. No.	Item Description	Unit	Rate (Rs.)	As per tender		Upto previous R/A Bill		Upto date (Gross)		Present Bill		Remarks
				Qty	Amount (Rs.)	Qty	Amount (Rs.)	Qty	Amount (Rs.)	Qty	Amount (Rs.)	

Note: i) if part rate is allowed for any item, _____

It should be indicated with reasons

Net value (A) since previous for following such rate bill.

ii) If adhoc payment is made, it should be mentioned specially.

Signature of the Contractor

ACCOUNT OF SECURED ADVANCE IF ADMISSIBLE

ON MATERIALS HELD AT SITE BY THE CONTRACTOR

No.	Item	Quantity	Unit	Amount	Remarks
			(In Rs.)		
1	2	3	4	5	6

(A) _____ Total value of materials at site _____ Secured Advance @ _____%, of above value

(B) _____

Certified: -

That the materials mentioned above have been actually been brought by the Contractor to the site of the work and no advance on any quantity of any of this item is outstanding on their security that the materials are of imperishable nature and are all required by the Contractor for use in the work in connection with the items of which rates of finished work have been agreed upon.

Date :

Signature of Site Engineer

Date :

Signature of Contractor

Date :

Signature of Architect

MEMORANDUM FOR PAYMENT

RUNNING BILL NO. ____

Total amount due since previous bill (A+B) : Rs. _____

Total amount due to the contractor : Rs. _____ (C)

DEDUCTIONS

- Secured advance paid in the previous R/A Bill : Rs. _____
- Retention money on value of work as per accepted tenders upto date : Rs. _____
- Less : Already recovered
- (-) Rs. _____

- Balance to be recovered : Rs. _____
- Mobilization Advance, if any : Rs. _____
- Outstanding amount as on date : Rs. _____
- To be recovered in this bill : Rs. _____
- Any other Departmental material cost to be recovered as per contractor, if any _____ : Rs. _____
- Any other Departmental Material service charges to be covered if any,
as per contractor (water, power, etc.) Enclosed statements : Rs. _____
- Total Deduction as per contract : Rs. _____
- (-) Rs. _____ (D)

- Net amount payable as per contract (C-D) : Rs. _____

(Rupees _____) in words.

CERTIFICATE

The measurements on the basis of which the above entries the Running Bill no. _____
Were made have been jointly on _____ and are recorded at pages _____ to _____ of measurements
book no. _____. The work recorded in the above mentioned measurements been done at the site
satisfactorily as per tender drawn conditions and specifications.

Signature of Contractor

Date:

Place:

Signature of Architect

Date:

Place:

Signature of ISI Site Engineer

Date:

Place:

We hereby certify that an amount of Rs. _____ /-(Rupees _____ only) may be paid to
M/s _____ against bill no. _____ dated as per details shown vide our letter no.
_____ dated _____ subject to verification of pervious payments. If any, made to them on this account of
materials supplied to the Contractor, if any, and any other tax deductions as per rule, the total payment including this
should not, however, Rs. _____

Signature of Architect

Date:

Place:

STATUTARY DEDUCTIONS:

- Total amount due (C) Rs. _____
- Less: I.T. payable Rs. _____

Net payable Rs. _____

The figures given in the memorandum for payment has been certified and the bill passed for
payment _____ towards and figures.

Signature of the Employer

Date: _____

APPENDIX-3	
FORMAT FOR RATE ANALYSIS OF ITEMS	
MATERIAL	
I. Basic Cost of Material	Rs. _____
2. Wastage – 5%	Rs. _____
• Labour: As per Standard Labour output and labour input required for the Particular item using quoted labour rates.	Rs. _____
III. Machinery / Tools Inputs of Machinery / Tools requirements as per the item and hire charges as per market.	Rs. _____
TOTAL (I) + (II) + (III)	Rs. _____
Tax Liability [as per contractual clauses will be added]	Rs. _____
V. Add – ½ % for water charges ½ % for Electricity	Rs. _____ Rs. _____
VI Any other Expenditure (please specify)	Rs. _____
TOTAL	
Contractor Profit & OH – 15%	Rs. _____
GRAND TOTAL	Rs. _____

TDS will be deducted as per standard norms and recovery shall be made for water and electricity as per tender conditions.

APPENDIX - 4

ARTICLES OF AGREEMENT

This agreement entered into on this the _____ day of _____ Two thousand and Six _____ at _____ between:

The Chief Executive Officer

Youth Hostels Association of India #5, Nyaya Marg, Chanakyapuri, New Delhi

Represented herein by its _____

(Hereinafter referred to as “the Association” which expression shall mean and include, wherever the context so requires or admits, its assigns, nominees, successors-in-interest and administrators)

And:

(Name) _____

(Description, whether proprietary concern/partnership firm/ company)

(Regd / Head Office Address) _____

Represented herein by its _____

Sri / Smt _____

(Hereinafter referred to as “the Contractor”, which expression shall mean and include, wherever the context so requires or admits, its successors-in-interest, administrators and executors)

WITNESS AS FOLLOWS:

- WHEREAS the Association is a nationalized bank and a Government of India undertaking engaged in the Association business having branches all over the country
- WHEREAS the Association is desirous of engaging the services of _____ in respect of electrical / housekeeping works for various branches / offices and residential premises for consideration to be mutually agreed upon by the parties. whereas the Association is desirous of appointing the _____ as its Contractor to carry out works specified in Annexure I and the Contractor is desirous of being appointed thus;

(This clause to be suitably modified by the Association depending upon the need and purpose)

NOW THIS AGREEMENT WITNESS THAT in consideration of the above and of the covenants of the parties contained herein, the Association hereby engages _____ as its Contractor for performing work, the scope of which is specified in Annexure I, which appointment is hereby accepted by the Contractor, on the mutual terms and conditions contained below:

➤ **ENGAGEMENT:**

The Association hereby engages -the Contractor above named for performing the works in respect of its branches, offices and residential premises.

➤ **DURATION / TENURE OF CONTRACT AGREEMENT:**

The engagement of the contractor by the Association under this Agreement shall be for a period of _____ years, certain, commencing from _____ to _____. This Agreement shall automatically stand terminated upon expiry thereof unless extended by mutual agreement.

➤ **FUNCTIONS, DUTIES AND RESPONSIBILITIES OF THE CONTRACTOR:**

- ✚ The Contractor shall perform all the works specified in Annexure- I and this agreement and may engage contract labour for the said purpose, the minimum number to be specified by the Association.
- ✚ The Contractor shall and hereby agrees and confirms to comply with all the provisions of labour laws and industrial laws in respect of the labour employed thereof.
- ✚ The contractor shall apply for and obtain incense as provided for under Section 12 of the contract labour (Regulation and Abolition) Act. 1970 whenever it employs 20 or more workmen on any day in a year and also obtain renewal from time to time.
- ✚ The Contractor shall apply for and obtain license as provided under section 12 of Contract Labour (Regulation and Abolition) Act, 1970 for each branch or office as a separate unit.
- ✚ The Contractor shall strictly comply with all the terms and conditions that the licensing authority may impose at the time grant of license and the Association shall not be responsible for the same.
- ✚ The Contractor shall be solely responsible for the payment of wages, including overtime wages to the workmen and ensure its timely payment thereof.
- ✚ The Contractor shall duly maintain a register giving particulars of the contract labour employed, nature of work, rate of wages, etc.
- ✚ The Contractor shall also ensure the compliance of the following labour legislations:
 - Minimum Wages Act 1948
 - Employees Provident Fund
 - Employees State Insurance Act 1948
 - Workmen's Compensation Act, if the ESI Act does not apply.
- ✚ The Contractor shall obtain an independent code number under the Employees State Insurance Act, 1948 and the Employee Provident Fund.
- ✚ The Contractor shall ensure that the compliance with the provisions of the Contractor, Labour (Regulation and Abolition) Act, 1970 and other labour legislations is current and up to date at all times performance of the works specified in Annexure-I
- ✚ The Contractor shall be solely responsible to adhere to all the rules and regulations relating to labour practices and service conditions of its workmen and at no time it shall be the responsibility of the Association.

- ✚ The Contractor or its workmen shall not at any point of time have any claim whatsoever against the Association.
- ✚ The Contractor shall identify the Association in so far as liability incurred by the Association on account of any default by the contractor.
- ✚ Neither the Contractor nor his workmen can be treated as employees of the Association for any purposes. They are not entitled for any claim, right, preference etc. over any job / regular employment of the Association.
- ✚ If the Contractor fails to discharge his duties or neglects to perform the work agreed to be done under the agreement, the Association is entitled to terminate this agreement as per clause 6 and get the work done by / through others and claim reimbursement of actual expenses incurred and also damages for the loss incurred on account of failure on the part of the contractor to discharge the duties or to perform the work under the agreement.

➤ **PAYMENTS:**

- a. The payments will be made to the contractor for the actual work executed at site from time to time on certification by the consultant/ Architects as per the terms and conditions of the contract.

➤ **MISCELLANEOUS:**

The Contractor shall not, delegate transfer etc., any of their rights and/or obligations under this Agreement to any third persons, concerns, firms companies or entities.,

The contractor shall at all times during this Agreement and thereafter, indemnify and keep indemnified the Association, its officers, employees and representatives, from all or any claims, losses, demands, damages, etc., which the Association, its officers, employees and representatives may or are likely to suffer by reason of acts, defaults, deeds, things, omissions and commissions committed by the contractor, while performing the conditions of this Agreement,

Any amendment and/or modifications to this Agreement shall be valid and binding on either party, only if such amendment/modification is mutually agreed to in writing and executed by both parties,

If any provision contained herein should be held unlawful, becomes incapable of performance by either party, is rendered void or unenforceable for any reason, that provision shall be severed from this Agreement and the other provisions shall continue to be valid and performed. As if the severed provision was never a part of this Agreement

➤ **TERMINATION:**

If the contractor, in the opinion of the Association, fails or neglects to fulfil any or all terms and conditions of the Agreement, the Association shall be entitled to terminate this Agreement, without assigning any reason, by a written notice of thirty (30) days to the contractor and the contractor shall not have any right to claim any damage / compensation from the Association for the same.

➤ **NOTICES:**

All notices required to be given under this Agreement shall be deemed to be sufficiently given if they are forwarded by registered post A .D. /hand delivery with acknowledgement to:

The Association at:

ADDRESS:

The Contractor at:

ADDRESS:

➤ **GOVERNING LAW AND JURISDICTION:**

This Agreement shall be constructed and interpreted in accordance with the laws of India. The Courts is _____ City alone to the exclusion of all other courts elsewhere in India shall have jurisdiction to try any arising out of the Agreement.

➤ **DISPUTE RESOLUTION:**

In case any dispute or differences arises between the parties in connection with any matter relating to this Agreement including ruminations thereof then at the option of the Association, the same shall be referred to Arbitration by a Sole Arbitrator appointed by the _____ of the Association. The decision of the sole arbitrator shall be final and binding on the parties. The provisions of the Arbitration and Conditions Act, 1996 and amendments, if any thereof shall be applicable to such arbitration. The place of Arbitration shall be _____ and the language of arbitration shall be in English.

The agreement shall be executed in duplicate the one shall be retained with the employer and the other shall be returned to the contractor. The following documents will become construed as the part of this contract.

Notice Inviting Tender

Corrigendum / Amendments to tender documents if any

Complete tender documents duly filled by the contractor.

IN WITNESS WHEREOF THE PARTIES ABOVE NAMED HAVE EXECUTED THESE PRESENTS ON THE DAY, DATE, MONTH AND YEAR WRITTEN HEREIN ABOVE IN THE PRESENCE OF THE WITNESSES ATTESTING HEREUNDER

1. WITNESSES	1. FOR Ace Associates
2.	FOR (CONTRACTOR)

APPENDIX – 5

INDEMNITY BOND FORMAT

(CONSTRUCTION OF “YOUTH HOSTELLING AT GOPALPUR”)

THIS DEED OF INDEMNITY BOND is made on this _____ day of _____ month of year two Thousand eleven (_____) By M/s _____ duly represented by proprietor / one of its Partners Sri _____, aged _____ years, son of Sri _____, residing at _____.

Where I am the authorized partner of M/s _____, and had applied for prequalification of contractors for Construction of YOUTH HOSTELLING situated at Gopalpur

Whereas My Company was shortlisted for issue of tenders and my company became successful in securing the subject work through competitive tendering and the work of Construction of YOUTH HOSTELLING situated at Gopalpur

And whereas for undertaking the construction work, my company has entered into contract agreement on _____.

Now this Deed Witnessed that in pursuance of the aforesaid contract agreement dt. _____ and in consideration of YHAI having agreed to make payments on the running bills claimed by my company based on the works completed by my company in respect of Construction of YOUTH HOSTELLING situated at Gopalpur and referred to above,

I hereby undertake to indemnify and keep harmless the YHAI & its project Architect from any damages, prosecution, other legal suits and claims arising out of any mishaps occurring at the site due to faulty work, faulty construction and for violating rules and regulations for which I shall be solely responsible.

Signature of Contractor With seal

PERFORMANCE GUARANTEE FORMAT

AGREEMENT TO BE EXECUTED BY CONTRACTORS FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF WATER PROOFING WORKS

This Agreement made on this _____ day of the month of _____ year Two thousand _____ (---.2015) between M/s _____ represented by Mr _____ (hereinafter called the CONTRACTOR of the one part) and YHAI, represented by the Chief Executive Officer (hereinafter called YHAI on the other part), WHEREAS, this Agreement is supplementary to a Contract (hereinafter called the CONTRACT) dated ---.2015 _____ and made between the Contractor of the one part and YHAI on the other part, whereby the Contractor, interalia, undertook to render the works executed in _____ in the said Contract recited completely water and leak-proof, AND WHEREAS, the Contractor agreed to give a guarantee to the effect that the said water proofed areas will remain water and leak-proof for FIVE YEARS from the date of giving water proofing treatment as certified by Architect of project i.e., from ---.2015,

NOW, the contractor hereby guarantees that water proofing treatment given by them will render the structures completely leak-proof and the minimum life of such water proofing treatment shall be five years to be reckoned from the date of giving water proofing treatment, mentioned herein above.

Provided that the contractor will not be responsible for leakage caused by earthquake or structural defects or misuse of roof or alteration and for such purpose:

Misuse of roof shall mean any operation which will damage proofing treatment, like chopping of fire wood and things of the same nature which might cause damage to the roof;

Alteration shall mean construction of an additional storey a part of the roof or construction adjoining to existing roof whereby water proofing treatment is removed in parts;

Alteration shall also mean construction of basement by adjoining building owners;

The decision of Association with regard to the cause of leakage shall be final.

During this period of guarantee, the Contractor shall make good all defects and in case of any defect being found, render the building water proof to the satisfaction of Association at their cost and shall commence the work for such rectification within seven days from the date of issue of the notice from the Engineer-in-charge calling upon them to rectify the defects, failing which the work shall be got done by the Department by some other party at the contractor's cost and risk. The decision of Association as to the cost payable by the contractor shall be final and binding.

AND WHEREAS, the contractor has agreed to deposit an amount Rs being 5% of the actual cost of Rs _____ of such water proof works, with Association. On successful completion of Guarantee Period, the deposited amount, along with accrued interest, shall be paid by YHAI to the contractor.

That if contractor fails to execute the water proofing or commits breach there under, the contractor will indemnify the Association and its successors against all loss, damage, cost, expense or otherwise which may be incurred by the Association by reason of any default on the part of the contractor in performance and observance of this Supplementary Agreement, YHAI shall forfeit deposit amount if contractor fails to execute the defects, if any, and may claim damages. As to the amount of loss and/or damage and/or cost incurred by the Association, the decision of the Association will be final and binding on the parties.

IN WITNESS WHEREOF these presents have been executed by the contractor M/s _____ and by the Chief Executive Officer for and on behalf of YHAI on the day, month and year first above written.

SIGNED, Sealed and Delivered by CONTRACTOR.

SIGNED for and on behalf of YOUTH HOSTELS ASSOCIATION OF INDIA

SCHEDULE A

TECHNICAL SPECIFICATIONS

CIVIL WORK

GENERAL

All Technical Specifications in respect of all material to be used, method of execution, workmanship and quality for each item of the work shall be as per OPWD specifications, latest Indian Standards, codes and practices for execution of civil works.

In case where the specifications in the drawings or those given in schedule of quantities are found wanting, the latest IS specifications shall hold good.

Whenever reference has been made to Indian Standard or any other specifications, the same shall mean to refer to latest specifications irrespective of any particular edition in the specifications below or schedule of quantities.

Where particular floor is not referred to in the specifications the rate will cover work at all heights from floor level to the top most element in the building.

Workmanship

The workmanship shall be the best of its kind and shall conform to Specifications as below or Indian Standard Specifications in every respect or the latest trade practice and shall subject to the approval of the Architect. All materials and / or workmanship which in the opinion of the Architect is defective or unsuitable shall be removed immediately from the site and shall be substituted with proper materials and/ or workmanship forthwith.

Materials:

All materials shall be best of their kind and shall conform to the latest Indian Standards.

All materials shall be of approved quality as per samples and from approved by the Architect/ Engineer.

A set of specimen samples of all approved materials shall be kept at site as well as in the office of the engineer, the cost of which to be borne by the contractor.

➤ **Cement:**

Shall comply with the latest specifications confirming to IS: 8112 for 43 grade OPC and IS 12269 for 53 grade cement as per preferred makes listed in page 119 of this document

➤ **Reinforcement: (Only TMT Steel shall be used)**

All reinforcement bars to be used in construction shall be deformed high strength TMT (thermo mechanically treated bars) reinforcement bars of FE 500-grade of high yield strength and percentage elongation, minimum 14.5% as per IS:1786 and obtained from approved manufacturer. Plain MS bars shall be used only for 6mm dia bars.

➤ **Coarse Aggregate:**

Shall be of the best quality, hard machine crushed stone approved by the Architect, free from earth or any organic matter etc. Suitably graded and shall conform to IS: 383- 1990.

➤ **Sand:**

Shall be natural pit/river sand clean, sharp, strong, angular and composed of hard siliceous materials. It shall be free from any harmful materials such as iron pyrites, coal mica, shale, clay alkali, soft fragments, sea shale, organic impurities, etc. It shall be obtained from approved quarries and shall conform to IS:383-1990.

➤ **AAC Bricks:**

Properly autoclaved aerated cement blocks of required size to be used to make partition of rooms above concrete slabs.

➤ **Fly-ash Bricks:**

It shall be first class table moulded bricks approved by the Architect, sound, hard square and with sharp edges and shall conform to Indian Standards 1077 – 1992 having strength of 35 kg/sq.cm as specified in the item.

➤ **Flush Shutters:**

Flush shutter if required shall be factory made of solid core construction with frame lock rail and well balanced backings and faced with high quality commercial or teak veneering as specified. The shutters shall be chemically treated proofing against termites as per IS: 2202 – 1991

➤ **Vitrified Tiles:**

Will be of approved colour, design and size approved by the engineer conforming to IS: 777 – 1988.

➤ **Granite: In Stairs only.**

Polished granite slab and tiles shall be of the kind specified in the schedule of quantities conforming to samples approved by the Architect for colour & texture. The slab shall be machine cut to required dimensions and shall conform to IS Standards.

➤ **Plastic (Acrylic) Emulsion Paint and Enamel Paint:**

Plastic emulsion painting will be of approved brand of paint and colour conforming to IS: 5411 – 1991 & will be applied over a coat of primer & putty (including preparation of wall surface). Painting for the doors, windows, grills will be carried out with synthetic enamel paint of approved brand and colour over one coat of primer, metal putty all of relevant IS specifications 4511-1993.

➤ **Solid Concrete Block:**

Shall be of 300 mm/150mm/200mm thick and compressive strength of 40kg/sqcm. Conforming to IS: 2885 – 1992.

➤ **Hardware Fittings for Doors:**

All the doors shall be provided with MS powder coated hinges, AL- drops, tower bolts, locks etc or as specified in schedule of quantities. The external doors shall be provided with Godrej make locks. All the fittings shall be approved by the Architect.

➤ **Water:**

Water used for mixing concrete and mortar and for curing shall be clean and free from injurious amounts of oil, acid, alkali, salts, sugar, organic materials or other substances that may be deleterious to concrete or steel. The PH value of water shall be not less than “6”. Water has to meet the requirements mentioned in clause 5.4 of IS:

456–2000. Water shall be tested to establish its suitability. Water for construction purpose shall be stored in well protected and proper tanks

➤ **Admixtures:**

Admixtures if used shall comply with IS 9103. Admixtures to concrete shall not be used without the written consent of the Architect. When permitted, the contractor shall furnish full details from the manufacturer and shall carry such test as the Architect may require before any admixture is used in the work to check particularly for Chlorides.

Admixture may be used to modify one or more of the following properties of **FRESH CONCRETE:**

- ◆ To increase workability without increasing water content or to decrease the water content at the same workability.
- ◆ To retard or accelerate both initial and final setting times.
- ◆ To reduce or prevent settlement.
- ◆ To increase slight expansion in concrete and mortar.
- ◆ To modify the rate or capacity for bleeding or both.
- ◆ To reduce segregation of concrete, mortars and grouts.
- ◆ To improve penetration & or pump ability of concrete, mortars & grouts.
- ◆ To reduce rate of slump loss.

Admixtures may also be used to modify one or more of the following properties of

HARDENED CONCRETE:

To retard or reduce heat generation during early hardening. To accelerate the rate of strength development.

To increase the strength of concrete or mortar (Compressive, tensile or flexural).

To increase the durability or resistance to severe conditions of exposure including the application of deicing salts.

To decrease the capillary flow of water. To decrease the permeability to liquids.

To control the expansion caused by the reaction of alkaline with certain aggregate constituents.

To produce cellular concrete.

To increase the bond of concrete to steel reinforcement. To increase the bond between old and new concrete.

To improve impact resistance and abrasion resistance. To inhibit the corrosion of embedded metal.

To produce coloured concrete or mortar.

- Integral waterproofed: Admixture used as integral waterproofed shall be free of chlorides sulphates and shall conform to IS: 2645, the application and doses shall be as per manufacturer's specification.
- If there is any discrepancies in specification of items of work in schedule of quantities and in specification schedule and also items not covered in technical specifications, latest. IS specification shall apply.
- Whenever items of materials not covered in IS specification, the approval of engineer/owner will apply.

➤ **Earthwork:**

➤ **Site Clearance:**

The site shall be free from rubbish of all kinds, rocks, trees, dirt and superfluous earth, all shrubs, brush wood, stumps of trees and saplings, grass and other rant vegetation etc. The serviceable material to be stacked at site in a manner as directed by the Architect. All cavities or holes formed shall be filled with good earth well rammed and levelled neatly. Site clearance shall be done all-round the proposed construction. All disposable materials shall be taken out form site and the dispose of same in area approved by local civic authorities. The contractor shall provide all labour and material for site clearance at his own cost.

➤ **Profiles:**

Shall be with pegs, bamboos, strings or burgies to show the correct formation before the start of work and maintained till the completion of the work.

➤ **Bench mark and levels:**

The contractor shall layout one or more permanent bench marks in some central place before start or the work, from which all important levels exact bed levels for the excavation will be set. The contractor shall provide all labour and material for setting, levels and profiles at his own cost.

In case the earthwork is to be computed from the cross section the quantity computed from such cross section. All useful materials such as gravel, stone relics of antiquity, coins, fossils etc, met with during excavation shall remain the property of the employer and shall be handed over to the Architect on behalf of the employer.

All cutting shall be done from top to bottom. No undermining shall be permitted. Cutting shall be done to precise levels and any cutting taken deeper shall be made good with PCC 1:4:8 to the required levels without any extra cost. The final surface shall be neatly dressed.

➤ **Excavation in trenches:**

The foundation trenches shall be excavated to the exact width of the lowest step of foundation or footing as shown on drawings. The sides of the trenches shall be kept vertical and bottom horizontal both transversely and longitudinally as shown on the drawings Steps shall squarely bench out as shown on the drawings or as directed by the engineer. The excavated earth shall be deposited at least three meter or 1/3 of depth away from the edge of excavation whichever is more. Working space on the outer periphery, if required, shall be provided by the contractor at his cost.

The bed of the trenches shall be made level and compact by watering and ramming, any soft and defective spots detected shall be filled with concrete of the mix as specified for foundations or as directed by the engineer. Cost of such concrete shall be paid to the contractor. In case excavation is taken deeper than required, the extra depth shall be good with concrete as specified foundation or as directed by the engineer at no cost to the Owner. Excavation of hard rock at no cost to contractor.

The contractor shall at his own expense make provision for all sorting, strutting, close or open timbering, pumping, dredging or bailing out water and the trenches shall be kept free from water until the work in foundation is completed and trenches refilled. The trenches shall be kept free from water until the work in foundation is completed and trenches refilled. The trenches shall be inspected and passed before concrete is placed.

The measurements shall be exact length and width of the lowest step of the trench of footings as shown on the drawings. The extra earthwork done by the contractor, providing steps etc and earth making ramps/steps as approach to work place shall not be paid for.

➤ **Earth filling:**

Filling can be in the sides of foundation trenches, under floors or for site formation.

The earth to be used for filling shall be free from salt petre, organic or other foreign matter. The space around the foundation in trenches and under floor shall be cleared of all debris, brick pieces or any other rubbish, surplus mortar falls etc. Filling shall be done in layers not exceeding 150 mm thickness. Each layer shall be well watered and rammed to the satisfaction of the Architect. Final surface shall be neatly dressed. **Black cotton soil shall not be used for filling in foundations and under floors.**

Where payment is to be made separately, the quantity of earth filling shall be computed from levels recorded before start of filling and after completion of filling. The quantity so computed shall be paid with standard deduction upon the type of compaction.

➤ **Sand filling:**

The sand shall be clean and free from any foreign matter. Sand filling shall be done measured and paid in the same manner as earth filling.

➤ **Hard core:**

Shall either be of stone ballast; gravel or stone rubble of size mentioned in the schedule of quantities and shall be free from dust and impurities.

Hard core of stone ballast not exceeding 40 mm gauge and shall be laid in required thickness dry rolled and consolidated with a power roller to satisfaction of the Architect unless otherwise specified in the schedule of quantities.

Hard-core or rubble stone shall be laid with stones of required height vertically, closely and hand packed with smaller pieces and/or ballast 40mm gauge as directed by the engineer and consolidated dry with a 10 ton power roller unless otherwise specified in the schedule or quantities to the satisfaction of the engineer/owner.

➤ **Disposal of excavated soil:**

Where in the schedule of quantities the disposal of excavated soil is specified to be measured and paid for separately, in such case the quantity of disposal earth, rock etc. shall not exceed the quantity paid as excavation i.e. the element of bulk age is not to be reflected in the measurements for disposal but is to be accounted for in the rates quoted for disposal. All the materials such as earth murum, soft/hard rock etc. are to be kept separately for classification and payment for disposal contractor shall maintain detailed charts, showing the origin and place of disposal of soil for calculation of load for disposal.

No separate payment shall be made for re–excavation or loosening of excavated soil for disposal and transportation due to its having become hard consolidated due to passage of time, rains or other cause whatsoever.

The lead shall be measured by the shortest route possible.

➤ **Concrete:**

Cement Concrete:

For foundation concrete shall be mixed in proportion and with ingredients as specified in the schedule of quantities. The concrete shall be mixed in a mechanical mixer. No more concrete shall be mixed than can be consumed within half an hour. It shall be deposited gently in the trenches in horizontal layers not more than 10 cm thick and rammed and consolidated with steel rammers of 5 to 6 kg weight. After laying and consolidation is completed water for a

week from the next day shall be done. The measurements shall be to exact length, breadth and depth ordered by the Architect or as shown or figured on the drawing and after the concrete is consolidated.

➤ **Reinforced cement concrete work:**

➤ **General:**

It is the intent of these specifications to ensure that all concrete placed at various location in the job, should be durable, strong enough to carry the design loads, it should wear well and be practically impervious to water, it should be free from such defects as shrinkage, cracking, honey combing and spilling of the surface. Unless otherwise called for in this specification, all plain and reinforced concrete shall conform in all respect to IS: 456 – 2000.

➤ **Mix design:**

Mix design shall be as per guidelines in IS: 10262 – 1982 reaffirmed in 2009 subject to minimum cement content as per IS 456-2000. The contractor at his cost should get the concrete mix designed from reputed laboratories in consultation with Architect for further implementation in the site. Necessary weigh batchers, equipment should be used in the site to achieve required properties as per design mix and to enable the concrete to attain required compressive strength. The concrete should be tested for strength at 7days & 28 days period. Any failure to achieve the strength needs removing such concrete and re-concreting. The mix design shall be subject to approval of the Architect.

➤ **Mixing:**

All concrete whether plain or reinforced, ordinary or controlled shall be mixed in a full bag mechanical mixer, having a minimum drum speed of 60 revolutions per minute. The cement and aggregates shall be first mixed dry until all particles of aggregate are coated with cement. Water shall be added and mixing continued for at least two minutes to result in a concrete of a uniform colour and consistency. The proportion of aggregate sand etc for various types of concrete shall be weighed in weigh batcher. The quantity of water used shall be minimum with practical workability and shall be varied as required to suit the moisture content of the aggregate and to produce having specified slump. Moisture correction for fine and coarse aggregates shall be made regularly.

➤ **Ready Mixed Concrete (RMC) :**

For all structural concreting, only Ready Mixed Concrete (RMC) manufactured at site is mandatory, weigh batching plant or obtained from approved R.M.C. supplying agencies or produced at site using mechanical mixers and weigh batchers as per item description, will be used. The R.M.C. supplying agency will supply mix design details in advance before start of delivery.

Transporting, placing, compacting, finishing and curing of concrete shall be in accordance with IS:456-2000.

For all RMC concreting, the concrete after discharge from batching plant will be loaded in transit mixers and kept continuously agitated while mix is in transit. At destination the mix will be unloaded in to the hoppers of concrete pump. For site made concrete suitable prescribed methods shall be adopted.

The concrete produced in RMC plant/batching plant, when discharged from transit mixer in pump hopper shall be kept continuously agitated and pumped to destination placing point. Site made concrete shall be placed by approved method of placing. The height of any single lift of concrete shall not exceed 1.5 m for walls and 2.0 m for columns.

For columns where the height of pour is more than 2.0 m, suitable arrangement in formwork should be made so that the vertical drop of concrete is restricted to less than 2.0 m. Any such arrangement should be approved from the engineer in advance before execution.

High velocity discharge of concrete causing segregation of mix shall be avoided. The concrete shall be placed in the forms gently and not dropped from the height exceeding 1.5 m except in columns where the maximum allowed will be 2.0 m. Each batch of concrete will be placed in layer. Each layer of concrete shall be compacted fully before the

Succeeding layer is placed and separate batches shall be placed and fully compacted before the layer immediately below has taken initial set. The layers should be sufficiently shallow, to permit stitching of two layers together by vibration.

Concreting of any portion or section of the work shall be carried out in one continuous operation and no interruption of concreting work will be allowed without approval of the Engineer. Plain concrete in foundations shall be placed, in direct contact, with the bottom of excavation, the concrete being deposited in such a manner, as not to get mixed with the earth. The concrete placed below the ground level shall be protected from falling earth during and after placing. Concrete placed in ground containing deleterious substances, shall be kept free from contact, with such ground and with water draining there from during placing and for a period of 7 days or otherwise instructed thereafter. Approved means shall be taken to protect immature concrete from damage by debris, excessive loading, abrasion, vibrations, deleterious ground water, mixing with earth and other materials and other influences that may impair strength and durability of concrete.

Before starting of work contractor will get the concrete pouring programme and its sequence approved by Engineer to avoid cold joints.

External, Internal (needle) and surface (screed board) vibrators of approved make shall be used for compaction of concrete a) External/internal vibrators shall be used for compaction of concrete in foundations, columns etc. For sections such as slabs, the concrete shall be compacted by external, internal and surface type vibrators, depending on the thickness of layer to be compacted. 25mm, 40mm and 60mm dia internal vibrators may be used. The concrete shall be compacted by use of appropriate

Diameter vibrator by holding the vibrator in position until:

- Air bubbles cease to come to surface
- Resumption of steady frequency of vibrator after short period of dropping the frequency, when the vibrator is first inserted.
- The tone of the vibrator becomes uniform

Flattened, glistening surface, with coarse aggregates particles blended into it, appears on the surface. After the compaction is completed, the vibrator should be withdrawn slowly from concrete so that concrete can flow in to the space previously occupied by the vibrator. To avoid segregation during vibration, the vibrator shall not be dragged through the concrete nor used to spread the concrete. The vibrator shall be made to penetrate into layer of fresh concrete below if any, for a depth about 150mm. The vibrator shall be made to operate at regular pattern of spacing. The effective radii of action will overlap, approximately half a radius to ensure complete compaction.

To secure even and dense surfaces free from aggregate pockets, vibration shall be supplemented by tamping or rodding by hand in the corners of forms and along the form surfaces while the concrete is plastic.

A sufficient number of spare vibrators shall be kept readily accessible to the place of deposition of concrete to assure adequate vibration in case of breakdown of those in use. 25mm diameter immersion vibrators shall be used in thin sections upto 125mm, 40mm diameter immersion vibrators in fairly wide sections like beams, slabs, columns etc. and 60mm diameter vibrators in foundations, pilecaps or such large section members. Screed vibrators shall also be used for slab concreting.

Plain concrete also shall be vibrated whenever and wherever directed by EIC to achieve full compaction, using needle and screed vibrators as necessary.

➤ **Curing:**

Curing shall be started at the earliest by spreading wet jute cloth (hessian) and cover top with impervious sheet and subsequently cured with spraying water. In inaccessible area to start with, curing be started by spraying curing compound before starting membrane curing.

Cubes of 15 cm x 15 cm x 15 cm size shall be cast on the first day and tested for compression at 7 and 28 days. Later on, if the Engineer so directs, 6 cubes shall be tested for every 50 cubic meters or part thereof of the concrete casted. The amount of water required for proper concrete consistency shall take into account the rate of mixing, length of haul, time of unloading and ambient temperature conditions. Additions of water to compensate for slump loss should not be resorted to nor should the design maximum water-cement ratio be exceeded. Additional dose of retarder/plasticizer/super plasticizer shall be used with prior approval of Engineer to compensate the loss of setting time and slump at contractor's cost. Re-tempering water shall not be allowed to be added to mixed batches to obtain desired slump.

➤ **Water Cement Ratio:**

Water cement ratio shall be carefully controlled throughout the work. This calls for a regular check on the equipment used for measuring water. Only graduated litre cans shall be used for the purpose. The water cement ratio as determined of approved mix design shall be strictly adhered to.

➤ **Transportation:**

Concrete should be placed in its final position within 30 minutes of mixing. The contractor shall arrange the mixer position and adopt a method of transportation so as to ensure that this period is not exceeded under any circumstances. Transportation shall be smooth and free from jerking.

➤ **Concrete placing:**

Concrete should not be dropped from a height greater than 2 meters. A properly constructed chute shall be used in such cases where it is necessary to exceed this height. Concrete must be thoroughly worked into the forms so that they are entirely filled, reinforcing bars adequately and tightly surrounded and entrapped air released from the mass of concrete. Placing shall be carried out by hand poking as well as vibrators. Concrete should not be moved through any considerable distance in the moulds, being consolidated as nearly as possible in the place where it is dumped. In casting beams or other deep sections concrete shall be laid in layers about 30cm, each layer being properly compacted.

➤ **Consolidation:**

All plain and reinforced concrete shall be consolidated by means of mechanical vibration. Adequate number of vibrators shall be used to ensure full compaction of concrete in about 10 minutes of placing. If needle vibrators are used, these shall be inserted at places not exceeding 0.5M apart until it is immersed to the full depth of concrete. Wherever possible shutter vibrators shall be used and the contractor shall design the shuttering so that this can withstand vibration. Care shall be taken to ensure that concrete is not over vibrated so as to cause segregation. In addition to mechanical vibration sufficient hand tools must be used to ensure full consolidation around reinforcement and at edge; and corners. All exposed faces of concrete shall be covered with Hessian, sand or similar materials which shall be kept continuously wet for a period of at least 7 days after casting.

➤ **Construction joints:**

Construction joints shall be made only where shown on the drawings or approved by the Architect. Such joints shall be kept to the minimum and shall not be located in valleys. The joints shall be at places where the shear force is the minimum and shall be at right angles to the direction of main reinforcement. In case of columns and walls the joint shall be horizontal and 8 to 15 cms below the bottom of the beam or slab running into the column or wall head or below the anchor reinforcement of beam and slab coming into the column and wall and the portion of the column or wall between the stopping of level and the top of the slab shall be concreted with the beam or slab. The necessary precautions shall be taken to make a proper bondage between the joints of different elements casted on different occasions.

➤ **Vertical joints:**

At the end of any day's work or run of concrete the concrete shall be finished off against temporary shutter stopper which should be vertical and securely fixed. This stopper should be removed as early as the weather permits.

➤ **Horizontal joints:**

Horizontal joints should be washed down two hours after casting in the manner described above for vertical joints. If the concrete has been allowed to harden excessively, the surface shall be chipped over its whole surface to a depth of at least 10mm and thereafter thoroughly washed. Before fresh concrete is added on the other side of a construction joint, the surface of the old concrete will be thoroughly wetted and covered with a thin layer of cement mortar 1 : 2 or epoxy bond coat as directed by the engineer.

➤ **Expansion joint:**

Expansion joint shall be provided where required as shown in drawing or as directed by the engineer. The filler to be used shall be of approved material.

➤ **Testing:**

The following tests shall be carried out on the materials and concrete used in RCC work: Material	Test	Field/Lab test	Test Procedure	Minimum Quantity of material/ Work for Carrying Out the test	Frequency of testing

	Particle size distribution	Field of lab required Engineer-in-charge		45 cum	For every 45 cum or part thereof as decided by Engineer-in-charge
	Ten percent fine value	Laboratory		45 cum	Initial Test and Subsequent test as @when required by Engineer-in-charge
Water Construction purpose	Chemical & Physical Properties	Lab	IS: 8025 1964	Water from each source	Before commencement of work and thereafter every three months till completion of work
Reinforced Cement Concrete	a) Slump test b) Cube test	Field Lab	Standard Standard	• 20 cum in slab, beams & connected Columns b) 5 cum in Column	At least once in a day • Every 20 cum of days concreting • Every 5 cum

➤ **Slump tests:**

The slump tests shall be carried out from time to time as directed by the engineer on concrete actually being placed in the works at the commencement of each period of concrete placing in accordance with the procedure laid down in the latest Indian Standards Specifications.

➤ **Cube tests:**

Whenever required by the Architect but subject to the minimum requirement given in the table above, cubes shall be made in a manner as laid down in the latest Indian Standards Code of Practice (IS:456) and sent to an approved laboratory for testing and the results submitted to the Architect immediately on receipt. The cost of all such tests made shall be borne by the contractor. At least 6 cubes will be taken on each day of concreting when a minimum of 5cum of concrete is laid or as instructed by the. The contractor shall keep a record at site of all such tests identifying them with the portion of the work to which they relate. This record will be checked by the engineer from time to time.

➤ **Acceptance criteria.**

Out of six sample cubes, three cubes shall be tested at 7 days and remaining three cubes at 28 days, if found necessary. The average of the strength of three specimen tested at 7 days shall be accepted as the compressive strength of the concrete provided the variation in strength of individual specimen is not more than 15% of the average otherwise 28 days test shall have to be carried out. The concrete may be considered satisfactorily if the 7 day's compressive strength is not less than 2/3 of the specified 28 day compressive strength. However, the engineer may require the 28 day test also to be conducted even if the 7 day strength is considered satisfactorily. Whenever both 7 day and 28 day tests are done on the same sample, 28 day strength done shall be considered for acceptance and payment purposes.

The acceptance criteria for 28 day strength shall be as follows.

The average of the strength of three specimen be accepted as the compressive strength of the concrete provided the strength of any individual cube shall neither be less than 70% nor higher than 130% of the specified strength.

The actual average strength of accepted sample exceeds specified strength by more than 30% the engineer-in-charge, if he so desires, may further investigate the matter however, if the strength of any individual cube exceeds 130% of specified strength, it will be restricted to 130% only for computation of strength.

If the actual average strength of accepted sample is equal to or higher than specified strength up to 30% than strength of the concrete shall be considered in order and the concrete shall be accepted at full rates.

If the actual average strength of accepted sample is less than specified strength but not less than 70% of the specified strength, the concrete may be accepted at reduced rate at the discretion of Engineer-in-charge.

If the actual average strength of accepted sample is less than 70% of specified strength. The Engineer-in-charge shall reject the defective portion of work represented by sample and nothing shall be paid for the reject get work. Remedial measures necessary to retain the structure shall be taken at the risk and cost of contractor. If however, when engineer-in-charge so desires, he may order additional tests to be carried out to ascertain if the structure can be retrained. All the charges in connection with these additional tests shall be borne by the contractor.

➤ **Inserts and pipes:**

Inserts of any kind like fan hooks, sleeves, pipes, bolts and nuts, anchor, bolts etc., are to be accurately placed in the concrete (and/or brick work) and concreted over, as and when required and directed. The word "insert" will mean article like anchors beams, sleeves, pipes, bolts, nuts etc.

➤ **Pipes:**

All electric conduits and junction boxes and all sanitary pipes, water supply pipes and down pies that lie within concrete slabs, beams or columns shall be laid in place and the engineer's approval shall be obtained before the casting of concrete. No cutting of structural concrete will be permitted. All care shall be taken to ensure that conduit pipes are not damaged.

➤ **Formwork:**

Formwork shall be erected true to line the aid to the shapes required in the work with tolerances as per IS 456 - 2000 and shall carry without deformation the full weight or wet concrete and other live loads. It should also withstand the effect of vibration without deflection, building, distortion or loosening of its component parts. The contractor shall be responsible for the sufficiency or all formwork, centering and moulds; formwork shall be wetted thoroughly before concreting. All form work, centering and shuttering used for concreting shall be rigid and straight, so as to produce all concrete members true to line and level with a tolerance of 1/8" (3mm).

Wire or similar items shall not be left in concrete having face exposed to weather. Bolts shall be permitted if they are greased/provided in sleeve pipe to allow for easy withdrawal and the holes subsequently made good.

The formwork shall be designed so that the soffits of slabs and the sides of beams may be removed first leaving the formworks to the soffit of beams and their supports in position. Wedges shall be provided to allow accurate adjustment of formwork and its easy removal.

Camber fillets shall be provided at all corners whenever called for on the drawings.

The boards shall be planned and straightened in order that the surface against the corner shall not be broken at joints between boards. All formwork shall be coated with approval oil before it is fixed in position.

Cleanout holes shall be provided at the bottom of all columns and care shall be taken to remove any rubbish, wood shaving or any other foreign material before concreting. Temporary supports shall be provided as required and/or ordered by engineer. The contractor shall provide steel/plywood formwork in place of timber boarding wherever called for by the engineer.

➤ **Design & Tolerance in construction:**

Form work shall be designed and constructed to the shapes, lines and dimensions shown on the drawings with the tolerance given below:

Deviation from specified Dimension of cross section of columns and beam + 12 mm Deviation from dimensions of footings+ 12 mm

- Dimension in Plan + 50 mm
- Eccentricity in plan 0.02 times the width of the footings in the direction of deviation but not more than 50 mm thickness
- Times the specified thickness. +0.05

(Note – Tolerance apply to concrete dimensions only, and not to positioning of vertical steel or dowels.)

➤ **Removal of formwork:**

All formwork shall be kept in position until the expiry of minimum period after concreting as specified in IS: 456-2000

➤ **Reinforcement: (Only TMT Steel shall be used)**

All reinforcement bars to be used in construction shall be deformed high strength TMT (thermo mechanically treated bars) reinforcement bars of FE 500-grade of high yield strength and percentage elongation, minimum 14.5% as per IS: 1786 and obtained from approved manufacturer. Plain MS bars shall be used only for 6mm dia bars.

➤ **Fabrication of reinforcement**

Reinforcement shall be fabricated as per the drawing. Bending shall be done mechanically or with hand nut to the correct radius with proper tools and platform and shall conform to IS. Bending of material shall be cold bending only. Material shall be inspected for visible defect such as cracks brittle excessive rust, loose mill scale, etc. Cracked ends of bars shall not be used in works. Also the bars should be free from any deleterious material and hence the best practice shall be to hose down reinforcement just prior to concreting.

It is important that bending straightening, cutting etc. shall be carried out in a manner not injurious to the material and the safety of the persons working.

Anchoring of bars and stirrup shall be provided exactly as detailed in the structural drawing or as directed by the Architect.

Cover to reinforcement

Reinforcement shall have concrete cover and the thickness of such cover (excluding of plaster or other decorative finish) shall be as specified in drawing or as directed by the Engineer / Architect.

FIXING IN POSITION

Correctly cut and bent bars shall be accurately placed in position as detailed in the drawing unless otherwise specified by the Architect reinforcement shall be positioned within the tolerance as under.

For effective depth 200mm or less ± 10 mm For effective depth more than 200mm ± 15 mm

But in no case shall the cover be reduced by more than 5mm of that specified. There shall be no compromise on cover for foundation work.

Reinforcing bars shall be held in position during placing of concrete by use of PVC or concrete cover blocks (made of equal strength of well cured concrete in use) steel chair spacers steel hangers, supporting wires, etc. and secured by tying with an annealed binding wire or 16 to 18 gauge as approved by the Architect.

Measurements

Reinforcement shall be measured as follows:

Lengths of different diameters of bars actually used including authorized overlaps shall be measured nearest to a centimetre and weight calculated. If steel is procured by the contractor; respective unit weight per meter shall be used for different diameter. If material is supplied by the owner on tonnage basis per meter weight for each diameter of the bar shall be fixed by the Architect from actual stock available at site.

Chairs and spacer bars shall not be measured and paid .The contractor shall account for all these in his quoted price. In case of welded coupled points measurements for payment shall be equivalent to the Length of overlap as per design. Price built up shall include in addition to cost of material. For purpose of reconciliation, maximum wastage permitted shall be 5% of the actual material used.

The description of items of steel reinforcement has been completely elaborated with complete requirements, specifications & scope of work involved in main item of BOQ.

- **BRICK MASONRY**
- **BRICKS**

The bricks shall be table moulded first quality of regular and uniform size, shape and colour. They shall have plane rectangular faces with parallel sides and sharp straight and right angled edges. They shall be free from cracks or other flaws. They shall

have a frog of 10mm depth on one of their flat faces. Bricks shall be cured in water before use. Broken bits shall not be used except in closer.

They shall give a clear metallic ringing sound when struck.

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

Only bricks of specified standard size shall be used on one work unless specially permitted. The following tolerances are permitted in the standard conventional size adopted on a particular work:

Unless otherwise specified the load to crush the brick when tested according to I.S.S. No. 1077- 1957 shall not be less than 35 kg/sq. cm

SCALE OF SAMPLING & TESTS

- + Dimensional Tolerance
- + Water Absorption}
- + Efflorescence} – PHYSICAL CHARACTERISTICS
- + Compressive Strength}
- + Scale for Dimensional Characteristics

No. of Bricks in the lot	No: of bricks to be selected	Permissible Defective	No. of Bricks to divided into	
2001-10000	20	1	40	Groups of 20 for dimensional characteristics
10001-35000	32	2		
35001-50000	50	3		

N.B: 50000 is the maximum no. of a lot

+ Scale for Physical Characteristics

Lot Size	Sample size for strength EFFL/W.A	Permissible no. defected for Efflorescence
2001-10000	5	
10001-35000	10	
35001-50000	15	

(Avg. Strength incl. Comp. 20% specified strength)

CONCRETE BLOCK MASONRY

Hollow and solid concrete blocks – Shall conform to the requirements of IS: 2185-1979. The blocks shall be sound, free from cracks, broken edges, honeycombing and other defects that would interfere with the proper placing of block or impair the strength or performance of construction.

Dimensions and Tolerances: The nominal size of the blocks shall be as specified. The maximum variation in the length of the units shall be not more than + 5 mm and maximum variation in height and width of unit, not more than + 3 mm.

Compressive Strength: The Minimum compressive strength for solid concrete blocks should be 40kg/sqcm.

Drying Shrinkage: The drying shrinkage of the blocks (average of three blocks), when unrestrained, shall be determined in accordance with IS: 2185-1979 and shall not be exceed 0.1 per cent.

Moisture Movement: The moisture movement (average of three blocks), when determined in the manner described in IS: 2185-1979, shall not exceed 0.09 per cent.

Water Absorption: The water absorption (average of three blocks), when determined in the manner described in IS: 2185-1979 shall be not more than 10 per cent by mass.

HALF BRICK WORK

Half brick thick and brick on edge walls shall be provided with hoop iron or reinforcements as stated in BOQ for half brick thick wall and brick on edge wall wire netting shall be provided every third course and in alternate course respectively according to standard practice with galvanized staples.

FLOORING:

• **Cement Concrete Flooring:**

Shall be laid in thickness and with cement concrete as specified in the schedule of quantities laid in panels either by fixing AC or glass strips or any other class of strips as specified in the schedule of quantities or with wooden removable forms.

Before laying floor concrete the sub-grade shall be properly cleaned, trimmed to give required thickness of floor and neat cement slurry to give proper bond of floor with the sub-grade. No extra payment will be made for providing the cement slurry.

The cement concrete shall be laid and finished with towels and finished with a coat of neat cement on top to give a smooth and homogeneous surface. No extra mortar shall be laid over the concrete to make the floor in level or for drying the floor surface.

The joints shall be straight both ways i.e along the length and width. No surplus mortar on the adjoining panel shall be allowed to spill from the other panel. The measurement shall be exact length and breadth from wall face to wall face.

- **Granite Stone Slab Flooring & Jaisalmer Stone Slab Flooring:**

Specifications shall be the same as per marble stone slab flooring except for Granite slab and Jaisalmer stone slab of approved design, quality. Except granite shall be pre-polished.

- **Granite stone flooring and steps of stairs:**

- **Laying:**

Sub-grade concrete or R.C.C. slab on which marble is to be laid shall be cleaned, wetted and mopped. The bedding for the marble slab shall be cement mortar 1:4 (1 cement: 4 coarse sand) or as mentioned in the schedule of quantities.

The bedding mortar shall be spread to required thickness. The slab shall be washed clean and then laid on top of the mortar layer, pressed, tapped with a wooden mallet and brought to level with adjacent slabs. It shall then be carefully lifted and laid aside. The top surface of the mortar shall then be corrected by adding fresh mortar at hollows. The mortar should be allowed to harden a bit. Cement slurry of 4.4 kg of cement per square meter shall then be spread. Edges of slabs already laid shall be buffered with white cement mixed with pigment. The pre polish granite slabs shall then be placed in position and tapped with a wooden mallet till the slab is properly embedded in line and level. The joints between slabs be as fine as possible. The surplus cement slurry oozing from joints shall be cleaned. The slabs shall be matched as shown in drawing. The flooring shall be cured for seven days.

- **Measurements:**

Shall be in square meter correct to two decimal places. Length and breadth shall be measured correct to a cm from wall to wall as actually laid.

- **Preparation of surface :**

Where required the wall surface shall be cut uniformly to requisite depth so that the skirting face shall have uniform projection from the finished face of wall as per drawings or as directed by the engineer. The concrete walls shall be hacked and roughened with wire brushes. Masonry walls shall have joints raked at least 15 mm deep. The surface shall be thoroughly cleaned, washed and kept wet.

- **Laying : Granite Steps:**

The risers of steps and skirting shall, be set in grey or white cement with an admixture to match the shade of stone, with the line of slab at an average distance of 12 mm from the wall but not less than 10 mm. If necessary the slabs shall be held in position by temporary M.S. hooks at suitable intervals. The joints shall be left to harden then the rear of the skirting or riser slab shall be packed with cement mortar 1:3 (1 cement: 3 coarse sand). The fixing hooks shall be removed after the backing mortar is set. The joint shall be as fine as possible.

- **Measurements:**

Shall be in square meter correct to two decimal places: Length and height shall be measured correct to a cm actually laid at site above floor.

+ Granite Cladding on walls: / Steps:

In case of reinforced cement concrete or brick work backing the lining shall be secure to the backing after it has set. The cramps shall be fixed in backing while laying at the required positions as specified in the description of items in the BOQ.

The grouting for veneering work shall be full of mortar, hollows noticed shall be made good by taking out the marble slab and re-fixing.

+ Measurements:

Shall be as laid in square meter correct to two decimal places. Length and breadth shall be measured correct to a cm as actually laid.

+ Ceramic tile flooring:

- **Ceramic:**

Tiles shall be of approved Indian make unless otherwise specified in the description of item. The tiles shall be flat, true to shape, free from cracks, crazing spots, chipped edges and corners. The tiles shall be of thickness as specified by manufacturer and of size as specified in the items of work or as directed by the Architect and the tiles shall conform to relevant Indian Standards.

- **Preparation of surface and laying:**

The sub-grade concrete or RCC slab shall be cleaned, wetted mopped. The bedding for the tile shall be 12 mm average thickness not less than 10 mm at any place, consisting of cement mortar 1: 4 (cement: 4 coarse sand) or as specified. Mortar shall be spread, and corrected to proper levels and allowed to harden. Over the bedding mortar neat grey cement slurry of honey thick consistency shall be spread @ 3.3 kg of cement for square meter. Tiles shall then be laid and gently tapped with a wooden mallet till it is properly bedded in line and level with adjacent tiles. The joints shall be as thin as possible and in straight line as to suit the required pattern. Where full size tile cannot be laid, it shall be cut (sawn) to required size edges rubbed smooth to ensure a true and straight joint. The floor shall be checked with a straight edge to obtain a true surface. The floor tile near the wall shall enter 10 mm under the striking or dado finish.

- **Pointing & finishing:**

The joints shall be cleaned of the grey cement grout with wire brushes a depth of 5 mm and all dusts and loose mortar removed. The joint then be flush pointed with non-shrink grout tile joint fillers mixed with pigment to match the colour of tiles and floor kept wet for 7 days. The floor shall not hollow when tapped with a wooden mallet.

- **Measurement:**

Shall be in square meter correct to two decimal places. Length & Breadth of the actual tile area laid shall be measured correct a cm. No extra shall be paid for the use of cut (sawn) tiles in the work.

Vitrified/Ceramic tiles in skirting and dados:

Ceramic tiles shall be as specified in the schedule for wall cladding.

- **Preparation of surface:**

The joints of masonry walls shall be raked out to a depth of at least 15 mm. In case of RCC walls the surface shall be hacked & roughened with wire brushes. The surface shall be cleaned thoroughly washed with water & kept wet.

- **Laying:**

The surface shall be plastered with cement mortar 1:4 (1 cement: 4 coarse sand) or as specified to an average thickness of 12 mm and allowed to harden. The plastered surface shall be roughened with wire brushes or by scratching diagonal lines 1.5mm deep at 7.5 cm centers both ways. The back of tiles shall be buttered with grey cement slurry and edges with white cement slurry and set in bedding mortar. The tiles shall be lightly tamped and corrected to proper plane and lines. Tiles shall be set in required pattern with as fine as possible butt joints. Top of dados, skirting etc. shall be truly horizontal and joints truly vertical. Where full tiles cannot be used, cut (sawn) tiles of required size shall be provided as in flooring. At corners, edges of tiles shall be cut at 45° before fixing. The joints shall be cleaned and flush with white cement mixed with pigment to match the colour of tiles. The surface shall be kept wet for seven days. The finished work shall not sound hollow when tapped with a wooden mallet.

- **Measurement:**

Shall be in square meter correct to two decimal places. Length & Breadth of the actual tile area provided shall be measured correct to a cm. No extra shall be measured correct to a cm. No extra shall be paid for the use of cut (swan) tiles in the work.

- **Vitrified Tiles Flooring – Skirting / Rectified Tiles flooring - Skirting**

The specifications in respect of material and execution process for vitrified tiles and rectified tiles flooring and skirting shall be strictly in accordance with the description of items in the BOQ as under.

- **Vitrified Tiles:**

Providing and fixing in position Premium quality mirror polished vitrified tiles of marble series in approved colour and shade with minimum 85% reflection value and water absorption less than 0.88% conforming to IS 15622 of approved make in floors, skirting, dados at all heights depths and levels laid over 20mm thick cement mortar bed 1:4 (1 cement: 4 coarse sand) including grouting the joints with white cement mixed with matching pigment including cost of all material, labour as per directions / approval of the Architect .

- **Rectified Antiskid Tiles:**

Providing and laying rectified antiskid tiles of size 600x600x8mm of approved quality shade and brand in floors laid over 20mm thick cement mortar bed 1:4 (1 cement: 4 coarse sand) including grouting the joints with white cement mixed with matching pigment including cost of all material, labour as per directions / approval of the Architect.

FINISHING (WHITE WASHING & COLOUR WASHING)

WHITE WASHING:-

Material:

White wash shall be prepared from 5 part of stone white lime and 1 part of shell lime. The lime shall be dissolved in a tub with sufficient quantity of water (about 4/5 liters/kg of lime) and the whole thoroughly mixed and stirred until it attains the consistency of thin cream. The wash shall be taken out of small quantities and strained through a clean coarse cloth suitable proportion of 2 kg of gum per cum of lime to prevent, the white wash coming off easily when rubbed, Indigo as necessary shall be mixed as per standard practice. If not directed otherwise, indigo (Neel) upto 3gm per kg of lime, dissolved in water shall be added and stirred well.

Scaffolding:

This shall be double or single according to requirements and as directed. If ladders are used pieces of old gunny bags or cloth rags shall be tied on their tops to avoid damage or scratches to the plastered surfaces, etc. Proper stage scaffolding shall be erected when white washing the ceilings.

Preparation of Surface:

The surface shall be prepared by removing all mortar droppings and foreign matter and thoroughly cleaned with wire or fibre brush or other means as may be ordered by the Employer/Architect to produce an approved clean and even surface. All loose pieces and scales shall be scrapped off and holes, cracks etc. filled with mortar to match with the surrounding finish. The mortar should be cured sufficiently. In case where the surface have been previously white washed or colour washed, the old white or colour wash shall be entirely removed and surface broomed down before the new white wash applied, in case the old white wash cannot be removed by brooming, the surfaces shall be cleaned by scrapping. Where efflorescence is observed the deposit may be brushed clean and washed. The surface shall then be allowed to dry for at least 48 hours before white washing is done.

Application of white wash:

On the surface so prepared the white wash shall applied with a brush. The first stroke of the brush shall be from top downwards, another from bottom upwards over the first stroke, and similarly one stroke from the right and another from one the left over the first brush before it dries. This will form one coat, each coat must be allowed to dry and shall be subject to inspection and approval before the next coat is applied, when dry, the surface shall show no signs of cracking. It shall present a smooth and uniform finish free from brush marks and it should not come off easily when rubbed with a finger. Minimum 3 coats of white wash shall be applied.

No portions in the surfaces shall be left out initially to be patched up later on.

For new work, the white washed surface shall present a smooth and uniform finish.

For old work, patches, and repairs shall be white wash first. Therefore, the whole surface shall be white washed with the required number of coats. Doors, Windows floors and other article of furniture etc. shall be protected from being splashed upon. Splashing and dropping, if any shall be removed and the surface cleaned.

Rates to include:

Apart from other factor mentioned elsewhere in this contract, the rate for white wash shall include for the following:-

- All Labour, materials, equipment required for white washing.
- Scaffolding including erection and removal.
- Providing and preparing the white wash.
- Preparing the surface for white wash including the scaffolding, minor repair etc.
- Applying the white wash in three coats (minimum). If a proper even surface is not obtained to the satisfaction of the Employer/Architect in 3 coats contractor shall carry out additional coat of white wash to approval, at contractors' expense.

Mode of Measurement:

The measurement shall be square meter. The mode of measurement shall be as applicable to that for plaster.

INTERIOR EMULSION PAINT:

- **MATERIALS:**

The emulsion paint and primers in general shall be of approved quality colour and shade as manufactured by M/s. Asian Paints, Berger, Nerolac or other equal and approved manufacture.

SCAFFOLDING:

This shall be double as required and directed. If ladders are used, pieces of gunny bags of cloth bags shall be tied on their tops to avoid damage or scratches to the plastered surfaces etc. Proper stage scaffolding shall be erected when painting the ceilings.

PREPARATION OF THE SURFACE:

New Surface

The surface to be painted shall be cleaned and all cracks, holes and surface defects shall be levelled with Plaster of Paris or the surface shall be prepared as specified in bill of quantities and with filler prepared.

PRIMING COAT

The priming coat of the approved shade shall be applied over the completely dry surface in the manner as recommended by the paint manufactures. The emulsion paint, in the priming coat, may be thinned down with 20% water or as recommended by the paint manufacture. Turpentine or any other solvent shall not be used for thinning the paint.

APPLICATION OF EMULSION PAINT:

The recommendation of approved paint manufacturer, whose product is used, shall be followed regarding the preparation of the surface and the application of the priming and finishing coat. The contractor shall arrange for technical assistance and supervision from the paint manufacturer, during the execution of the painting work. After the priming coat has been applied and perfectly dried, all holes, scratches, if any shall be repaired as mentioned in preparation of surface and then the second coat of approved shade and manufacture shall be evenly

applied and allowed to dry. The third coat shall be carefully supplied to achieve smooth and even surface after the previous coat has dried up. Minimum 3 coats of paint shall be applied inclusive of primer coat. If a proper and even surface is not obtained to the satisfaction of the Employer/Architect in 3 coats, contractor shall carry out additional coats of painting to approval, at contractors expenses. Care shall be taken that dust or other foreign materials do not settle or disfigure the various coats.

RATES TO INCLUDE:

Apart from other factors mentioned elsewhere in this contract, the rates for the item of plastic emulsion point shall include for the following:

All labour, materials and equipment necessary to carry out the work. Supplying the approved emulsion paint for priming and finishing coats.

Repairing the surface and applying one or more coats of approved quality filler for receiving the primer and finishing coats.

Scaffolding including its erection, dismantling.

Application of one primer coat and minimum two coats of finishing. If a proper and even surface is not obtained to the satisfaction of Employer/Architect in 3 coats. The contractors shall carry out additional coats of painting to approval at contractor's expense.

Protection to painted surface till dried and handed over.

Expense, if any for supervision and technical assistance supplied by the approved paint manufacturers.

MODE OF MEASUREMENT:

The measurement shall be in sq.m. The mode of measurement shall as applicable to that for white washing.

EXTERNAL ACRYLIC PAINT IF REQUIRED

Material

External acrylic paint shall be of approved colour & manufacture as per makes / brands shown in the list of material.

Preparation of surface:

Before painting is commenced on surface, all dirt, oil, grease, efflorescence and organic material shall be completely removed by sand papering and rubbing and there after all cracks, holes and surface defects shall be repaired with Birla White putty and allowed to set hard. All irregularities shall be sand papered smooth and wiped clean. The surface so prepared must be completely dry and free from dust before painting is commenced. In the case of the walls newly plastered special care shall be taken see that it is completely dry before any treatment is attempted.

Application:

The instruction of the makers shall be followed regarding the preparation of the surface and application of priming and finishing coats. Paint shall not be mixed in a larger quantity than is actually required for a days work. Normal water should be used to prepare the mixture. Paint shall be applied in dry weather with broad stiff brush in long parallel strokes. The treated surfaces shall be allowed dry and harden, Second or succeeding coats shall not be

applied until the preceding coat has been passed by the Employer/Architect. Two more coats of paint shall be given in exactly the same manner as the first one but only after the earlier coat laid has thoroughly dried.

Rates of include:

Apart from other factors mentioned elsewhere in this contract, the rate of providing paint shall include for the following:-

- All labour, materials and equipment to provide paint.
- Scaffolding, including erecting and removing.
- Preparing the surface as stated above.
- Applying 3 coat of approved paint. If a proper and even surface is not obtained to the satisfaction of the Employer/Architect in the coats in the applied, the contractor shall provide additional coats of painting to approval, at contractor's expenses.
- Curing as stated above.

Mode of Measurement:

Measurement shall be in square metre and as applicable to white wash. Nothing extra shall be allowed for painting on rough surface, for example, external sand faced plaster/rough cast plaster etc.

 **WPC WORK AND JOINERY:**

All exposed faced of WPC shall receive a primer coat of wood primer wherever required.

• **Holdfasts:**

Six holdfasts shall be fixed to each post of the door frame. The M.S hold fasts shall be of the size 300 mm x 40 mm x 5mm and shall be fixed to the frames by means of screws and/or bolts and nuts and not nails. The other end of the holdfast shall be fixed into jambs with cement concrete blocks of dimensions 22cm x 10cm x 15cm or as directed. Horns in frames shall be cut and shall not be used as holdfasts. Whenever asked for. Rawl plugs or bolts as directed shall be used for Rough grounds framing, hangers etc.

• **Workmanship:**

The workmanship shall be first class and to the approval of the Engineer. Scantlings and boarding's shall be accurately sawn and shall be of required width and thickness. All carpenter's work shall be wrought except where otherwise described. The workmanship and joinery shall be accurately set out in strict accordance with the drawings and shall be framed together and accurately fixed in approved manner and with properly glued with approved glue/ fevicol to the satisfaction of the engineers.

• **Screws:**

All screws to be used in woodwork and joinery shall be of brass or as specified or as directed by the engineer.

• **Tolerances:**

1.5mm will be allowed for each wrought face of the sizes specifications except where described as 'finished' in which case they shall be hold to be full dimensions.

- **Protection:**

All wood work and joinery edges of timber frames etc shall be protected from being damaged during construction by providing rough timber casings securely fixed and with other adequate protective measures.

- ◆ If decided by the owner to provide anti termite treatment, the contractor shall co-ordinate his work suitably as directed by the engineer.
- ◆ Door Window frames shall have cut rebates. Slanted rebates shall not be permitted.
- ◆ Where door frames are fixed flush with plaster to wall, teak wood cover mould 40 x 12 mm as per drawing shall be provided all round where the plaster is flush with the frame, painted or finished as in doors and rates quoted shall include for the same, unless otherwise specified.

- **Mortice lock:**

Mortice lock latch and a pair or lever handles shall have die-casting, brass body and brass bolts and shall be right or left handed as required. It shall be of approved make and quality. The lock for single leaf door shall have plain face and for double leaf door a rebated face. The lever handles with spring shall be mounted on plates and shall be bright brass finished or chromium plated or anodized as approved.

- **WATER-PROOFING**

INDIAN STANDARDS:

All relevant Standards as specified elsewhere in this Volume are applicable. Indian Standards to be followed are:

IS 1322

IS 384

IS 5871

IS 6494

MATERIAL:

Stone aggregate, lime, sand, cement, Brick, Brick Aggregate and shall conform to previous chapters discussed in this Volume.

China Mosaic shall be prepared from broken pieces of white glazed tiles. No pieces shall be larger than 40 MM and smaller than 10 MM in any dimension.

Plain cement tiles, Kota or Shahabad type stone slabs shall conform to previous chapters as discussed in this Volume.

PROPRIETARY TREATMENTS:

Various experienced water proofing specialists shall carry out the following or similar types of water proofing treatments. Final finished surfaces may be laid with paving tiles, stones or finished smooth in Cement and marked with false chequered marking. Points given below are just for guide lines. The actual steps and details shall be submitted by the Contractor for approval of the Employer.

The surface to be treated shall be cleaned and well-defined cracks grouted by making 'V' Notches with cement slurry.

Average 75-115 MM thick brick bat coba cement concrete with 25 MM nominal size brick aggregate, 50% cement mortar mix in a ratio of 1:4 (1 cement:4 sand) shall be laid to slopes about 1 in 120 and rammed. The minimum thickness shall be 30 MM. This shall be treated with a 12 Kg bar soap and 4 Kg alum dissolved solution per Cum. Consolidation shall be carried out by beating the surface with wooden beaters till the beaters rebound readily and do not make any impression on the surface. During beating operation, the surface shall be kept wet by sprinkling liberally by mixing cement with a solution prepared by mixing with 3 kg of jaggery and 1.5 kg of Beal fruit to 100 litres of water. The solution shall be made in hot boiling water at least 10 days before it is used. On completion of beating operation, the mortar coming out at the top shall be trowel led with the addition of sugar solution (if necessary), finished and cured for 7 days.

The treatment shall also be carried out over parapet walls which are minimum 300 MM in height.

The surface shall be finished neatly with cement mortar in a ratio of 1:3 and marked with false marking. It may be covered with paving precast cement, tiles or stones in specified sizes. These shall be bedded in 12 MM thick cement sand mortar. Joints shall be pointed with CM in a ratio of 1:3 mixed with 5% crude oil by weight.

MEASUREMENTS:

Measurements shall be in Square meter for finished surface area. Rates shall include all items right from cleaning of surface to completion and required guarantee.

Following points to be noted:

The treatment shall be guaranteed against any seepage/leakage dampness etc. for a period of 10 years from the date of handing over the buildings to the Employer. The guarantee shall have to be given by the proprietary specialist firms or Contractor carrying out the treatment directly to the Employer on judicial stamp paper in approved proforma.

The treatment to be undertaken in co-ordination with sanitary and plumbing works.

All the treated areas shall be tested by ponding with water. The water shall be made to stand for 72 hours in 50 MM depth throughout the period of testing. In case of any leakage/dampness/seepage the same shall be rectified completely and testing shall be redone until all treated surfaces are found to be free from any leakage/dampness/seepage.

FOR FLAT ROOFS:

The minimum thickness of treatment shall not be less than 75 MM. The slope of the finished treatment on terrace shall not be flatter than 1 in 80

FOR SLOPING SLABS:

The sloping slab surface to be thoroughly cleaned and applied with a slurry coat of cement and proprietary water proofing compound 3% by weight of cement. The brick bat coba 1:3:6 with proprietary water proofing compound 3% by weight of cement to be laid over the slurry to a thickness of 50 to 70 MM over which 20 MM thick cement

mortar 1:4 proportion mixed with proprietary water proofing compound 3% by weight of cement is laid and finished smooth in required colour and in steps of 450 MM size and 20 MM height. Final curing shall be done by covering the surface by gunny bags or grass. The total minimum thickness of treatment to be 70 MM minimum and 90 MM maximum. The water proof finish to be turned over the eaves board.

FOR SUNKEN FLOOR:

Providing water proofing treatment to sunken floors, kitchen sink bat/W.C. toilets etc. The surface to be applied with a slurry coat of cement and water added with proprietary water proofing compound 3% by weight of cement. The floor and side wall shall be provided with 20 MM thick

1:4 cement mortar added with 3% proprietary water proofing compound by weight of cement. Plastering to be done in two coats. The plastered surface shall be applied with a coat of proprietary polymer coating on floor made ready to receive final floor level. The sunken portion to be filled in with brick bat coba of 1:3:6 cement concrete with 3% of proprietary water proofing compound by weight of cement.

TERRACE WATER PROOFING:

The surface is cleaned and roughened and a slurry coat made out of cement water and proprietary water proofing compound 3% by weight of cement is applied on terrace and brick bat coba of 1:3:6 cement concrete added with 3% of proprietary water proofing compound by weight of cement shall be laid with a slop of not flatter than 1 in 80 and a minimum thickness of 75 MM this layer is allowed to take initial setting with proper curing for 3 days. On the brick bat coba a layer of 25 MM thick I.P.S. in C.C. 1:2:4 added with 3% proprietary water proofing compound will be laid. The joints of brick bat coba will be properly filled with cement mortar and finished smooth with false markings of 300 MM*300 MM. The treatment shall be continued to a height of 300 MM on parapet walls. Inverted beams and columns. The finished surface to be applied with a coat of proprietary polymer coating.

WATER TANKS, SUMP, SEPTIC TANK:

Minimum 20 MM thick water proof cement plaster 1:3 with proprietary water proof compound as per specialist firm's specifications including injections/grouting of the walls/slabs as may be required for any honey combed surface, hollows in RCC works as per specialist firm's specifications and finishing the surface smooth as directed.

CANOPY CHAJJA ETC.:

It shall be given with 1:2:4 IPS finish a average 25-40 MM thick including 3% proprietary water proofing compound laid in approved bays to be carried over to the adjoining walls/bunds etc. upto a height of 300 MM with all junctions well rounded off.

RAIN WATER FROM TERRACES, BALCONY AND VERANDAH:

Surface water disposal vertical stacks in PVC or CI (as specified in the drawings and Bills of Quantities) pipes of required diameters laid upto 150 MM above GL. Surface water disposal from Verandahs / Balconies will be through G.I. pipes spouts as provided in the Bills of Quantities. The opening made in the terrace parapet and balcony walls to be closed with special care and tested for water tightness before making payments.

FLOWER BEDS:

With average 20 MM thick cement plaster 1:3 inclusive of 3% proprietary water proofing compound laid to required slope to be carried over to adjoining walls and sides up to 150 MM height or to full depth of the flower bed and junctions well rounded off.

BOX TYPE WATER PROOFING TREATMENT:

This shall also be carried out under a proprietary treatment. The Contractor shall submit the complete proposal for approval of the Employer.

Basic steps are:

Plain cement concrete raft, minimum 100 MM thick or as specified shall be laid. The mix of PCC shall be cement concrete in the ratio of 1:4:8. The raft shall project about 300 MM than the finished size of RCC structure.

20 MM thick cement sand mortar mixed with water proofing powder 4% by weight of cement shall be laid on PCC and 20 MM graded aggregate free from impurities shall be spread on the floor. It shall be cured for 3 days.

Then 25 MM thick rough kota or Shahabad or similar stones 600*600 MM in size shall be laid flat and joined with cement-sand-mortar. This shall project 300 MM all around RCC raft.

Then the surface shall be screeded with cement-sand-mortar and finished smooth. RCC raft, walls, or masonry shall be constructed as designed.

Well –cured walls shall then be treated in the vertical direction by fixing a layer of Kota or Shahabad or similar stones. Treatment shall be carried out 300 MM above the finished Ground Level.

Treatment to floor and wall shall be scaled such that it is continuous. It shall be the responsibility of the Contractor to achieve correct slopes, chamfers, etc. by providing PCC in the ratio of 1:4:8 in required locations as part of items.

MEASUREMENT:

The measurements shall be in Square Meters for the area treated. Rates shall include all items right from cleaning of surface to completion and the required guarantee.

The following type of failure will be judged as defective work:

Dampness Leakage

Failure to stay in place Splitting

Pulling loose Tearing

Undue expansion and contraction Alligating etc.

GUARANTEE:

All water-proofing systems described above are to be referred as guide-lines only. The Contractor shall propose the system giving full descriptions. The system shall be guarantee for 8 years against all defects and liabilities thereof from the date of completion of the project. The guarantee shall be on Stamp paper of required value in proforma to be approved by the Employer. The cost of the Stamp Paper shall be to the Contractor's Account. Work shall be carried through approved specialist agency as per method of working approved in writing by the Employer.

ANTI TERMITE TREATMENT

- **Codes: -**

Anti-termite treatment shall be carried out in accordance with the following standards unless specified otherwise.

IS 6313 Code of practice for Anti-Termite Treatment (Part-I) Constructional measures (Part II) Code of practice for anti-termite measures in Building (pre constructional chemical treatment)

- **Materials: –**

Anti-termite chemicals in water emulsion shall be used as specified below.

Chemical	Concentration by weight, percent
Chloropyriphos	As per manufacturer's instructions
Indosulfon	As per manufacturer's instructions

- **Workmanship:-**

Conditions of formation - The Anti-termite barrier shall be complete and continuous under the whole of the structure to be protected. All foundations shall be fully surrounded by and in close contact with the barrier of treated soil. Each part of the area treated shall receive the prescribed dosage of chemical Time of application.

Soil treatment should be done immediately prior to placing concrete or sub-grade in foundations, ground beams, floor slabs, etc. Concrete works should start when the chemical emulsion has been absorbed by the soil. Treatment must not be done when the soil is wet or saturated.

Disturbance -Once formed, treated soil barriers shall not be disturbed. If treated soil barriers are disturbed, immediate steps shall be taken to restore the continuity and completeness of the barriers - system.

Termite mound treatment - If termite mounds are found within the plinth area, these shall be destroyed by breaking open the earthen structure and pouring into the mounds at several places, after, emulsion at the rate of 4 litres per cubic meter of mound.

TREATMENT TO R.C.C. FRAMED STRUCTURES:

The foundations require to be completely enveloped by a layer of Bitumen from a good epoxy manufacturing brand.

DESIGNER CONCRETE INTERLOCKING CONCRETE PAVER BLOCKS:

Medium duty 80mm thick rubber moulded interlock pavers of premium make of approved size and shape and colour unless otherwise mentioned and laying to be as per the following instruction.

SUBSTRATE PREPARATION – FLOOR

- The ground is to be watered and rammed thoroughly to create a firm base.
- Over this 3” of sand is to be laid and rammed thoroughly.
- On top of the sand cushion, for pedestrian traffic, 4” of 1:5:10 brick jelly concreting has to be done and for heavy traffic, 4” of 1:4:8 PCC concreting to be done.

EXTERNAL CERAMIC TILES:

- Prepare base mortar with cement and sand in the ratio 1:4.
- The total mortar thickness should not be more than 1” in case where tiling is to be done on RCC slabs, finished floor levels would have to be marked using tube levels. In this process, if it is observed in some area mortar thickness is likely to be in excess of 1” in those areas PCC work will have to be done to raise levels, so that thickness is not more than 1”.
- Set the levels for the finished floor (i.e, dead level or slope as specified by the Architect / Contractor).
- Prepare cement slurry (i.e, mixture of cement and water to form a thick paste) and spread it on the leveled base mortar.
- Wet the reverse of the tile with water. Complete immersion of tile in water is not required.
- If tiles are square or rectangle in shape, set the right angles for the rooms and place the first tile along the right angle lines and place it in a base mortar. Tap gently and uniformly only with a rubber or wooden mallet covered with cloth to obtain perfect levels.
- Clean the surface of the tile with a wet sponge immediately after laying. Ensure that the base mortar cement, which squeezes through joints does not settle on the tile. Also ensure that the water used is clean and not salty, hard or brackish.

It is suggested to leave a fine gap of 1mm all around for external tiles like Regolia, Aquarius etc., for fast and proper laying.

BRANDS OF EXTERNAL TILES:

For external tiling completely open to sky, the tiles should be laid in such a way that for every 10' x 10' area laid, there should be an expansion gap of 2 mm on all sides. This should be followed throughout the area of laying to provide for the expansion for all tiles. Absence of expansion gaps may result in lifting / chipping / cracking of tiles. In site where multiple levels are encountered, the tiles on the ridge will have to be adequately protected with mortar cushion.

When large span tiles are laid on curved substrate, it is suggested that the tiles be cut to take the contour of the slope ensuring proper bedding.

Fill in the joints with pointing material, which is a mixture cement and desired colour of pigment. To arrive at the desired colour / shade, mix the same with water to form a smooth paste which should be applied to the joints preferably with the use of rubber squeeze or rubber sheet. For higher quality of finishes you could use if required a polymer based cementations tiling joint filler. Do not apply the pointing material all over the tile surface.

Allow pointing material to set, for 15 minutes and then clean the surface of the tile with wet sponge, removing the excess pigment on the tile surface.

Wash the surface with soap water or mild detergent to obtain a clean surface.

Do not use the area laid for 3 days for pedestrian traffic areas, 7 days for light traffic areas and 10 days for heavy traffic.

+ UPVC DOORS, WINDOWS AND VENTILATORS:

MATERIAL

UPVC used in the manufacture of extruded doors and window sections shall correspond to IS designation HE 9 WP of IS 733. Hollow UPVC sections used shall conform to IS designation HV9-WP of IS 1285. Machine screws used shall conform to the requirements of IS 1362. Also cadmium plated screw, nuts, washers, bolts lugs of steel shall be used on direction of the Employer/ Architect.

Specially designed and extruded sections may be permitted if supporting design calculations for wind load are submitted to the Employer/ Architect for approval.

All UPVC material used shall be able for protection against corrosion in marine atmospheres.

+ FABRICATION:

Frames shall be square and flat, with the corners fabricated to a true right angle.

The fixed as well as open able frames shall be constructed by cutting sections to exact length, with corners mitered and welded. Mitered shutter frame joints must be clitted mechanically with aluminum clits if approved by the Employer/ Architect.

Where hollow sections are used with welded joints, argon-arc welding or flash butt welding shall be employed or if approved mechanical connection assembly.

Subdividing bars of units shall be tenoned and riveted into the frame. Sections used shall conform to IS 1948 for respective location or as approved by the Employer Similarly, the specifications of 12mm thick pre-laminated particle board flat pressed three layers or graded wood particle board confirming to IS:12823 Grade I Type II, in panels and glazing (glass panes) including all other allied material required to be provided in the aluminium doors and windows shall be as per latest Indian Standard and as described in the respective item of the BOQ.

+ MEASUREMENTS:

Measurements shall be in square meter. Glass shall be measured as part of UPVC window and doors.

+ ROLLING SHUTTERS MATERIAL

Steel used in the fabrication of lath, M.S. sections, guide channels, suspension shaft, pulley wheels, locking ships, U clamps gears, counter balancing roller spring, helical spring and flat spring shall conform to various grades as detailed in Indian Standard specifications for metal rolling shutters and rolling grills.

+ FABRICATION

Interlocking lath shall be of minimum 1.25mm thickness. They shall be securely riveted at ends. Lock plat must be of 3.15mm thickness with M.S. angle section of not less than 35X35X5 mm at bottom. Lock plate shall be provided with sliding bolts at both ends and with pull handles both inside and outside of shutter. Guide channels shall be pressed out of a 3.15 mm and become proportionately higher upto at least 7mm for large size shutters. Suspension shaft shall be of sufficient dia and deflection shall not be more than 5mm per meter width. Required C.I. pulleys, helical wire springs flat spiral springs and self-lighting double row ball bearings shall be provided.

Hood cover stiffened with angles and flats and of minimum 0.9mm thick M.S. sheet shall be provided. Required gears worms etc. used shall be machine cut and of the specified material.

The rolling shutters supplied shall meet the requirements of IS 6248 in every respect and shall be to the approval of the Employer/ Architect.

Intermediate post or mullions may be of the fixed or removable or sliding types and shall be provided if asked for or required for rigidity and safety. Wicket gate also shall be provided if specified. Rolling shutters shall be pull and push types, upto 8 sqm.. they shall be mechanically or electrically operated as specified.

MEASUREMENTS:

Measurements shall be in square meters for actual clear opening.

M.S. GRILLS, RAILING & GATES:

M.S.Grills, railings and gates shall be fabricated and fixed in position strictly as per design and drawings. All intersection or meetings of all members shall be welded and the workmanship shall be high grade quality to the entire satisfaction of the Architect/Engineer. After fixing in position, these shall be cleaned off dust, rust or scales and rubbed with emery and unless otherwise specified an steel priming coat with enamel paints shall be applied. The rate for M.S.Grills to window where required shall also include the cost of screws to be used for fixing, for M.S. railing the cost of 1:2:4 cement concrete for jamming the hold fasts of the railing. The rate is for the completed work in all respects.

GLAZING PLATE GLASS:

Plate glass shall be flat, transparent and clear when judged by the unaided eye. It may however possess a tint when viewed edge-wise. It shall be free from cracks, blisters, stones, scratches; bubbles sheet glass shall not show any distortion of light when tested to Indian Standard. Plate glass shall not have defects greater than those given in Indian Standard. Test shall be conducted as specified in Indian Standard. Classification of glass shall be as per Indian Standard.

OTHER ITEMS

All materials to be used and workmanship for all the other items (not covered above) but taken and described in the BOQ including items beyond BOQ shall also be the best of its kind and shall be conforming to the CPWD specifications and latest Indian Standard Specifications in every respect and to the approval of the Engineer / Architect.

All materials / or workmanship which in the opinion of the YHAI Engineer / Architect are / is defective / under specifications or un-suitable, shall be remove immediately from the site and shall be substituted with proper material and / or workmanship forth with as per drawings, requirements and as per approval / directions of the Engineer / Architect.

All material shall be of approved quality, brands / makes as per list preferred makes and as per sample got approved from the Engineer / Architect. A set of specimen samples of all approved materials shall be kept at site as well as in the office of the Engineer / Architect. The cost of which shall be borne by the Contractor.

SCHEDULE B

TECHNICAL SPECIFICATIONS FOR WATER SUPPLY, SANITARY & DRAINAGE WORKS

The following specifications are to be read in conjunction with the details given in the Schedule of Quantities.

STANDARD SPECIFICATION

All works under this contract shall be carried out in accordance with the technical specifications & the latest issue of the Indian Standard Specifications applicable to the particular class of work. Indian standards are not formulated for any particular materials or method of execution of work, the relevant British Standards shall apply. Relevant issues of I.S. Specifications applicable to the particular work have been described along with the specification for the respective works. In case of any confusion or dispute regarding the meaning & Interpretation of any specification for the respective works, the decision of the Owner/ Architects shall be final and binding on the contractor.

PLUMBING & SANITARY WORKS

The general character and the scope of works to be carried out under this contract is illustrated in the drawings and specifications attached herewith. The contractor shall carryout and completes the said work under this contract in every respect in conformity with the rules and regulations of the local authority. The contractor shall furnish all labour, supply and install all materials appliances, tools, equipment necessary for the complete provision and testing of the whole plumbing and services installation as specified herein and as per the relevant ISI codes and shown on the drawings. This also includes any material, appliances, equipment not specifically mentioned herein or noted on the drawings as being furnished or installed but which necessary and customary to make complete installation as shown on the drawings or described herein properly connected and in working order.

In general the work to be performed under this contract shall comprise of the following.

All incidental jobs connected with plumbing services installation, such as excavation in trenches and back filling, cutting chases in concrete and brick and making good, cutting/ drilling holes through walls, floors and grouting and for fixing of fixtures equipment etc.,

Furnish and install a complete workable, plumbing services installation as shown on the drawings and described in this specification and as per the latest ISI specifications including all that which is reasonably inferred.

Complete installation of internal and external water supply system. Complete installation of sewerage and sewerage appurtenances internally as well as around the building.

Complete installation of all sanitary and plumbing fixtures. Cooperation with other crafts in putting the installation in place. Any work done without regard for consultation with other trades, shall be removed by the contractor without additional cost to the owner to permit proper installation of all other work, as desired by the Architects.

Repair all damages done to the premises as a result of this installation and remove all debris left by those engaged for this installation to the satisfaction of Employer.

Cleaning of plumbing fixtures, showing the satisfactory performance of all the fixtures at the time, the building is handed over to the owners.

It is the responsibility of the contractor to take care of all the fixtures fitted until the time of handing over to the owners. Painting of all concealed and exposed pipes as specified.

Assume full responsibility of all required applications and cost, to connect to corporation water mains, sewers and storm water drains to the extent these are applicable to this installation.

REGULATION AND STANDARDS

The installation shall conform in all respects to the following broad list of standards in general.

The installation shall also be in conformity with the byelaws and requirements of the local authority in so far as these become applicable to the installation. Wherever these specification calls for higher standard of materials and / or workmanship than those required by any of the above regulations and standards, then the specification shall take precedence over the said regulations and standards. Wherever drawings and specifications require something which will violate the regulations, the regulations shall govern.

FEES- PERMITS AND TESTS

The contractor shall obtain and pay for any all fees and permits required for installation of this work. On completion of the work, the contractor shall obtain and deliver to the owner, certificates of the final inspection and approval by the local authority. The owner shall have full power to require the materials or work to be tested by an independent agency at the contractor's expenses in order to prove their soundness and adequacy.

• **DRAWINGS AND SPECIFICATIONS**

The drawings and specifications shall be considered as part of this contract and any work or materials shown on the drawings and not called for in the specifications or vice versa shall be executed as if specifically call for in both. The contract drawings indicate the extent and general arrangement for the fixture drainage systems and are diagrammatic. The drawings indicate the points of supply and termination of pipe runs and broadly suggest the routes to be followed. The work shall be installed as indicated on the drawings, however any changes found essential to coordinate this work with other trades shall be made without any additional cost. The date given herein on the drawings is as exact as could be secure, but its complete accuracy is not guaranteed. The drawings and specifications are for the assistance and guidance for the contractor, and exact location, distance and levels will be governed by the individual building and site condition. Therefore approval of the Architects shall be obtained before commencement of work. After completion of the work, the contractor shall furnish necessary information like-

invert levels and layout of pipe line etc., and prepare final completion drawings and hand over to the owner on tracing cloth.

- **MANUFACTURER'S INSTRUCTIONS**

Where manufacturers have furnished specific instructions, relating to the materials issued in this job, covering points not specifically mentioned in this documents, instructions shall be followed in all cases.

- **CHANGE IN DIMENSIONS**

If the size of fixtures mentioned is not available then the nearest available size shall be fixed with due considerations of the owner.

- **MATERIALS**

Materials shall be of the best approved quality obtainable and unless otherwise specified, they shall conform to the respective Indian Standards specifications. Samples of all materials shall be as per the list of approved brand manufacture which shall be got approved before placing order and the approved samples shall be deposited with the owner. For purchases coming under the contractor shall furnish a blank copy of order placed with the supplier. In case non- availability of materials in metric sizes, the nearest size of FPS units shall be provided with prior approval of the Architects, for which no extra amount will be paid.

TESTING OF WATER SUPPLY PIPE LINES AFTER LAYING

After laying and jointing, the main shall be slowly and carefully charged with water so that all air is expelled from the main by providing a 25mm inlet with a stop-cock allowed to stand full of water for a few days if time permits, and then tested under pressure. The test pressure shall be 5kg / cm² or double the maximum working pressure whichever is greater. (However, the working pressure for which the lines are to be tested at various floor level are indicated below) The pressure shall be applied by means of a manually operated test pump. Due precaution shall be taken to ensure that the required test pressure is not exceeded. Pressure gauges shall be accurate and shall preferably have been recalibrated before the test. The pump having been stopped, the test pressure shall maintain itself without measurable loss for at least five minutes. The mains shall be tested in sections as the work of laying, proceeds: it is an advantage to have the joints exposed, or inspection during the testing. The open end of the main may be temporarily closed for testing under moderate pressure by fitting a watertight expanding plug of which several types are available. The end of the main and the plug shall be secured by struts or otherwise to resist the end thrust of the water pressure in the mains.

- **TABLE FOR TEST PRESSURE OF DIFFERENT FLOORS**

Ground and First floor 8 kg / sq cm Second and third floor 7kg / sq cm Fourth and fifth floor 6kg / sq cm 5kg/sqcm
Fifth and above 10 kg/sq cm Well water and drinking water rising mains

- **TESTING OF CI SOIL WASTE AND VENT PIPES**

All soil pipes, waste pipes and vent pipes and all other pipes when above ground shall be approved gas-tight by a smoke test conducted under a pressure of 2:5mm of water and maintained for 15 minutes after air trap seals have

been filled with water. The smoke is produced by burning oily water or tar paper or similar material in the combustion chamber of a smoke machine. Chemical smokes are not recommended.

DRAINAGE

- **BURIED SERVICES**

All pipes, ducts, cables, mains and other services exposed by the excavations shall be effectively supported by timbering or other means. The contractor shall be responsible for any damage occurring to the buried existing services and make good the same at his own cost to the satisfaction of the Architects/ Owner.

- **LAYING AND JOINTING S.W. PIPES:**

LAYING: The pipes shall be carefully laid to the levels and gradient shown on the plans and sections by making use of sight rails and boning rods, with socket up the gradient.

JOINTING: PVC joining mtr. to be used at jointing.

CURING: The joint shall be cured at least for seven days.

TESTING: All lengths of the sewer and drain shall be fully tested for water tightness by means of water pressure maintained for not less than 30 minutes. Testing shall be subjected to a test pressure with at least 1.5 mtr head of water, at the highest point of the section, under test. The pipes shall be plugged preferably with standard drain plugs (with rubber rings) on both ends. The upper end shall, however be connected to a pipe for filling with water and getting the required head. The contractor shall give a smoke test to the drains and sewers at his own expenses and charges as directed by the Architects.

PAINTING: Pipes laid under floor /ground, concrete etc shall be given two coats of bitumastic paint.

SEWER APPURTENANCES, INSPECTION CHAMBERS AND MANHOLES:

SIZE OF CHAMBERS: MANHOLE: The size given in bill of quantities and drawings shall be internal size of chamber. The work shall be done strictly as per standard drawing and following specifications.

BED CONCRETE: Shall be in 1:5:10 cement concrete 150 mm thick for inspection chambers, 230mm for depths upto 2.1 mtrs and 300 mm for greater depths in case of manhole.

BRICK WORK: Brick work shall be with best quality table moulded bricks in 1:5 cement mortar as per specifications for brick masonry.

PLASTER: Inside of the wall of chamber / manhole shall be plastered with 12mm thick cement plaster 1:2 and finished smooth with a floating coat of neat cement.

BENCHING: Channels and benching shall be done in cement concrete 1:2:4 rendered smooth with neat cement.

- **CHAMBER/MANHOLE COVERS**

Covers shall be of medium duty cemo concrete with lifting hooks details given in the drawing and fixed on the C I frame embedded in concrete. Cover placed on the frame shall be air tight. Weight of the cover on frame shall be as specified in the schedule of quantities.

- **GULLY TRAP CHAMBERS**

The gully trap chambers to be made of Brick masonry as per drawings.

MODE OF MEASUREMENT

- The inspection chambers shall be measured per number and the rate quoted also shall be number only. The quoted rate shall include the cost of all the items, specified in the bill of quantities and specifications viz.
- Bed concrete
- Brick work
- Plastering
- Concrete benching and channeling
- Inspection chamber cover and frame including PCC bed for fixing the frame
- Keeping holes and embedding pipes for all connections
- Excavation, refilling necessary dewatering and disposing of extra stuff to a place as directed by the Architects
- Testing
- Curing

 **SANITARY INSTALLATION AND FIXTURES:**

All fixtures shall be fixed in neat workmen like manner true to line and as recommended by the manufacturer or shown on the drawings. Care shall be taken to fix all fixtures, brackets and accessories by proper wooden cleats, rawl plugs, bolts and nuts., as such fixtures will warrant with the correct size of screws nuts and bolts.

Care shall be taken in fixing all chromium plated fixtures and accessories so as not leave any tool marks or damages on the finish. All such fixtures shall be tightened with fixed spanners. Use of stilson type pipe wrenches with toothed jaws shall not be allowed.

All fixtures shall be thoroughly tested after connecting up the drainage and water supply system. All fixtures shall be thoroughly finished and any leakage in piping, valves and waste fittings corrected to the entire satisfaction of the Architects.

Upon completion of the work all labels, stickers, plasters etc., shall be removed from the fixtures and all fixtures cleaned thoroughly with soap water, so as present a neat and clean toilet.

MODE OF MEASUREMENTS

All the items above shall be measured per number and quoted rate per number only which shall include:

The cost of respective materials Necessary fixtures

Fixing in position

SANITARY INSTALLATIONS:

- **URINAL:**

The urinals shall be of white or colored vitreous chinaware conforming to I.S.2556 Part VI Section-I It shall be flat back half stall urinal as specified. Each urinal shall have flushing valves with installation box and CP brass waste dome grating and other CP brass fitting and other fittings as specified in respective item of urinals.

- **WASH BASIN (OVAL TYPE):**

Best quality Parry ware/ Hindware wash basin shall be of white vitreous chinaware (or coloured) oval shape counter top with Parry ware make CP brass pillar tap (push type) for wash basin as specified in the item. All the waste fittings shall be brass chromium plated as specified. Oval type counter top wash basin shall be fixed on RCC counter above granite stone.

- **WASH BASIN:**

Best quality Parryware/Hindware washbasin shall be of white vitreous chinaware (or coloured) with Parryware make CP brass pillar tap (push type) as specified in the Items. It shall be provided with 1st quality vitreous chinaware pedestals where so specified. Pedestals shall accommodate supply and waste pipes fittings. The wash basin shall be placed on pedestal and firmly fixed on wall using nut-bolt & washers. All the waste fittings shall be brass chromium plated as specified.

- **PARTITION PLATE:**

It shall be best quality 20mm thick granite partition plate size 600x1200mm as specified in the BOQ. It shall be fixed with cement concrete 1:2:4 supporting with CI/MS special types brackets and cutting / making good the walls.

- **SINK:**

Kitchen sink with drainage board shall be of stainless steel (Salem Stainless Steel IS:304) 1mm thick. The sink and drainage board shall be in one piece as specified size with rectangular compartment/ bowl. Each sink shall be provided with one stainless steel waste and GI 'B' class waste pipe. Sink shall be supported on RCC platform having suitable cut for the bowl of the sink.

- **MIRROR:**

Best quality Saint Gobin / Asahi make mirror of size 600x600mm with bevelled edged over wash basin. The mirror shall have 5.5mm thick hard board 6mm thick sheet backing complete fixed on wall with PVC plug and CP brass concealed screws and washers. The bevelled edge of the mirror shall be 3mm thick with bevelled width of 25mm.

- **TOWEL RAIL:**

CP brass towel rail rod 20mm dia I 6 gauge 450mm long including CP brass brackets.

- **SOAP DISH:**

Best quality Stainless steel made recessed type soap dish/ cake holder.

- **STEEL SHELF:**

Pre-fabricated best quality 600mm long chromium plated steel frame with 6mm thick glass shelf tray with all edges neatly grinded and polished as specified in the item. The steel shelf / tray shall be fixed with PVC plugs and CP brass screws.

- **SOAP CONTAINER:**

Best quality CP brass liquid soap container. It shall be fixed to PVC plugs with CP brass screws.

- **PAPER HOLDER:**

The paper holder shall be of white vitreous chinaware of recessed type & the rate shall include wooden spindle, chase cutting of walls. Setting in cement sand mortar & making good the all-round joint with white cement.

- **PVC SOIL, WASTE AND VENT PIPES AND FITTINGS:**

PVC soil, waste and vent pipes Class-3 and fittings (PVC specials) shall be of heavy quality conforming to I.S. 4985-2000 for PVC pipes and PVC fittings conforming to IS 7834-1998. The standards weights and thickness of pipes shall be as per I.S. codes.

All soil waste and vent pipes shall be carried above the roof (90cms Beyond the tops of parapet.) and fitted with PVC terminal guard at top. The pipes shall have with coupler. The pipes and fittings shall be true to shape, smooth and cylindrical. Their inner and outer surface shall be concentric. They shall be sound and be free from cracks, taps, pinholes and other imperfections. The pipes and fittings shall ring clearly when struck over with a light hand hammer.

- **FIXING:**

The pipes and fittings (specials) shall be fixed to walls at least 2.5cm clear of the finished surface of wall by using proper PVC clamps. Pipes shall be fixed vertically in a line as directed. Connection between main pipes and branch pipes shall be made by using proper bends invariably with access doors for cleaning.

All PVC pipe fittings like bends, tees, heel rest bend, single junction with door etc in soil waste & vent pipes shall be ISI marked.

- **JOINING:**

Joining the pipes and specials with solvent cement complete as per requirement.

- **FLOOR TRAPS:**

Floor traps shall be PVC, deep seal with an effective a seal of 50mm. these shall be ISI marked. The trap and waste pipe shall be set in cement concrete blocks firmly supported on the Ground Floor. The blocks shall be cement

concrete 1:2:4 and extended to 40mm below finished floor level and size of the blocks shall 300x300mm and of required depth. The floor trap shall be 100mm dia inlet and 75mm dia outlet. Floor traps shall have extension piece to receive waste lines as indicated in the plan. All floor traps shall be provided with CP brass taproach trap round of approved design and shape.

SUBMERSIEABLE PUMPING SET:

- **PERFORMANCE GUARANTEE**

The motor and pump shall be based on laboratory test corrected for site performance. The test report shall be submitted to Architect. The machinery shall be guaranteed for a period of 12 months from the date of installation against any manufacturing defect or bad workmanship.

OVER HEAD TANK:

- All overhead tanks shall be of concrete water tank made of as per details shown in drawings.
- These tanks shall be placed and located on the roof terrace as shown in drawing.
- Each overhead tank shall be complete with the following:-
- Cover at top with locking arrangement.
- Inlet & outlet with ball valves, overflow, air vent, scour pipe with all fittings.
- Mosquito proof coupling shall be provided to overflow and air vent pipes.
- The inlet pipe inside the tank shall be provided with ISI marked 40mm, 32mm & 25mm dia brass body all valve with polythene ball
- The inlet pipe to the overhead tank shall be 50mm dia with ISI marked full way gunmetal valve and all outlet pipes shall be 40mm, 32mm, 25mm dia with ISI marked full way ball valves.
- 20mm dia UPVC pipe for over flow of each tank shall be brought down upto the finished terrace level and laid upto the nearest khurra on terrace.
- Ball valves at location on terrace as shown in Layout plan drawing.

INTERNAL WATER SUPPLY:

- **WATER SUPPLY**

UPVC PIPES AND FITTINGS: The pipes shall be of UPVC made. They shall be manufactured by a firm of repute.

LAYING AND FIXING: Where pipes have to be cut or re-threaded, ends shall be carefully filled out so that no obstruction to bore is offered. For internal work all pipes and fittings shall be fixed truly vertical and horizontal, either by means of standard pattern holder bat clamps keeping the (12 mm) clear of the wall everywhere or concealed as directed. For external work, UPVC Pipes and fittings shall be laid in trenches. The width of the trench shall be the minimum width required for working. The pipes laid underground shall not be less than 60 cms from the finished ground level. The work of excavation and refilling shall be done as specified elsewhere, or concealed as directed

TESTING: Before any pipes are painted or covered, they shall be tested to a hydrostatic pressure of 7 kg/cm². Pressure shall be maintained for at least eight hours without appreciable drop in pressure. In addition to the sectional testing of water supply pipes, the contractor shall test the entire installation to the entire satisfaction of Architects. He shall rectify and leakages, failure of fittings or valves.

MODE OF MEASUREMENT

G.I. pipes above ground shall be measured along the center line of the pipes and fittings. The quoted rate for respective item shall be per Rmt and shall include the following:

- Cost of respective pipes and specials
- Laying, fixing and jointing with necessary clamps
- Cutting holes and chases in walls, floors etc. and making good the same.
- Testing and making good the defects if any
- G I pipes below ground shall be measured as stated above.

- **WATER FITTINGS (TAPS STOPTAPS, ETC..)**

All water fittings shall be of approved quality and design and generally comply to latest I S specifications. The fittings and joints shall be tested as specified for pipeline to ensure that the joints are leak proof. Defective fittings and the joints shall be repaired or re-done replaced as directed.

MODE OF MEASUREMENTS

These items shall be measured in number, unless not included in other items viz. Wash basins Inlets to cisterns, etc...

Cost of materials

Cost of fixing accessories like bolts, nuts, washers.

- **ALL TAPS:**

Ball taps used for storages tanks shall be high pressure brass/GM. Ball taps with brass lever rods and PVC floats.

Measurements

Ball taps shall be measured by the number unless called for, with the item in the schedule of quantities.

- **ALL VALVE:**

It is required to be provided in the overhead tank at end UPVC. It will conform to IS 1703. The ball valve shall be of brass (as specified) of required diameter. The float shall be of polythene. The body of ball valve shall be capable of withstanding a pressure of 14-kg/sq cm. A ball valve when assembled in working condition with float immersed to not more than half of its volume shall remain closed against a test pressure of 10.5 kg/sq cm. The standard weights of ball valves shall be as given in the I.S. standards.

- **BIB TAP:**

All bib taps short body, long body, bottle traps, spray jet and copper pipe connection and other minor fittings shall be brass chromium plated. These shall be ISI marked. For fixing of CP brass fittings wherever required CP brass extension piece shall be provided.

- **STOP COCK:**

The stop cock shall be plain or angular type as per its place of installation & of specified quality opening anticlockwise & of screw down pattern of the size as specified. Other specifications shall be as per the specification of Bib Cock above.

- **RAIN WATER PIPES & SPOUTS:**

The rainwater pipes where shown on the drawings shall be PVC pipes (Class-3) of the diameter a specified in the schedule of quantities/drawings of approved manufacturer confirming to IS-4985 with coupler:

For PVC pipes and PVC fittings jointing shall be provided as B.O.Q.

Where required these are to be run in the chase left or cut in wall, columns, slab. For exposed lengths of pipes these are to be neatly secured clear from the finish wall face with clip or bracket, nailed or screwed to hard wood tapering plugs embedded in walls.

The mouth of the rainwater pipe shall be fixed with PVC grating and the pipe jammed in position in 1:2:4 cement concrete.

The rate for the work shall include supplying and fixing of materials cutting, making chases etc. and is for the complete work in all respects. Unless otherwise specified in the schedule of quantities, the rate shall also include supplying, fixing and jointing all the specials like bends tee, junction etc. required for the complete work.

CONNECTIONS FOR WATER SUPPLY, SEWER LINE & STORM WATER

The approval of connections (Water supply, sewer and storm sewer) shall be got by the contractor from the concern authority under the name of the concerned Association of YHAI and all the legal fees shall be borne by the Employer Incidental expenses if any shall be borne by the Contractor.

CLEANING & DISINFECTION F OF THE WATER SUPPLY SYTEM, WATER STORAGE TANKS AND DOWN TAKE DISTRIBUTION PIPES

All water mains, communication pipes, service and distribution pipes used for water for domestic purposes should be thoroughly and efficiently disinfected before being taken into use and also after every major repair. The method of disinfection shall be subject to the approval of the Owner/ Architects.

The water storage tanks (underground & overhead) & pipes shall first be filled with water & thoroughly flushed out. The storage tanks shall then be filled with water again and disinfecting chemical containing chlorine added gradually while the tanks are being filled, to ensure thorough mixing. Sufficient chemical shall be used to give water a dose of 50 parts of chlorine to one million parts of water. If ordinary bleaching powder is used, the proportions will be 150 gms of powder of 1000lts of water. The powder shall be mixed with water to a creamy consistency before being added to the water in the storage tank. If a proprietary brand of chemical is used, he proportions shall be as specified by the makers. When the storage tank is full, the supply shall be stopped and all the taps on the distribution pipes opened successively working

progressively away from the storage tank. Each tap shall be closed when the water discharge begins to smell of chlorine. The storage tank shall then be topped up with from the supply pipe and with more disinfecting chemical in recommended proportions. The Storage tank & pipes shall then charges at least for three hours. Finally, the tank and pipes shall be thoroughly flushed out before any water is used for domestic purposes. Cost of the same shall be included in the tender. No separate amount will be paid to the contractor.

UNDERGROUND SEWERAGE & DRAINAGE PIPE LINE (GLAZED STONE WATER PIPING)

The piping shall be measured in running meters including joints, along the centre line of pipes faces in fitted condition. The length shall be measured between the inside faces of walls of the inspection pits at both ends of that stretch of piping.

The item rates for the piping shall also be inclusive of the costs of the following works.

- Jointing arrangement with all materials and labours.
- Thorough cleaning of the entire pipe line after laying & before commissioning as directed by Architects / Owner.
- Concrete bed, earth works etc as per schedule of quantities and drawings.

SCHEDULE C
TECHNICAL SPECIFICATIONS FOR
ELECTRICAL WORK

ELECTRICAL INSTALLATIONS:

The following specification will apply under all circumstances to the equipment to be installed against this contract and it is to be ensured that the contractor shall obtain for himself at his own expenses and no his own responsibility the information which may be necessary for the purposes of entering into a contract keeping in view of the purposes of entering into a contract the specifications detailed here under, drawings and design of the electrical installation and inspection of site etc.

Test certificate from individual manufacturers of all cables, wires, fittings etc. shall be furnished by the contractor and responsibility of getting the approval from electrical authorities and fire department shall lie with the contractor.

Scope

The contractor is required to complete the work in full and comply with all the relevant specifications and scope of work. All electrical tests to be carried out for the entire electrical works i.e. testing of the existing incomplete work and additional work undertaken to make the entire electrical system functional and operative under the electrical rules and regulations. Tests sheets for the entire work along with drawings shall be submitted to the Architect before the complete certificate.

The contractor shall supply, store, erect test and commission all the equipment required for electrical installation. The contractor shall furnish all the materials, labour, tools and equipment for the electrical work, as shown in the accompanying drawings and in the bill of quantities and specifications hereinafter described.

The electrical installation shall comply with the requirements of Indian Electrical Supply Act and Rules make there under and also with any other regulation, such as those made under Fire Insurance Act that may be applicable. The electrical installation shall be carried out only by authorized and qualified persons competent to undertake such work.

Contractor

The contractor shall be class 'A' licensed electrical contractor, possessing a valid electrical contractor's license in the State, employing licensed supervisors and skilled workers having valid permits as per the Regulation of Indian Electricity Rules and Local Electrical Inspector's requirements.

ISS	=	Indian Standard Specification
IEE	=	Indian Electricity Rules, 2003
BS	=	British Standard
BSCP	=	British Standard Code of Practice
HRC	=	High Rupturing Capacity
GI	=	Galvanized Iron
MS	=	Mild Steel
CI	=	Cast Iron

Definitions

The following abbreviations used in the bill of quantities specifications and drawings represent.

APLSTS	=	Aluminum conductor, Paper Insulated Lead Sheathed Double Steel Tape Armored & Serving
PVC	=	Polyvinyl Chloride
XLPE	=	Cross Linked Polyethylene
HT	=	High Tension
LT	=	Low Tension
A-Amp	=	Ampere
KV	=	Kilo Volts
PT	=	Potential Transformer
CT	=	Current Transformer
OCB	=	Oil Circuit Breakers
SFU	=	Switch Fuse Unit
ACB	=	Air Circuit Breaker
CFS	=	Switch Fuse Switch
MCCH	=	Moulded Case Circuit Breaker
MCB	=	Miniature Circuit Breaker
IC	=	Iron Clad
ICPTN	=	Iron Clad Triple Pole and Neutral
ICDP	=	Iron Clad Double Pole
DB	=	Distribution Board
KVA	=	Kilo Volts Ampere
KVAR	=	Kilo Volts Ampere Reactive
NC	=	Normally Closed

NO	=	Normally Open
		Standard Wore Gauge

Regulation & Standards

The installation shall conform generally to Indian Standard code of practice for electrical wiring installation IS 732. It shall also be in conformity with the Current Indian Electricity Rules and Regulations and requirements of the local electric supply authority in so far as these become applicable to the installation. Whenever this specification calls for a higher standard of materials and / or workmanship then those required by any of the above regulations, these specifications shall take precedence over the said regulations and standards.

In general, the materials, equipment and workmanship not covered by the above shall conform to the following Indian Standards (Latest Edition) unless otherwise called for:

1.	SWITCH GEAR	
a)	Requirements of AC Circuit breaker	IS 2516 (Part-I) Sec 1,2 & 3 Part-III)
b)	Switches and switch isolators above 1000 V but not exceeding 1.1 KVA	IS-4710
c)	Markings & arrangements for switch gear busbars main connection & auxiliary writing.	IS-375
d)	Specifications for normal duty air break switches & composite units for air break switches & fuses for voltage not exceeding 1000 volts	IS-4064
e)	Heavy duty air-break switches and composite units of air break switches and fuses for voltage not exceeding 100 volts	IS-4047
f)	Specifications for miniature circuit breakers	IS-8838
g)	Specifications for enclosed distribution fuse board & cutouts for voltage not exceeding 1000 volts	IS-2675
h)	Installation & maintenance of switch gear	IS-3072
i)	HRC cartridge fuse links 650 volts	IS-2208
2.	CABLES	
1.	Specification for PVC insulated (Heavy Duty) electricity cables (Part-I) for voltage upto 1100 volts.	IS-1554
2.	Specification for PVC insulated cables (for voltage upto 1100 V) (Part-II) with aluminium conductors.	IS-694
3.	3 pin plugs and socket outlets.	IS-1293
4.	Ceiling roses	IS-371
5.	General and lighting fittings. safety requirements for electrical	IS-1913
6.	Propeller type AC ventilating fans.	IS-2312
7.	Code of practices for earthing	IS-3043
8.	Glossary of term for electrical cable and conductors	IS-1885

9.	Code of practice for building (General) electrical installation	IS-1646
10.	Protection of buildings and allied structures against lightning	IS-2309
11.	Current Transformers	IS-2705 (Part I to III)
12.	Voltage Transformers	IS-3156 (Part I to III)
13.	Power Transformer	IS-2926-1977 (Part-I to IV)
14.	Shunt capacitors for power system	IS-2834
15.	Direct acting electrical indicating instruments	IS-1248

ISI marking of materials/ equipment is not necessary unless otherwise specifically called for.

Inspection & approval of the work by Local Authority

On completion of this work, the contractor shall obtain and deliver to the Architect the certificates of inspection and approval by the Electrical Inspector of Local Administration. The Architect shall have access to the manufacturers premises for inspection of any items of the tender for which contractor has to make arrangement with different manufacturers 15 days' notice to be given to the Architect/Consultant for the same.

Drawings

The drawings, specifications and bills of quantities shall be considered as part of this contract and any work or materials shown on the drawing and not called for in the specifications or vice versa, shall be executed as if specifically called for in both. The contract drawings indicate the point of termination of conduit runs and broadly suggest the routes to be followed. The work shall be installed as indicated on the drawings, however, any minor changes if found essential to co-ordinate installation of this work with other trades shall be made without any additional cost to the owners/employers. The data given herein and on the drawing is as could be secured but its complete accuracy is not guaranteed. The drawings and specifications are for the assistance and guidance of the contractor. The exact location, distance and levels, etc. will be governed by the space conditions. The contractor shall examine all architectural, structural plumbing and sanitary and air conditioning drawings before starting the work and report to the Architect / consultant any discrepancies which in his opinion appear on them, and get them clarified, he shall not be entitled to any extras for on missions or defects in electrical drawings or when they conflict with other work.

As Built Drawings

At the completion of the work and before issuance of certificate of virtual completion, the contractor shall submit to the Architect/consultant layout drawn on tracing film and at approved scale indicating the complete wiring as installed.

Foreman/Supervisor

The contractor shall employ a competent, licensed qualified full time electrical foreman/supervisor to direct the work of electrical installation in accordance with the drawings and specifications. The foreman/supervisor shall be available at all times on the site to receive instructions from the Architect/Consultant in the day to day activities throughout the duration of the contract. The foreman/supervisor shall correlate the progress of the work in conjunction with all the relevant requirements of the supply authority, the skilled worker employed for the work should have requisite qualification and should possess competency certificate from the electrical inspector of Local Administration.

Application for Electric Supply/Liaison

The contractor shall be responsible for filing and follow up of application for electric supply to the project. The contractor shall carry out all the liaison work required for obtaining electric supply commencing from filing of application. This liaison shall be deemed to be a part of this contract and no separate payment will be made on this account.

Samples

Sample of all materials that the contractor intends to use shall be mounted on wooden frame and submitted to the architects for approval. After the samples are approved the sample based shall be exhibited in the office of the site engineer of the Association's at the site of works.

SWITCH FUSE UNITS GENERAL

Switch fuse units shall be incorporated in the switch board panels wherever, specified. Switch board shall conform in all respects to IS: 4064 or BS: 3185. Switch fuse unit shall be suitable for 415 volts, 3-phase, 50 HZ AC supply.

Construction

The unit housing shall be of robust construction designed to withstand arduous conditions encountered in the electrical system. Sheet steel materials used for switch fuse shall be given a rigorous rust proofing treatment before it is fabricated and painted. Unit shall preferably have double break per phase in order to isolate fuse links when the switch is in 'OFF' position.

Fuses

The units shall contain fuse based and carriers for accommodating HRC fuse units. HRC fuse units of specified rating and conforming to IS: 2208 or BS: 88 shall be provided.

Operation Mechanism

The operating mechanism of the unit shall be crisp and positive in action with quick make, silver plated contacts. The operating handle shall be suitable for rotary operation unless otherwise specified. Position of the handle as 'ON' 'OFF' shall be clearly indicated, operating handle shall be of retractable type.

Shrouding

All the live parts inside the switch fuse unit shall be shrouded to prevent any accidental contact.

Terminals

All the terminals shall be liberally designed. All the units above 100 A shall be provided with integral cable sockets.

Interlocking

All switch fuse unit shall be provided with suitable interlock such that the donor of switch board panel shall not open unless the switch is in 'OFF' position. Provision for pad locking the switch in 'OFF' position shall also be provided.

MEDIUM VOLTAGE DISTRIBUTION BOARDS FOR POWER AND LIGHTING DISTRIBUTION

General

Distribution board shall be suitable for 415 volts, 3 phase AC supply or 230 volts single phase AC supply, as required. Distribution boards shall generally conform to IS-2675. However, the specifications hereinafter described shall take precedence over the above wherever this workmanship.

Type and Construction

Distribution board shall be of totally enclosed dust/vermin proof factory fabricated. The enclosure shall be made of the best quality sheet steel shall be treated with a rigorous rest inhibited process before fabrication. The distribution boards shall comprise of MCB unit as incoming and required number of miniature circuit breakers as outgoing shall have rating as specified on the drawings and schedule.

Bus bars

Suitable bus bars made of aluminium conductivity copper strips and mounted on non-hydroscopic insulating supports shall be provided.

Circuit Breakers

Miniature circuit breakers shall be of approved design and make. Circuit breakers shall be equipped with individually insulated and segregated terminals. The position of handle of the breakers shall clearly indicate the condition of breaker such as ON/OFF.

Testing

Distribution boards shall be tested at factory as per IS: 2675. The test shall include insulation test high voltage tests, etc. Original test certificate from the manufacturer shall be furnished.

MEDIUM VOLTAGE DISTRIBUTION SYSTEM (INTERNAL, LIGHTING & POWER WIRING)

General

Medium voltage distribution system shall be applicable for wiring 3 phase, 4 wire 415 volts, 50 HZ AC supply and single phase, 2 wire 240 volts, 50 HZ AC supply.

Regulation & Standards

The system shall be governed by the requirements of IS: 712 and IE Rules, IS standards and codes applicable for medium voltage distribution is also listed in standard specification No. 101.

PVC Conduit and Accessories

Installation of conduits

Open / surface conduit system: Wherever, specifically called for, surface conduit system shall be adopted. Conduits shall be run in square are and symmetrical lines. Before the conduits are in exact route shall be marked at site and approval of the Architect shall be obtained. Conduits shall be fixed be heavy gauge saddles, secured to suitable rawl plugs, at an interval are used, the saddles shall be provided on either side at a distance of 30cm from the centre of such screwed couplers and screwed accessories only. In long distance straight rungs of conduit inspection type couplers of running type couplers with jam nut shall be provided.

All the conduits opening shall be properly plugged with PVC stoppers/bushes.

Wherever conduits terminate into/point control box, outlet box, distribution boards, etc. conduits shall be rigidly connected to the box/board.

Recessed conduit system

All the conduits including, bends, unions, junction boxed etc. shall be cleaned, before they are fixed in position. Conduits which are to be taken in the ceiling slab shall be laid on the prepared shuttering work of the ceiling slab before concrete is poured. The conduits shall be properly threaded and screwed into sockets, bends, junction boxes, outlet boxes.

The conduits in ceiling slab shall be straight as far as possible to facilitate easy drawing of wires through them. Before conduits are laid in the ceiling the positions of outlet points, point control boxes, junction boxes, shall be set out clearly so as to minimize offsets and bends. Conduits recessed in walls shall be secured rigidly by means of steel hooks/staples at 0.6 mtr intervals. Before conduit is concealed in the walls, all chases, grooves shall be neatly made to proper dimensions to accommodate the required number of conduits. The outlets boxes, point control boxes, inspection and draw boxes shall be fixed as and when conduit is laid. The recessing of conduits in cover on the same. All grooves, chases etc. shall be refilled with cement mortar and finished upto the unfinished wall surface before plastering of walls is taken up by the general contractor. Where conduits pass through expansion joints in the building, adequate expansion fittings or other approved devices shall be used to take care of any relative movement. Wherever conduits devices shall be used to take care of any relative movement. Wherever conduits terminate into point control boards etc. with check nuts on either side of the entry to ensure electrical continuity.

Running joints in conduits wherever necessary shall be rigidly held in aligned position by a check nut tightened on running side. After conduits, junction boxes, outlet boxes etc. are fixed in position their outlets shall be properly plugged with PVC stoppers or with any other foreign material do not enter into the conduit system.

All conduits ends terminating into an outlet, draw box, junction box, point control boxes, etc. shall be provided with bushes of PVC or rubber. Necessary pull wires shall be inserted into the conduit for drawing wires and proper size earth continuity wire shall be run throughout the lengthy of the conduit with the earth wire being efficiently fastened to the conduit by means of special clamps. Copper clamps shall be sued for copper earth wire and GI clamps for GI wires. Earth continuity wires may also be brought inside the conduits.

Enclosure for Electrical Accessories

- Enclosure for electrical accessories such as switches, sockets, fan regulators etc. shall be mild steel conforming to IS: 5133-Part-I. The dimensions of the enclosures shall be as per clauses 3.1 of IS-5133. The wall thickness of enclosures shall not be less than 1.6mm. The enclosure boxes shall be provided with a minimum of four fixing lugs located at the corners for fixing the covers. All fixing lugs shall have tapped holes to take machines brass screws.
- Sufficient number of knock-outs of 32 mm / 25 mm/ 20 mm dia shall be provided for conduit entries. Enclosures shall be sufficiently strong to resist mechanical damage under normal service conditions. Provisions shall be made

for bonding the enclosures to the earth. The enclosures shall be adequately protected against rust and corrosion both inside and outside with suitable air drying paint. The phenolic laminate cover with beveled edges for mounting switches, sockets, etc. wherever different phase conductors are brought into the same enclosure, phase barriers shall be provided. Phase barriers shall be of MS.

WIRING CONDUCTORS

All wiring conductors shall be PVC insulated, single/stranded copper conductors of 1100 V grade. Wiring conductors shall generally conform to IS:694.

The current ratings for wiring conductors shall be based on the following parameters.

- Ambient temperature : 40°C
- Conductor temperature : 70°C

Wiring conductors shall be supplied in various colours for easy identification of wires. The wiring conductors shall be supplied in sealed coils of 91.44 mtr length. The wiring conductor shall bear manufacturer's trade mark, name, voltage grade etc.

Installation of Wiring Conductors/Cables

The wiring conductors shall not be drawn into the conduits until the works of any nature that may cause damage to the wires are completed. Before drawing the wires the conduits shall be thoroughly cleaned and drained, proper care shall be taken in pulling the wires. The installation and termination of wires shall be carried out with due regard to the followings:

- While drawing the wiring conductors, care shall be taken to avoid scratches and kinks which cause breakage of conductors. There shall be no sharp ends in the conduit system.
- Insulation shall be shaved off like sharpening a pencil.
- Strands of the wire shall not be cut for connecting to the terminals or lugs. The terminals shall have adequate cross section to take all the strands.
- Brass flat washers of large area shall be used for bolted terminated.

Wiring for power and lighting circuit shall be carried out in separate and distinct wiring system. Wiring for emergency system shall also be carried out in a separate and distinct wiring system. Balancing of circuits in a three phase system shall be arranged before the installation is taken up. The wiring system envisaged is generally shown on the layout drawings and line diagrams, however, a brief account of the general wiring system is given below:

Sub main wiring: Wiring from switch boards to the individual distribution boards.

Circuit wiring: This shall be included in point wiring.

The sub main wiring shall be either in 3-phase, 4 wire, or single phase, 2 wire system. Each sub main wiring circuit shall also have its own copper earth continuity wire. The number and size of copper earth continuity wire shall be as per BOQ.

The load per circuit shall not exceed 800 watts. The minimum size of conductor for wiring of lighting circuits shall not be less than 3/20 mm. Power wiring shall not have more than two sockets connected to one circuit.

The maximum number of various size conductors that could not be drawn into various sizes of conduits shall be as per table of IS-732 (Latest Edition) the wiring shall be colour coded for easy identification of phase and neutral generally the following colour coding may be adopted.

Phase	R	=	Red
	Y	=	Yellow/White
	B	=	Blue
Neutral		=	Black
		=	Green

SWITCHES, SOCKETS AND ACCESSORIES

General Requirements

Light control module switches shall be 6A rating for controlling upto four light points and 16A rating for more than four light points. Light control switches shall be of module type design suitable for flush mounting for general lighting. Wherever specifically called for tumbler type switches shall be used for surface mounting. Light control switch shall 3 mm thick phenol in laminated sheet covers.

All sockets 6A and 16A rating shall be flush mounting module type with control switches of module type design of the same rating as that of the sockets. All sockets outlets shall be of 3 pin module type. The base of the socket shall be high quality porcelain with pins made of brass alloy and plated with a noble metal. Socket module shall be provided.

Lamp Holders, Ceiling Roses, etc.

Accessories for light outlets such as lamp holders, ceiling roses, etc. shall be in conformity with requirements of relevant IS specifications. Only approved make of accessories shall be supplied.

Installation of Switches module, Sockets module and Accessories

All the switches shall be wired on phase. Connections shall be made only after testing the wire for continuity, cross phase etc. with the help of megger switches module sockets module fan regulator etc. shall be housed in proper sheet enclosures. The arrangement of switches and sockets shall be neat and systematic. Covers for enclosures accommodating module switches, sockets, etc (point control boxes) shall be of module type. For termination of wires PVC connections shall be provided wherever essential. For wall plug sockets, the conductors may be terminated directly

into the switches module and sockets module. The outlets, point control boxes etc. shall be set out as shown on the drawings. Before fixing these, the contractor shall obtain clearance from the Engineer/Architect with regard to their proper locations. The enclosures of sockets and 3rd pin of the socket shall be connected to the ground through a proper size earth continuity wires as laid out in standard specifications.

POINT WIRING

Point wiring shall commence from distribution board to outlet through point control board or switch. Circuit wiring from DB to switch board is included in point wiring and no separate circuit wiring will be paid by the employer.

Point wiring for lights, fans, module sockets, call bell etc. shall be carried out with copper conductor PVC insulated wires of 3/20 and 3/22 cross section as per BOQ. The point wiring shall be inclusive of 20 mm / 25 mm / 32 mm sheet steel conduits of standard and approved make (as specified) along with approved quality conduit accessories such as bends, inspection bend, reducers, junction boxes, etc. together with wiring accessories such as ceiling, roses, lamp holder connections, point control boxes (enclosure for electrical accessories) etc. point wiring shall be provided with 16 SWG copper earth continuity wires for earthing 3rd pin of light sockets and fan fixtures.

A max of 800 watts or 8 points whichever is lower shall be on one circuit.

TESTING AND ELECTRICAL INSTALLATION

Testing and installation shall be as per IS-1732-1963.

The insulation resistance shall be measured by applying between earth and the whole system of conductors or any section thereof with all fuses in places and all switches closed and except in earthed concentric wiring all lamps in position or both poles of the installations otherwise electrically connected together, where a direct current pressure of not less than twice the working pressure provided that it need not exceed 500 volts for medium voltage circuits. Where the supply is derived from the three wires (AC & DC) or a poly phase system, the neutral pole of which is connected to earth direct or through added resistance, the working pressure shall be deemed to be that which is maintained between the outer or phase conductor and the neutral.

The insulation resistance measured as above shall not be less than 50 divided by the number of points on the circuits that the whole installation shall be required to have an insulation resistance greater than one meg ohm.

Control rheostat heating and power appliances and electric signs may, if required, be disconnected from the circuit during the test, but in event the insulation resistance between the case of frame work and all live parts of each rheostats appliance and sign shall not be less than that specified in the relevant Indian Standard Specification or where there is no such specification shall not be less than half a meg ohm.

The insulation resistance shall also be measured between all conductors connected to one pole or phase conductor of the supply and all the conductors connected to the middle wire or the neutral or to the other pole or phase conductors of the supply and its value shall not be less than specified in sub clause

On completion of all electric installations (or an extension to an installation) a certificate shall be furnished by the contractor counter signed by the qualified supervisor under whose direct supervision the installation was carried out. The certificate shall be in prescribed form as required by the local electric supply authorities. One such recommended form is given in Appendix.

Testing of Earth Continuity Path

The earth continuity conductor including metal conduits and metallic envelopes of in the cases shall be tested for electric continuity and the electrical resistance of the same along with the earthing lead but excluding any added resistance or leakage circuit breaker measured from the connection with the earth electrodes to any point in the earth continuity conductor in the completed installation shall not exceed one meg ohm.

Testing of Polarity of non-linked Single Pole Switches

In a two wire installation a test shall be made to verify that all non-linked single pole switches have been fitted in the same conductor throughout and such conductor shall be labelled or marked for connection to an outer on phase conductor or to the non-earthed conductor of the supply.

In a three wire or four wire installation a test shall be made to verify that every non linked single switch is fitted in a conductor which is labelled, marked for connection to one of the outer conductor of the supply.

EARTHING FOR ELECTRICAL WORK

All non-current metal parts of the electrical installation shall be earthed as per IS: 3043. The materials to be used are described in the BOQ.

Earthing Conductors

All earthing conductors shall be of bare solid copper conductor and shall be protected against mechanical damage and corrosion. The connection of earth continuity conductors to earth bus and earth electrodes shall be strong and shall easily accessible. The earth strip shall be rigidly fixed to the walls. Conduits and cable by using suitable clamps made of non-ferrous metals compatible with the earthing conductor, the following earthing conductors are required to be used for various sections of the installations.

- All fixture lighting, fan and switch enclosures, lighting conduits shall be earthed with bare solid copper conductor of 16 SWG.
- Third pin power socket outlets upto 20A shall be earthed with bare solid copper conductor of 14 SWG.

All the sub mains and sub circuits shall be provided with earth continuity conductors as specified and connected to main earth bus. Earthing conductors for equipment shall be run from the exposed metal surface of equipment and connected to a suitable point on the sub main or main isolator earthing bus. All switch boards, distribution boards and isolators,

shall be connected through double earthing, double earthing, and conductor to the earth bus. Earthing conductors shall terminate at the equipment using suitable lugs, bolts, washers and nuts.

- All the single phase switch and DB's above 30 amp rating shall be earthed with one run of 10 SWG bare copper earth wire and above 30 A upto 63 amp with one run of 8 SWG bare copper earth wire as per BOQ.
- All the 3 phase switch / DBs upto 30 A rating shall be earthed with 2 runs of 10 SWG copper wires and above 30 A upto 63 amp with 2 runs of 8 SWG copper wires or as per BOQ.
- The computer points shall 1/18 PVC insulated copper wire or as mentioned in BOQ.
- All conduits, cables armoring etc. shall be connected to the earth all along their run by Earthing conductors of suitable cross sectional area. Water pipes, steel structural elements, cable trays/racks lighting conductors shall not be used as a mean of earthing an installation. The electrical resistance of earthing conductors shall be low enough to permit the passage of fault current necessary to operate a fuse/ protective device a circuit breaker and shall not exceed 2 ohms.
- All single phase wiring shall have one run of copper earth wire and three phase wiring shall be provided with two run of copper earth wires.

Earthing Electrode

Earthing electrodes shall be designed as per the requirement of IS:3943. The number and size of earth electrodes shall be calculated so that under fault conditions no electrode is loaded above its maximum permissible current density. The resistance of earth electrodes shall be as low as possible, the maximum allowable value being one ohm. Earthing electrodes of plate type be adopted GI earth electrode shall be used to arrest the lightning.

Plate Electrodes

Plate electrodes shall be made of copper plates of 3.15mm thick and 60x60 cm size. The plates shall be buried vertically in ground at depth of not less than 2 mtr to top of the plates, the plates being encased in charcoal to a thickness of 15cm all around. It is preferable to bury the electrodes to a depth where sub soil water is present. Earth leads to the electrodes shall be laid in a GI pipe and connected to the plates electrode with brass bolts, nuts and washers, GI pipe and connected to the plates electrode with brass bolts, nuts and washers, GI pipe of not less than 19 mm dia shall be placed vertically over the plates and terminated in funnel. The funnel shall be enclosed in masonry chamber of 30x30 cm dimensions. The chamber shall be provided with CI frame and CI cover. The earth station shall also be provided with permanent identification label/tag.

Precautions

Earthing system shall be mechanically robust and the joints shall be capable to retaining low resistance even after passage of fault currents. Joints shall be solders, tinned and double riveted in case of copper and joints shall be filled and double riveted in case of GI. All the joints shall be mechanically electrically continues and effective. Joints shall be protected against corrosion.

Testing

On the completion of the entire installation, the following tests shall be conducted.

a) Earth resistance of electrodes.

LT CABLES

LT cables shall be of copper/aluminium conductor PVC insulated PVC sheathed steel taps/ wire armoured construction. Cables supplied in smaller lengths or otherwise shall bear manufacturers identification mark at regular intervals.

LIST OF MATERIALS OF APPROVED MAKES/ BRAND

The contractor shall use materials in their works subject to inspection prior to dispatch, by Owner or his authorised representative of any materials, as deemed necessary in accordance with the following list. All materials not otherwise specified shall be in accordance with the latest Indian Standard Specification, where such exists and subject to prior approval of Owner/ Architect. The contractor shall be bound to offer sample of materials, which are claimed to be conforming to IS specifications for testing at an approved test laboratory as when directed by Owner/ Architect. Contractor shall purchase all materials from the makers or their authorized stockiest only. Necessary documentary evidences must be produced to the owner or their authorized representative on demand. Contractor shall be bound to supply items of any make of the items as per the choice of the owner/ Architect.

CIVIL WORKS

ANNEXURE - 2
LIST OF APPROVED MAKE OF MATERIAL
A) CIVIL WORK

Sr. No	Details of Materials / Equipment	Manufacturer's Name
1	Cement (OPC-(43 & 53G) & PPC)	a) Ultra tech b) ACC c) Birla Ambuja d) Zuari e) Chettinad
2	Ready Mix Concrete (RMC)	f) ACC g) Ultratech h) Lafarge
3	TMT Tor Steel	a) SAIL
4	Structural Steel	a) SAIL b) TISCO c) RINL
5	Rolled Steel Sections	a) SAIL b) TISCO c) RINL
6	Aluminum Sections	a) Jindal b) Indal c) Hindalco
7	Ceramic Tiles (Wall & Floor Tiles)	a) Johnson b) Nitco c) Kajaria d) Orient e) Somany
8	Industrial Tiles (Floor & Wall Tiles)	a) Johnson Endura or Approved Equivalent
9	Water Proofing Compound, Hardener & Construction chemicals	a) FOSROC b) CICO c) Pidilite d) Sika e) BASF
10	Anti termite chemical & Wood Preservatives	a) Thiodon b) De-nocil c) Bayer d) Vam Organic e) NOCIL f) Hindustan Insecticides g) Roffe Construction Chemicals

Sr. No	Details of Materials / Equipment	Manufacturer's Name
11	Float Glass & Mirror	a) Saint Gobain b) Asahi India c) Modi Glass
12	Glass Film	a) 3M b) Llumar
13	Wall Putty	a) Birla white
14	Paints (OBD, Emulsion paints, Synthetic enamel Paints)	a) ICI b) Asian c) Berger
15	Water Proof Cement Paints	a) Snowcem India Ltd. b) ICI c) Asian
16	Red Oxide & Pink Primers	a) ICI b) Asian c) Berger
17	PVC Water Stop Bars	a) Fixopan b) Syntex c) BASF d) FOSROC
18	Precast Cement Concrete Pavers & Tiles	a) Nitco b) Ultra c) Johnson d) Dura crete e) Basant Beton f) Astana
19	Texture Paint (Internal & External)	a) Oikos b) Spectrum c) Asian d) Berger e) ICI
20	Laminates	a) Greenlam b) Century ply c) Merinolam d) Ventura
21	Plywood & Board (Waterproof)	a) Duro b) Green ply c) Century ply d) Merinolam
22	MDF (Exterior Grade)	a) Duro b) Green ply c) Century ply
23	Natural wood Veneer	a) Greenlam b) Century ply c) Archidply d) Ventura

Sr. No	Details of Materials / Equipment	Manufacturer's Name
24	Flush door	a) Kitply 'swastik' b) Duro 'Tower' c) Archid d) Green ply
25	Hardware	a) Dorma b) Geze c) Ozone
26	Aluminum hardware	a) Ipsa or Approved equivalent
27	Fire Doors	a) Sukri b) Aadhunic c) Promat d) Shaktimet
28	Fire door Accessories	a) Briton b) Astroflame c) Geze
29	Fasteners	a) Hilti b) Fischer
30	Gypsum Board	a) India Gypsum b) Saint Gobain c) USG d) Lafarge
31	Self taping screws	a) Hilti b) Landmark
32	Welding Rod	a) ESSAB Ferro Speed plus b) D&H Norma
33	Tarfelt	a) MAK b) Bengal Bitumen c) Rishub Petrochemical
34	Adhesive	a) Fevicol SH b) Vamicol c) Araldite of Hindustan d) Laticrete
35	PU Paint	a) MRF (Aqua fresh) or approved equivalent
36	GRC Panels	a) Unistone b) Terra Firma

SANITARY AND PLUMBING WORKS

<u>Sl. No</u>	<u>Particulars</u>	<u>Make of Materials in order of preference SANITARY & PLUMBING WORKS</u>
1.	IWC/ EWC / Wash Basins	Parry ware/ Hindware or equivalent as approved by Engineer / Architect
2.	G I pipes	B class - Tata / Jindal / Surya Prakash/Hindustan
3.	G I Fittings	"R" Brand fittings/ ISI mark fittings Sun brand / CPVC Finolex
4.	CP Fittings	Jaguar (Continental range)/Essco from Jaguar or equivalent as approved by Engineer / Architect
5.	Gate Valves	Neta/ Zolata with ISI mark, MMI or CPVC finolex
6.	Plastic Tank multi-layered	Sintex/ Hygiene Tank (3 layer) Renu or equivalent as approved by Engineer / Architect
7.	Pumps	Texmo
8.	Kitchen Sink	Approved make/Deepali S.S. Gold

Electctrical Works

APPROVED MAKES LISTS **

1.	Conduit pipe painted inside & outside 16 SWG ISI marked.	<input type="checkbox"/> BEC <input type="checkbox"/> M-Kay <input type="checkbox"/> AKG <input type="checkbox"/> S.K. (E.R.W.)
2.	Conduit Accessories & Junction boxes	<input type="checkbox"/> All made out of 16G MS sheet <input type="checkbox"/> All made out of 14G MS sheet
3.	Wires PVC insulated and PVC sheathed FR/ FRLS /control wires (IS marked)	<input type="checkbox"/> Finolex <input type="checkbox"/> Havells <input type="checkbox"/> R.R. Kabel <input type="checkbox"/> KEI <input type="checkbox"/> Gloster
4.	PVC/XLPE insulated LT cables	<input type="checkbox"/> Universal <input type="checkbox"/> Gloster <input type="checkbox"/> KEI <input type="checkbox"/> Havells
5.	XLPE insulated HT cables	<input type="checkbox"/> Universal <input type="checkbox"/> Gloster <input type="checkbox"/> KEI <input type="checkbox"/> Havells
6.	Modular switches and sockets	<input type="checkbox"/> Legrand (ARTEOR) <input type="checkbox"/> ABB <input type="checkbox"/> L&T <input type="checkbox"/> MK Honeywell (wrap around plus)
7.	Flush type switch and sockets	<input type="checkbox"/> Anchor <input type="checkbox"/> Kinjal <input type="checkbox"/> SSK <input type="checkbox"/> Havells Reo
8.	Air circuit breaker	<input type="checkbox"/> L&T <input type="checkbox"/> ABB <input type="checkbox"/> Siemens <input type="checkbox"/> C & S
9.	Fuse switches Unit/Switch Fuse Unit & HRC fuses	<input type="checkbox"/> L&T <input type="checkbox"/> Siemens <input type="checkbox"/> Havells <input type="checkbox"/> C & S

10.	Distribution boards MCB	<input type="checkbox"/> Legrand <input type="checkbox"/> Siemens <input type="checkbox"/> ABB <input type="checkbox"/> C & S
11.	Loose wire box for distribution boards	<input type="checkbox"/> Legrand <input type="checkbox"/> Siemens <input type="checkbox"/> ABB <input type="checkbox"/> C & S
12.	Lighting fixtures & LED fixtures	<input type="checkbox"/> Philips <input type="checkbox"/> Crompton <input type="checkbox"/> Decon <input type="checkbox"/> Wipro <input type="checkbox"/> Havells
13.	Fluorescent/ CFL lamps/LED	<input type="checkbox"/> Philips <input type="checkbox"/> Crompton <input type="checkbox"/> Osram <input type="checkbox"/> Wipro
14.	Ceiling Fans / Wall Fan/ Cabin Fan	<input type="checkbox"/> Havells <input type="checkbox"/> Orient <input type="checkbox"/> Usha <input type="checkbox"/> Bajaj
14 (a)	Air Circulator	<input type="checkbox"/> Bajaj <input type="checkbox"/> Havells <input type="checkbox"/> Almonard <input type="checkbox"/> Crompton
15.	MCB's	<input type="checkbox"/> Legrand <input type="checkbox"/> ABB <input type="checkbox"/> Siemens <input type="checkbox"/> C & S
16.	MCCB	<input type="checkbox"/> Legrand <input type="checkbox"/> Siemens <input type="checkbox"/> L&T <input type="checkbox"/> ABB <input type="checkbox"/> C & S

17.	Exhaust fan	<input type="checkbox"/> Almonard <input type="checkbox"/> Alstom <input type="checkbox"/> Crompton
18.	Cable lug	<input type="checkbox"/> Ascon (Heavy gauge) <input type="checkbox"/> Jainson <input type="checkbox"/> Dowells
19.	Lamp Holder (Brass)	<input type="checkbox"/> Kay <input type="checkbox"/> SSK <input type="checkbox"/> Kinjal
20.	Safe trip/RCCB/ELCB	<input type="checkbox"/> Legrand <input type="checkbox"/> ABB <input type="checkbox"/> Siemens <input type="checkbox"/> C & S
21.	GI pipe `B` class	<input type="checkbox"/> Prakash Surya <input type="checkbox"/> Jindal
22.	Electrical Switchboards / feeder pillar/LT panel	<input type="checkbox"/> Milestone Switchgear Pvt. Ltd <input type="checkbox"/> Neptune Systems Pvt. Ltd. <input type="checkbox"/> Tricolite Electrical Industries
23.	Telephone wires/Telephone Cable / jelly filled telephone cables	<input type="checkbox"/> Finolex <input type="checkbox"/> Delton <input type="checkbox"/> Havell's <input type="checkbox"/> R.R. Kabel
24.	Telephone tag blocks	<input type="checkbox"/> Krone <input type="checkbox"/> Pouyet
25.	Telephone outlet	<input type="checkbox"/> MK Electric <input type="checkbox"/> Legrand (Mosaic) <input type="checkbox"/> Crabtree (Piccadilly)
26.	GI raceways	<input type="checkbox"/> Milestone Engineering <input type="checkbox"/> Legrand <input type="checkbox"/> MDS <input type="checkbox"/> Neptune Systems Pvt. Ltd. <input type="checkbox"/> MK
27.	PVC raceways	<input type="checkbox"/> Legrand <input type="checkbox"/> MK
28.	Panel meters	<input type="checkbox"/> L&T Rishab <input type="checkbox"/> AE <input type="checkbox"/> Secure <input type="checkbox"/> Conzerv

29.	Current transformer	<input type="checkbox"/> Gilbert Maxwell <input type="checkbox"/> Kappa <input type="checkbox"/> AE
30.	Selector switch	<input type="checkbox"/> L&T <input type="checkbox"/> Kaycee <input type="checkbox"/> Siemens
31.	Protective relays	<input type="checkbox"/> ABB <input type="checkbox"/> C & S
32.	Electronic Energy Meter	<input type="checkbox"/> Enercon <input type="checkbox"/> Anchor <input type="checkbox"/> L&T <input type="checkbox"/> HPL <input type="checkbox"/> Konzerv <input type="checkbox"/> Secure
33.	Changeover switch	<input type="checkbox"/> L&T <input type="checkbox"/> HPL
34.	Electronic ballast	<input type="checkbox"/> Philips <input type="checkbox"/> Wipro <input type="checkbox"/> Bajaj
35.	DLP plastic trunking	<input type="checkbox"/> Legrand <input type="checkbox"/> MK
36.	Geysers	<input type="checkbox"/> Recold <input type="checkbox"/> Venus <input type="checkbox"/> Usha Lexus <input type="checkbox"/> Sphere hot
37.	Smoke / Heat detectors	<input type="checkbox"/> Apollo <input type="checkbox"/> System Sensor <input type="checkbox"/> Agni
38.	Manual Call Point	<input type="checkbox"/> PRD <input type="checkbox"/> Systems-Tek <input type="checkbox"/> Simplex <input type="checkbox"/> System Sensor <input type="checkbox"/> Agni
39.	Response indicators	<input type="checkbox"/> PRD <input type="checkbox"/> Systems-Tek <input type="checkbox"/> Simplex <input type="checkbox"/> System Sensor <input type="checkbox"/> Agni

40.	Fire Exit Signs	<input type="checkbox"/> Systems-Tek <input type="checkbox"/> Simplex <input type="checkbox"/> Agni
41.	Fire Control Panel	<input type="checkbox"/> Systems-Tek <input type="checkbox"/> Morley <input type="checkbox"/> Agni
42.	Speaker/Hooter	<input type="checkbox"/> Systems-Tek <input type="checkbox"/> Philips <input type="checkbox"/> Agni
43.	Occupancy sensors/ movement sensor	<input type="checkbox"/> Legrand <input type="checkbox"/> Philips <input type="checkbox"/> Wipro
44.	Tower Light	<input type="checkbox"/> ligman <input type="checkbox"/> Simes
45.	HT/LT transformers	<input type="checkbox"/> ABB <input type="checkbox"/> Schneider <input type="checkbox"/> CGL (Crompton Greaves Ltd.)
46.	HT SF-6 circuit breakers/VCB	<input type="checkbox"/> Siemens <input type="checkbox"/> ABB <input type="checkbox"/> CGL
47.	Programmable Logic Controller(PLC)	<input type="checkbox"/> Siemens <input type="checkbox"/> Allen-Bradley <input type="checkbox"/> Schneider
48.	Earthing (Chemical Earthing) Plate Earthing	<input type="checkbox"/> JMV <input type="checkbox"/> As per CPWD Norms
49.	Octagonal Pole	<input type="checkbox"/> Bajaj <input type="checkbox"/> Crompton <input type="checkbox"/> Phillips
50.	11 kV HT panel I/c relay	<input type="checkbox"/> CGL <input type="checkbox"/> Schneider <input type="checkbox"/> ABB
51.	Control Relay Panel	<input type="checkbox"/> CGL <input type="checkbox"/> Schneider <input type="checkbox"/> ABB

52.	Lightning Arrestor	<input type="checkbox"/> ABB <input type="checkbox"/> Alltec <input type="checkbox"/> JMV
53.	Temp. Gauge	<input type="checkbox"/> Guru
54.	Gate Valve	<input type="checkbox"/> Leader <input type="checkbox"/> Sant
55.	Electrical Backup	<input type="checkbox"/> Spare hot <input type="checkbox"/> Racold
56.	PVC Tank	<input type="checkbox"/> Syntex <input type="checkbox"/> Polycon
57.	Thermostat	<input type="checkbox"/> ISI Marked
58.	Flat Collector Plate	<input type="checkbox"/> Solocrome <input type="checkbox"/> Tata BP <input type="checkbox"/> Racold
59.	S.S Sheet	<input type="checkbox"/> Jindal / National
60.	HT/LT cable joints (Straight through/outdoor/indoor)	<input type="checkbox"/> 3M <input type="checkbox"/> Denson <input type="checkbox"/> GSeal
61.	Alternator	<input type="checkbox"/> STAMFORD
62.	DG Set	<input type="checkbox"/> Sterling & Wilson <input type="checkbox"/> Caterpillar <input type="checkbox"/> Commins Power Generation

NOTE: - ARCHITECT / YHAIRRESERVE THE RIGHT TO CHOOSE FROM ANY OF THE BRAND MENTIONED ABOVE OR EQUIVALENT TO IT.

 **COMPANY / FIRM DETAILS**

1	(1) Name of the firm	
	(2) TIN NO & PAN NO	
	(3) Whether Proprietor/Partnership/Private LTD Co/Public LTD Co	
2	Address :	
3	Telephone Number Office	
	Residence	
	Fax	
	Email	
	Name of Authorized Signature/Power of Attorney holder	
4	Month and year in which the firm was established.	
5	Particulars of old firm (if present firm is new) if main partners were working as construction contractors in some other name in the past (The partnership deed of old firm is to be enclosed)	
	Particulars of sister construction firms (if any)	
7	(i) What is the constitution of the firm viz Sole Proprietor, Partnership, Pvt. Ltd., Public Ltd., etc	
	(ii) Enclosed copy of partnership deed, articles of association, or affidavit, in case of sole proprietorship as per Annexure III	
8	Has the applicant or his partners or directors been black listed in the past by any Central/ State or Governmental organizations	
9 i)	Annual turnover for the last three years (enclosed documentary evidence or proof to support figures) as per Annexure II	Year Rs. In Lakhs
		2022-2023
		2021-2022

		2020-2021
ii)	What evidence or proof is enclosed to support the amounts of yearly turnover	
iii)	Details of submission of income tax returns	
10.i)	Name and complete postal address of complete postal Name and Bankers	
ii)	Enclose solvency certificate indicating amount	
iii)	Bank Guarantee limit of various banks (in lakhs)	
		Rs.
		Rs.
		Rs.
	TOTAL (in Lakhs)	Rs.
11	Fill in and enclose list of tools & plants as per Annexure-IV enclosed	
12	Fill in enclosed Annexure I giving full particulars about major works completed during the past three years	
	Note: List of only those works which were similar in nature and carried out by the firm requesting for enrolment is to be given	
13	Enclose certificates regarding performance of the contractor from the owner / companies / Departments.	
	Work in progress	
i)	List full details of major work on hand given	
ii)	Enclose copies of work orders for such works	
15	Whether full information regarding permanent –technical staff employed given in Annexure-V	
16	Any other information the applicant might like to give	

ANNEXURE-I

LIST OF MAJOR SIMILAR NATURE WORKS COMPLETED DURING LAST THREE YEARS

Sl.No	Name and complete postal Address of			Order			Value of Works as Per final Bill Rs. In Lakhs	Commencement of work month & year	Completion of work Month & year	Penalty Levied For Delay Of Completion, if any
	cc	Place of work & Nature of work	Owner	Authority Under Whom Work was Carried out	Ref. No & Date	Contract Amount (Rs. One Lakhs)				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

DETAILS OF THE TURNOVER

Details in last **THREE** years

Year to Year	Name of the work	Work Executed	Payment Received (Rs. LAKHS)
2022-23			
2021-22			
2019-20			

SIGNATURE AND SEAL OF THE BIDDER

(CONSTITUTION OF FIRM – WHETHER SOLE PRORIETORSHIP/ PARTNERSHIP/ LTD.CO/ OTHER)

DETAILS OF CONSTITUENTS

Sl. No.	Name of sole partner or Director/other High Official	Age	Share	Technical experience in Years			Whether power of attorney Holder
1	2	3	4	5			6

SIGNATURE OF CONTRACTOR

PARTICULARS OF TOOLS AND PLANT

Sl. No	Item (2)	Specification (3)	Quantity (4)	Estimated Value (5)	Remarks (6)
1.	Shuttering plates				
2.	Shuttering wooden planks				
3.	Wooden props				
4.	Steel props				
5.	Concrete mixers				
6.	Concrete vibrators i) Petrol driven ii)Elect driven				
7.	Tower hoist				
8.	Track				
9.	Welding elements				
10.	Pump sets				
11.	Floor-polishing machines				
12.	Cranes				
13.	others				

SIGNATURE OF CONTRACTOR

PARTICULARS OF PERMANENT TECHNICAL STAFF

Sl. No	Name	Designation	Age	Academic Qualification	Service with the firm	Details of Experience Year to year
1.	2	3				

SIGNATURE OF CONTRACTOR