

INDIAN INSTITUTE OF ASTROPHYSICS

**TENDER DOCUMENT FOR PROJECT: “RENOVATION OF HOSTEL
BLOCK AT SECOND FLOOR OF STORES BUILDING AT I.I.A,
BANGALORE”**

OWNER

INDIAN INSTITUTE OF ASTROPHYSICS
Koramangala,
Bangalore-560034, India
Phone : +91 080 2553 0672

ARCHITECTS & PRIME CONSULTANTS

MATHEW & GHOSH ARCHITECTS PVT. LTD.
#4b, TEMPLE TREES ROW, VIVEKNAGAR
P.O., BANGALORE-560 047
T/F :25520824 / 25506134

**LAST DATE AND TIME FOR SUBMISSION OF TENDER IS 30.08.2011 UPTO
1500 Hours**

PLACE OF SUBMISSION:

**The Director,
INDIAN INSTITUTE OF ASTROPHYSICS,
Koramangala,
Bangalore - 560034, India
Phone: + 91 080 2553 0672-76
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Part - I

- **Notice Inviting Tender**
- **General Conditions of Tender**
- **Special Conditions of Contract**
- **General Specification of Works**



INDIAN INSTITUTE OF ASTROPHYSICS
2nd BLOCK, KORAMANGALA, SARJAPUR ROAD,
BANGALORE-560 034

PUBLIC TENDER NOTICE NO: 08/IIA/Civil/RFHHostel?2010-11

DATED:05.08.2011 (TWO BID SYSTEM)

The Indian Institute of Astrophysics invites sealed item rate tenders on behalf of the Director in “Two part” in the prescribed form from appropriate registered Contractors in state PWD, CPWD, MES, Scientific Institutions and Private Body Competent contractors who have executed works of similar nature.

| Sl. No | Name of the work | Estimated cost in Rs. | Time for completion | EMD Rs. | Cost of tender document Rs. |
|--------|---|-----------------------|---------------------|------------|-----------------------------|
| 1. | Renovation of Hostel Block at Second floor of Stores Building at I.I.A, Bangalore | 75.58 Lakhs | 06 Months | 1.50 Lakhs | 1000.00 |

The Tender Document can be viewed and downloaded from our website www.iiap.res.in/tenders.htm. Interested tenderers may at their option download the same from our website (as “NO” hard copies of Tender document is/are provided from this office) and submit their offers along with EMD (refundable) & Tender fee (non-refundable) prescribed therein, only in the form of Demand Draft drawn in favour of the Director, Indian Institute of Astrophysics. However, your offers (both Technical & Commercial/price bids) should be superscribed in separate envelope mentioning the tender notice No. and date with date of opening. Both the sealed Bids shall be submitted in a sealed envelope addressed in favour of Director, Indian Institute of Astrophysics, Koramangala, Bangalore – 560 034.

The offers should be submitted in two sealed covers one superscribed “**Technical Bid**” and other “**Price Bid**”. Both covers shall be put in another sealed cover superscribing the envelope with “**Tender for Renovation of Hostel Block at Second floor of Stores Building at I.I.A, Bangalore and Notice No. and due date**”. The last date for submission of bid is 30.08.2011 on or before 3:00 pm. The Technical bid will be opened at 3.30 pm. on the same day in the presence of attending tenderers or their authorized representatives

After opening of Technical bid, the capability and suitability of the bidders shall be evaluated and Price bid of the qualified bidders be opened in the presence of the attending bidders. The date of opening of Price bid will be informed to the qualified bidders.

The Director, IIA reserves the right to accept or reject any or all tenders without assigning any reason thereof.

Administrative Officer
For Director

INSTRUCTIONS FOR FILLING THE TENDER FORM

The document comprises of following sections with respective contents shall individually and collectively constitute the tender document:

Part – I: Notice inviting tender, Instructions for filling up the tender, Tender form, General conditions of contract and special conditions of Contract

Part – II: Schedule of quantities and abstract summary sheet

Part – III: Drawings of Architectural, PHE and Electrical works

Technical specifications are the detailed information, general instructions for carrying out the works which will be supplied to the selected contractor for acceptance during the execution of agreement. The contractor shall submit with due signature and stamping, which will become part of the contract.

For the schedule of quantities, in Part: II, the rates shall be written (after carefully studying the technical specifications and detailed specifications and drawings) clearly, legibly in figures and in words. In case of any doubts or discrepancy, the amount in words will be treated as correct. Amounts should be entered after carefully checking up the unit adopted for the item.

List of drawings accompanying the tender documents is furnished in Part – III. All tender drawings form an integral part of tender and the details shown on the drawings are complementary to the schedule of quantities and vice versa. Rates quoted must and be deemed to have taken note of all the drawings, Technical specifications of items of works and Schedule of quantities.

The tenderer should certify that he has studied the works at site and acquainted himself with the position with regard to construction, availability of material, power, water, labour etc., required for work.

The tenderer should submit a declaration disclosing all works for which he has already entered into contract, the value of work that remains to be executed in each such contract, while submitting the tender and details of any disputes pending in respect of any such contract whether in a court or any other forum or under discussion/negotiation with the other party to such contracts.

Every tenderer should furnish along with his tender an income tax clearance certificate and brief information regarding the income tax circle, ward and the district in which he is assessed by income tax, the reference no. of assessment and the assessment year, as also details of any attachments, prohibiting order, furnishing proceedings in connection there with. The other details like PAN, VAT etc., shall also be submitted.

The tenderer are to pay the amount of earnest money as specified in the tender notice separately along with the tender. Tenders for which earnest money deposit has not been received separately shall be returned unopened / opened.

Certified copies of registration certificates, partnership deed and power of attorney or article of agreement in case of limited companies will have to be furnished along with the tender to render the tender eligible for consideration.

Should the tenderer noticed any discrepancy or error in any statement made, or quantities or units shown against items, he shall immediately bring it to the notice and obtain clarifications before submitting the tender. The tender shall be recorded as such in the covering letter to the tender, failing which the owner shall have right to ask the contract to execute the work according to the statement made or quantities or units shown in the tender, without any compensation. ***The tenderer shall visit our website before the submission of the tender to know or confirm about the updated information about the tender and as a final check.***

Every tender should furnish along with his tender proof of his /their technical and organizational competence to execute the works of the above nature and magnitude adequately supported with testimonials and the certificate from the organizations for which they have executed similar works in the past 5 years.

The tenderer should submit the following additional documents:

- a. Complete bar chart worked out based on the period of construction.
- b. Site organizational chart giving details of all staff to be deployed including names and bio-data of managerial and engineering staffs for the execution of this project.
- c. A detailed list of plant and machinery and shuttering materials proposed for deployment should be submitted along with the offer.
- d. A list of subcontractors (if any) should be enclosed along with the offer.

If the tender is made by an individual it shall be signed by him and his full name and complete address shall be given. if it is made by a partnership firm, it shall be signed in the name of the firm by a partner of the firm who shall sign his own name and give a name and address of each partner of the firm and attach a copy of 'power of attorney' with the tender authorizing him to sign on behalf of other partners. A certified copy of the 'partnership deed' in case of registered firms and notarized copies in other cases shall also be submitted along with the tender. In case the tender is made by or on behalf of a company incorporated under the companies act, 1956, it shall be signed by the DIRECTOR or duly authorized on his behalf and shall include a copy of the 'power of attorney' with the tender. A certified copy of the registered articles of agreement shall also be submitted along with the tender.

Following are the Qualifying Criteria:

1) Should have completed at least one work costing not less than Rs.70.00 lakhs during pervious 3 years for Government / Semi Government/Reputed corporate clients.

Or

Three similar works each costing not less than Rs 30.00 lakhs including Civil & Electrical, during pervious three years for Government / Semi Government/Reputed corporate clients.

The intending Bidders shall furnish the relevant experience certificates duly signed by the competent Authority not less than the rank of Executive Engineer.

2) The tenderers should submit latest Audited Balance Sheet duly certified by the Chartered Accountant and also the latest TDS Certificate indicating the Income Tax deducted by the client for the execution of similar works.

The tender of any tenderer not complying with any of the above said instructions will be rejected.

Tenderers are advised to go through all the documents in connection with this carefully. The duly filled and completed (in all respects) tender documents shall be deposited to The Director, Indian institute of Astrophysics, Koramangala, Bangalore - 560034, before the time and date indicated in the tender notice. If any tender received after the deadline will be returned unopened to the bidder and the Institute will not take any responsibility for the reason whatsoever.

Tenderers shall deposit the following in a sealed envelope:

- a. Earnest money deposit for the amount and in the manner specified in a separate envelope.
- b. Tender drawings duly signed with seal by the contractors.
- c. Tender books duly signed with seal by the contractor.
- d. The submittals mentioned at various part of the documents.

Tenders not properly filled are mutilated or with incorrect, inaccurate calculations are generally or generally not complying with the conditions will be rejected.

The sealed tenders will be opened on the date and the time mentioned in the tender notice in the presence of the tenderers who wish to attend. If the office happens to be closed on the date of the tender receipt, the tenderers will be received and opened and next working day at the same time / venue.

Earnest money deposit shall be submitted along with the tender amounting to Rs.1.50 Lakhs (Rupees One Lakh Fifty Thousand only) as mentioned in the tender notice in the form of demand draft **in favour of the Director, Indian institute of Astrophysics, Bangalore. The tender document is to be downloaded from website, the cost of the tender documents shall also be paid separately in the form of DD along with the EMD.**

E.M.D of the unsuccessful tenderers will be returned from within 90 days from the last date stipulated for submission of tenders. E.M.D 's shall be forfeited if the contractor selected for the work fails to sign the prescribed agreement or fails to start the work within 10 days of order to commence the work. The E.M.D of the successful tenderer will be adjusted towards retention money.

The successful tenderer should furnish a performance bond in the form of a Bank guarantee from a scheduled bank as per the approved format for 5% of contract value within fifteen (15) days of date of award of work. The bank guarantee shall be in the format as attest and valid up to 13 months from the start date of the project.

The tender shall remain valid for acceptance for a period of **NINETY DAYS** from the last date for submission of the tenders. If any tenderer withdraws his tender before the said period or makes any modifications in terms and conditions of the tender, then EMD amount shall be entitled to forfeit herein before referred to.

Every tenderer is expected to inspect the site of the proposed work and acquaint himself with the site conditions approaches, availability of raw materials, geological and weather conditions etc. before quoting his rates. He must go through all the drawings, specifications and other tender documents.

The quoted rate must be firm and shall include the cost of transportation of materials to the site, all taxes such as Sales tax, Excise duty, Octroi, Works contract tax, ESI/PF and any other statutory levy etc., and the fixing or placing in position for which the item of work is intended to be operated. The rates quoted by the contractor shall remain firm throughout the contract period and there shall be no upward revision of the rates quoted by the contractor for any reason whatsoever. It should be clearly understood that any claims for extra sales tax, excise duty, Octroi and any other statutory levy taxes etc. shall not be entertained in any case whatsoever.

No part of the contract shall be sub-let without the written permission nor shall transfers be made by the power of attorney authorizing others to carryout the work or receive payment on behalf of the tenderer.

Time is deemed to be the essence of this contract. The construction period shall be **06 (SIX) months**. The contractor shall draw a detailed schedule of program in the form of bar/ pert chart of the whole work, within **THREE** weeks of the award of work.

Any delay, reckoned on the basis of the bar or pert chart shall attract a penalty of $\frac{1}{2}\%$ of total value of works for every week delay upto a maximum of 5% on the portion of the works delayed.

Water for the construction purpose shall be arranged by the contractor. If Institute supplies the water at convenient point, the charges will be recovered at 1% on the value of work then in the running / final bill. The contractor should make his own arrangements in case supplementary supply points are required for water.

The power required for construction purpose shall be arranged at own risk of the contractor and the consumption charges from the day of connection till handing over the premises shall be borne by the contractor.

The mobilization advance shall be recovered through payments due to the contractor against running account bill on pro-rata basis subject to adjustment in pre final bill for complete recovery. The bank guarantee furnished by the contractor shall be returned after complete recovery has been made of the advance amount from the running bills, unless such guarantee has been enforced for breach of aforesaid condition.

Check List for submission of Technical Bid:

The organizations/agencies shall need to enclose the following documents in complete with Expression of Interest.

1. Profile of the firm/firms
2. Memorandum of Understanding (MoU) of Consortium/Partnership details like partnership deed etc., if applicable.
3. Documents regarding the registration of the firm with the government and also with other institutions/authorities, if any.
4. Organization chart.
5. List of Technical personnel with their qualification, specialization, total experience etc.,
6. List of similar works executed and works under progress with value of the project.
7. Photographs of the major works executed/executing by the firm.
8. Appreciation/reward letter, if any, from the clients.
9. Financial details of the firm including the audited balance sheets.
10. Any additional document/papers which the organization wishes to submit.

This notice inviting tenders will form part of the tender document and the agreement executed by the successful tenderer.

I / we hereby declare that I/we have read and understood the above instructions and the terms and conditions mentioned above are binding on me/us.

Place:

SIGNATURE OF THE TENDERER

Date:

PROJECT SUMMARY

- 1 Date of commencement of works : **10 days** on receipt of work order
- 2 Period of completion of works : **06 (SIX) months** from the date of work order
- 3 Retention money : **5% (FIVE percent) in every RA bills**
- 4 Release of retention money : **50% of retention** in final bill and the balance after completion of 12 months DLP.
- 5 Defect Liability Period (DLP) : **Twelve months** from the date of virtual completion
- 6 Certification of the running bills by the architects : **within 15 working days** from the date of the bill submitted by contractor along with the measurement book.
- 7 Passing of the running bills payment by the owner : **within 15 days** from the date of the architect certifies for payment
- 8 Period of final bill Measurement : **Three months** from the date of virtual completion and valuation
- 9 Period of final bill certification by the architects : **within NINETY days** from the date of final bill submitted
- 10 Penalty : **½% of total value of works** for every week delay up to maximum of 5%
- 11 Interim bill value : Minimum value Rs. **TEN LAKHS**
- 12 Extra items : Cost of material and labour + **15% for profit and overheads** including all taxes or mutually agreed rates considering market rates.
- 13 Passing of the final bill payment by the owner : **within THIRTY days** from the date of architect certification for payment
- 14 Escalation : **No escalation will be considered** till completion of the project

To,

The Director,
Indian institute of Astrophysics,
Koramangala,
Bangalore - 560034

Dear Sir,

Sub: Tender for project : “Renovation of Hostel Block at Second floor of Stores Building at I.I.A, Bangalore”

With reference to the tender invited by you for the above proposed work, I/we write this after having:

- a). Examined the designs, drawings, detailed specifications to tenders, agreement, the general conditions of contract and special conditions of contract annexed there to (here in after called ‘the contract documents’) relating to construction.
- b). Visited and examined the site of the proposed work and acquired the requisite information relating to or affecting the tender. We are agreed to the decisions of the pre bid meeting by signing and stamping the minutes of the meeting which is enclosed along with this tender.

I/We undersigned hereby offer to construct the proposed work in strict accordance with the contract document for the consideration to be calculated in terms of the priced schedule of quantities.

I/We undertake to complete the whole of the works as per the attached schedule from the date of issue of intimation by you that our tender has been accepted and up on being permitted to enter site. I/We further undertake that on failure, subject to the conditions of contract relating to extension of time, I/We shall be agreed ‘Liquidated damages’ for the period during which the work shall remain incomplete.

I/We hereby deposit with you as earnest money **Rs. 1.60 LAKHS (RUPEES ONE LAKH SIXTY THOUSAND ONLY)** [carrying no interest] and I/We fail to take up the contract when called up on to do so.

Our Bankers are

1.

2.

Place:

Date:

Signature of the tenderer

Name of the partners of the firm

Or

Name of the person having power of attorney to sign the contract

CONDITIONS OF CONTRACT

1. DEFINITIONS :

The following terms shall have the meaning hereby assigned to them except where the context otherwise requires:

Owner/Employer: means **the DIRECTOR, Indian Institute of Astrophysics**, Koramangala, Bangalore: 560 034, India.

Architects / Consultant : means M/s **MATHEW & GHOSH ARCHITECTS PVT. LTD.** #4b, TEMPLE TREES ROW, VIVEKNAGAR P.O., BANGALORE-560 047

Contractor: shall mean the successful tenderer to whom the contract has been awarded.

Sub-Contractor: shall mean the person named in the contract for any part of the work or any person to whom any part of the contract has been sublet with consent in writing by the Architect and or Employer and the legal representatives, successors and assigns of such person.

Contract: shall mean and include the Notice inviting tender, Tender form, General conditions of contract, General specifications, Technical specifications, Schedule of quantities with detailed specifications, Drawings, Work order and / or any other correspondences of negotiations.

Site : The site shall mean the location at the property IIA, Koramangala, Bangalore.

Work: shall mean and include all materials and labour necessary to construct in full compliance with the requirements of the Contract Document.

Contract Price: shall mean the sums referred to in the formal agreement, if any or the work order.

Defects Liability period : shall mean any defect developed within twelve (12) months period after completion of the project will have to be rectified by the contractor at their own cost and in case the defects are not rectified by the contractor, the architect or **Indian Institute of Astrophysics** shall get the work done by outside agencies at the risk and cost of the contractor.

Vendors: shall mean and include all suppliers, material, men, contractors, sub-contractors, nominated sub-contractors and trade contractors engaged for later phases of the Project, when such Vendors are having Contract with the Owner.

Virtual completion : shall mean when the work has been completed in every respect in conformity with the Contract Documents and are ready and fit for the intended purpose, complete with all systems and services having been tested and commissioned.

Written notice : shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at and a written delivery receipt obtained, or if sent by registered mail to the last known business address.

2. ASSIGNMENT AND SUB-CONTRACTING:

2.1 ASSIGNMENT :

The contractor shall not assign the contract or any part thereof or any benefit or interest therein or there under without the written permission of the Architects.

2.2 SUB-CONTRACTING :

The contractor shall not sub-contract the whole of the contract. The contractor shall not subcontract any part of the works without the written consent of the Architects and such consent, if given shall not relieve the contractor from any liability or obligation under the contract and the contractor shall be responsible for the acts, defaults & neglects of the sub-contractor, his agents, employees or workmen as fully as if they were the acts, defaults or neglects of the contractor or his agents, servants, or workmen.

3. DRAWINGS :

3.1 ISSUE OF DRAWINGS :

Drawings approved for construction will be issued to the contractor progressively during the contract period and the contractor shall arrange for the execution of the works and the procurement of materials accordingly. The contractor shall give adequate notice in writing to the Architects or his representative of any further drawings or specifications that may be required for the execution of the works or otherwise under the contract.

3.2 COPIES OF DRAWINGS TO BE KEPT AT SITE :

Two Copies of the drawings furnished to the contractor as aforesaid shall be kept at the site and the same shall at all reasonable times be available for inspection and use by the Architect or his representative and by any other person authorized by the Architect in writing.

3.3 ISSUE OF FURTHER DRAWINGS AND INSTRUCTIONS:

The Architect shall have full power and authority to supply to the contractor from time to time through his representative, during the progress of the works such further drawings and instructions as shall be necessary for the purpose of proper and adequate execution and maintenance of the works and the contractor shall carryout and be bound by the same.

3.4 OWNERSHIP OF DRAWINGS:

All drawings supplied to the contractor are deemed to be the property of the Architects. The contractor agrees both on behalf of himself & his employees, & sub-contractors, whether during or after completion of the contract not to divulge or use, except for the purpose of this contract, any information contained in the drawings.

3.5 EXECUTION AS PER DRAWINGS:

The contractor must not vary or deviate from the drawings in any respect while executing the work or executing any extra work of any kind whatsoever unless authorized by the Employer/Architect.

3.6 PLANS AND DRAWINGS TO BE SUBMITTED BY THE CONTRACTOR :

The contractor shall submit the following information in triplicate to Architects for approval within the time stipulated each item below:

- a) A general tentative layout plan of construction plant and equipments for the execution of work within 7 Days from the date of receipt of work order.
- b) Drawings or prints showing the location of major plants and other facilities which he proposes to put up at the site, including any changes in the general layout, at least 7 Days prior to the commencement of the respective work.
- c) Layout & details of temporary works that the contractor wants to carry out to fulfill his obligation under the contract.
- d) Within three weeks upon award of contract the Contractor shall submit to the Architect's for approval a detailed consolidated services co-ordination plan(s) showing the various services including false ceiling layout, HVAC, PHE, Fire, Process piping lines, Electrical lines, Structural layout etc., on Autocad drawing. The above drawing(s) shall be based on the design documents prepared by the Architects and Consultants.

Within 15 Days the Architects will give their approval / comments sufficient to proceed with the work or objections/instructions to the contractor based on which the drawings shall be revised and submitted again for approval by the contractor.

All these plans and drawings submitted by the contractor and approved by the Architects shall become part of the contract.

3.7 ROYALTIES AND PATENT RIGHTS:

All royalties or other sums payable in respect of the supply and use in carrying out the work as desired by or referred to in the schedule of quantities of any patented articles, process or inventions shall be deemed to have been included in the contract sum and the contractor shall indemnify the Employer from and against all crimes, proceedings, damages, costs and expenses which may be put by reason of the contractor infringing or being held to have infringed any patent rights in relation to any such articles, process and inventions.

4. GENERAL OBLIGATIONS:

4.1 INSPECTION OF SITE ETC., BEFORE SUBMISSION OF TENDER:

The contractor shall inspect and examine the site and its surroundings, and shall satisfy himself before submitting his tender, as to the nature of the ground, form and nature of the site, the quantities and nature of work and materials required for the completion of the works, the means of access to the site, the local labour conditions, the accommodation he may require and in general shall obtain all necessary information as to the risks, contingencies and other circumstances which may influence or affect his tender.

4.2 SUFFICIENCY OF TENDER:

The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices stated in the priced bill of quantities and the schedule of rates and prices, if any, with tender rates and price shall cover all obligations under the contract and all matters and things necessary for the proper completion and maintenance of the work.

4.3 CLARIFICATION BEFORE SUBMITTING TENDERS :

Should the contractor notice any discrepancy or error in the statement made, or quantities or units shown against items, he shall immediately bring it to the notice of the employer/Architects and obtain the clarification before submitting the tender. The tender shall be based on such clarifications received and shall be recorded as such in the Covering letter to the tender, failing which the Employer/Architect shall have the right to ask the contractor to execute the work according to the statement made or quantities or units shown in the tender, without any compensation.

4.4 RATES QUOTED FOR FINISHED WORK :

The rates quoted in the tender by the contractor must be for the finished work as per the drawings and specifications.

4.5 LOCATION OF WORK :

Unless specifically mentioned in the item, the work described therein may be at any location or elevation.

4.6 TENDERS OPEN FOR :

The tender shall remain open for acceptance for a period of **Ninety (90) Days** from the date of submission of the tender.

4.7 COMMENCEMENT OF WORK :

The contractor shall commence the work at site, within 13 Days of issue of formal work order & handing over of the site or being advised by the Employer unless otherwise specified, and shall proceed with the same with due expedition.

4.8 PROGRAMME OF WORK:

Soon after the award of contract, the contractor shall submit to the Architect for his approval a program to match with the planned completion of the whole job showing the order of procedure and method in which he proposes to carryout the works and shall whenever required by the Architect or Architect's representative furnish further detailed program & particulars in writing of the contractor's arrangements for carrying out the works & of the constructional plant & temporary works which the contractor intends to supply, use or construct as the case may be. The submission to and approval, if any, by the Architect or his representative of such programs or particulars shall not relieve the contractor of any of his duties or responsibilities under the contract.

4.9 CONTRACTOR'S EMPLOYEES :

The contractor shall provide and employ at site in connection with the execution and maintenance works.

- a) Only such technical assistance as are skilled and experienced in their respective fields and such sub agents, foreman and leading hands as are competent to give proper supervision to the work they are required to supervise and,
- b) Such skilled, semi-skilled and un-skilled labour as is necessary for the proper and timely execution and maintenance of works.

4.10 REMOVAL OF WORKMEN:

The Architect/Employer shall be at liberty to object to and required the contractor to remove forthwith from the works any person employed by the contractor in or about the execution or maintenance of the works who in the opinion of the Architect misconduct's himself or is incompetent or negligent in the proper performance of his duties or whose employment is otherwise considered by the Architect to be undesirable and such person shall be replaced by the contractor without delay by a competent substitute approved by the Employer / Architect.

4.11 COMMUNICATIONS TO BE IN WRITING:

All references, communications, correspondences made by the Employer, the Architects, the Architect's representative or the contractor concerning the works shall be in writing and no reference, communication, or complaint which is not in writing, shall be recognized.

4.12 OCCUPATION AND USE OF LAND:

No land, building belonging to or in the possession of the Employer shall be occupied by the contractor. The contractor shall not use, or allow to be used, the site for any purpose other than that for executing the works.

4.13 CONSTRUCTION OF SITE SHED:

Any site shed, proposed to be temporarily constructed by the contractor for his office work, storage of materials etc., shall conform to the standard sketch, or to the plan approved by the Architect. Permission for the construction of such shed shall be obtained in writing.

4.14 MATERIALS, TOOLS AND PLANT :

All materials required for the execution of the works other than those mentioned in the Notice Inviting Tender shall be supplied by the contractor. Materials so supplied shall have the approval of the Architect before using on the works. All the rejected materials shall be removed at once from the site of work at the contractor's own cost.

4.15 TOLLAGES ETC.:

The contractor shall pay all tollages and other royalties, rent and other payments or compensations, if any for getting stone, gravel, sand, clay and all other materials required for the works.

4.16 SETTING OUT:

The contractor shall be responsible for the true and proper setting out of the works and for the correctness of the positions, levels, dimensions and alignment of all parts of the works and for the provision of all necessary instruments, appliances and labour in connection therewith. If at any time during the progress of the works any error shall appear or arise in the

position, level, dimensions or alignment of any part of the works, the contractor on being required to do so by the Architects or Architect's representative, shall at his own cost rectify such error to the satisfaction of the Architect or his representative. The checking of any setting out or of any line or level by the Architect or his representative shall not in any way relieve the contractor of his responsibility for the correctness thereof. The contractor shall provide all necessary instruments, appliances and labour required by the Architect or his representative for checking, if any, of the setting out. The contractor shall carefully protect and preserve all bench marks, site levels, pegs and other things used in setting out the works. The rates quoted for the work shall also include the cost of reference and level pillars and their dismantling, when no longer required.

4.17 DAMAGE TO PERSONS AND PROPERTY:

The contractor shall indemnify and keep indemnified the Employer against all losses and claims for injuries or damages to any person or property whatsoever which may arise out of or in consequence of the construction and maintenance of works and against all claims, demands, proceedings, damages, costs, charges, expenses, whatsoever in respect thereof in relation thereto the contractor to execute the work according to the statement made or quantities or units shown in the tender, without any compensation.

4.18 CO-OPERATION WITH OTHER AGENCIES:

The contractor shall co-operate with the work of other agencies or contractors that may be employed or engaged by the employer and as far as it relates to the contractor's work. The sequence of work shall be so arranged that the work of other agencies are also in progress simultaneously.

4.19 BARRICADING AROUND EXCAVATED TRENCHES ETC:

The contractor shall at his own cost provide around excavation temporary barricading with ballies and bamboos with warning signals during day and night and shall maintain it so long as the trenches are not filled up. Similar barricades shall also be provided at all dismantling work, erection of structurals, sheeting work etc. No extra claim shall be entertained for providing, maintaining and removing such barricades.

4.20 FABRICATION DRAWINGS:

Contractor shall prepare at his own cost all fabrication drawings of all structural steel works and submit them to the architects for their approval at least before 15 days of commencing the fabrication. All the details like sizes, capacities, dimensions, arrangement of fabrication etc., should be clearly indicated on these drawings.

4.21 PROTECTION OF UNDERGROUND SERVICES:

The contractor must take precautionary measures to protect the underground and other services lines, viz. cables, water & sewer lines, etc., and observe any specific instructions which may be given in this regard by the Architect.

4.22 DE-WATERING TRENCHES AND PITS:

The tendered rates shall always be deemed to have taken into account the cost of removal of silt and materials that may slip in the trenches and pits and dewatering the trenches or pits of water accumulated or collected through seepage or subsoil water or rain water. The contractor shall in no case be entitled to claim any extra amount for the above work. The contractor shall remain prepared with necessary pumps and equipment for dewatering the trenches or pits so as to avoid unnecessary delay and possible damage to the property etc.

4.23 WORK IN OR AROUND OPERATING PLANT OR OFFICES ETC:

Where the work is being carried out in or around an operating plant where the plant must run uninterrupted, the contractor shall work only at specified places and times as mutually arranged between the contractor and the Architect/Employer. Similar arrangement must be made while executing works inside the offices, buildings, etc., without causing disturbance to the office work. For this the work may be required to be done during off-hours and Sundays. No extra will be allowed beyond the rates quoted for doing work in the manner described above.

4.24 WORK IN SHIFTS AND OFF-DAYS:

The contractor shall work in one or more shifts as also on Sundays and off days to complete the work in time, if so required by the Architect for which the Employer shall not be liable to pay any extra. If instructed by the Architects, the contractor should carry out the work in night also.

4.25 SITE ORDER BOOK:

A site order book must be maintained and always be available at site to record the instructions by the Architects or his representative. The contractor must see that the instructions noted therein are properly carried out.

4.26 DELAY IN OBTAINING MATERIALS SUPPLIED BY THE EMPLOYER:

If, the Employer has undertaken to supply any material specified in the special conditions at rates and conditions cited therein, the contractor shall keep himself in touch with day-to-day position regarding the supply of materials from the Employer and so adjust the progress of the works that labour may not remain idle nor there by any other claim due to or arising from delay in obtaining the materials.

4.27 RECORD OF MATERIALS SUPPLIED BY THE EMPLOYER:

The contractor shall maintain an account of different materials obtained from the Employer for executing the works under the contract. The Architect shall have the right to check the position of materials at all times.

4.28 SAFE STORAGE OF MATERIALS:

The contractor shall be responsible for the safe storage of materials supplied by the Employer for execution of the works. Surplus materials or materials lost or damaged or unaccounted for or made unserviceable by the contractor shall be charged at twice the prevailing market price.

4.29 MATERIALS SUPPLIED BY THE EMPLOYER:

All those materials that are to be supplied by the Employer, shall be supplied at the site of work.

4.30 SITE TO BE KEPT CLEAR:

The surplus spoiled and dismantled debris shall be removed to a place as directed by the Architect and stacked, leveled and dressed as directed.

5. LABOUR:

5.1 LABOUR RULES:

In respect of all labour directly or indirectly employed on the works by the contractor, the contractor shall comply with the provisions of the contract labour (Regulation and Abolition) Act 1970, Minimum Wages Act 1948, Payment of Wages Act 1936 and any amendments thereof and all legislation's and rules of the state and / or Central Government or other local authorities, framed from time to time, governing the protection of health, sanitary arrangements, wages, welfare and safety for labour employed on building and construction works and for bonus, retirement benefits, retrenchment/lay off, compensation and all other matters involving liabilities of employers to employees. The rules and the other statutory obligations regarding fair wages, welfare & safety measures, maintenance of register etc., will be deemed to be part of the contract.

5.2 REPORTING ACCIDENT OF LABOUR:

The contractor shall be responsible for the safety of all employees and/or workers employed or engaged by him on and in connection with the works and shall forthwith report all cases of accidents to any of them, however caused & whenever occurring, to the Architect or his representative & shall make every arrangement to render all possible assistance and aid to the victims of the accident.

5.3 PROVISIONS OF WORKMEN'S COMPENSATION ACT:

The contractor shall at all times indemnify and keep indemnified the Employer against all claims for compensation under the provisions of the Workmen's Compensation Act 1923 or any other law for the time being in force by or in respect of any workmen employed by the contractor in carrying out the contract and against all Cost and expenses or penalties incurred by the Employer in connection therewith. In every case in which, by virtue of the provision of the said Act, the Employer is obliged to pay compensation to a workmen employed by the contractor in executing the works the Employer shall recover from the contractor the amount of the compensation so paid and without prejudice to the rights of the Employer under the said Act. The Employer shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any amount due by the Employer to the contractor, whether under this contract or otherwise without prejudice to any other remedy that may be available to the Employer in law. The Employer shall not be bound to contest any claim made against it under the said Act, except on the written request of the contractor and upon his giving to the Employer full security for all cost for which the Employer might become liable in consequence of contesting such claim.

5.4 ACCIDENT OR INJURY TO WORKMEN:

The Employer shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workmen or other person in the employment of the contractor or his subcontractors, and the contractor shall indemnify and keep indemnified the Employer against all such damages & compensation and against all claims, demands, proceedings, costs, charges & expenses whatsoever in respect thereof or in relation thereto.

5.5 PROVISIONS OF MINES ACT:

The contractor shall observe and perform all the Provisions of the Mines Act 1952 where applicable or any statutory modifications thereof and shall indemnify and keep in the indemnified the Employer from and against any claim under the said Act.

5.6 PRESERVATIONS OF PEACE:

The contractor shall take requisite precautions to prevent any riotous or unlawful behavior by or amongst his workmen and/or others employed on the works by him, for the preservation of peace & protection of the inhabitants and security of property in the neighborhood of the works.

5.7 AGE LIMIT OF LABOUR:

The age limit for employment of labour shall be in strict accordance with the existing labour legislation.

5.8 LABOUR EMPLOYED:

The contractor, if required by the Architect, shall submit reports in detail in such form and that such interval as the Architects may prescribe showing number of different classes of labour employed on the works from time to time by the contractor.

5.9 OBSERVANCE BY SUB-CONTRACTOR:

The contractor shall be responsible for the observance of the provisions of aforesaid clauses by the sub-contractors employed by him in the execution of the contract.

6. SAFETY PROVISION:

The contractors shall at his own expense, arrange for the safety provisions indicated or as required by the Architects in respect of all labour directly or indirectly employed for performance of the works and shall provide all facilities in connection therewith.

6.1 PROVISION OF FIRST AID BOX:

The contractors shall at his cost provide and maintain at the site of works a standard aid box as directed and approved by the Architects/Employer.

6.2 SCAFFOLD & LADDERS:

Suitable scaffolds shall be provided for workmen for all work that cannot safely be done from the ground or from solid construction except such short period work as can be done safely from ladders. When a ladder is used, it shall be securely held in position. If the ladder is used for carrying materials as well, suitable footholds & holds shall be provided on the

ladder & the ladder shall be given an inclination not steeper than 1/4 to 1 (1/4 horizontal & 1 vertical). Scaffolding or staging more than 3.25 meters above the ground or floor swing or suspended from an overhead support or erected with stationery support, shall have a guard rail properly attached, bolted, braced & otherwise secured at least 1 meter high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside & ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be fastened as to prevent it from swaying from the building or structure.

6.3 WORKING PLATFORMS:

Working platform, gangways and stairways shall be so constructed that they do not sag unduly or unequally, and if height of a platform on gangway or stairway is more than 3.25 meters above ground level or floor level, it shall be closely boarded, have adequate width and be suitably fenced, as described in 6.2 above.

6.4 OPENINGS IN FLOORS:

Every opening in floor of a building or in a working platforms shall be provided with suitable means to prevent fall of persons or materials by providing suitable fencing or railing with a minimum height of 1 meter.

6.5 ACCESS TO WORKING PLACES:

Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 meters in length. Width between side rails in a rung ladder shall in no case be less than 30 cm for ladders upto and including 3 meters in length for longer ladders this width shall be

increased by at least 6mm for each additional 30 cm of length. Uniform step spacing shall not exceed 30 cm.

Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The contractors shall provide all necessary fencing and lights to protect public from accident and shall be bound to bear expenses of defense of every suit, action, other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and costs which may be awarded in any such suit, action or proceedings to any such person or which may with the consent of the contractors to be paid to compromise any claim by any such person.

6.6 EXCAVATED TRENCHES & PITS:

Excavation and Trenching : All trenches, 1.5 meters or more in depth, shall at all times be supplied with at least one ladder for each 30 meters in length or fraction thereof. Ladder shall be extended from bottom of trench to at least 1 meter above surface of the ground sides of a trench which is 1.5 mts 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. Excavated materials shall not be placed within 1.5 mts of edge of trench of half of depth of trench, whichever is more. Cutting shall be done from top to bottom. Under no circumstances shall under mining or under cutting be done.

6.7 **DEMOLITION:**

Before any demolition work is commenced and also during the process of the work:

- a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
- b) No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by operator shall remain electrically charged.
- c) All practical steps shall be taken to prevent danger to persons employed, from risk of fire or explosion, or flooring. No floor, roof or other part of a building shall be so overloaded with debris or materials as to render it unsafe.

6.8 **SAFETY EQUIPMENT:**

All necessary personal safety equipment as considered adequate by the Architect / Employer shall be available for use of persons employed on the site and maintained in a condition suitable for immediate use and the contractors shall take adequate steps to ensure proper use of equipment by those concerned.

- a) Worker employed in mixing asphaltic material, cement and lime mortar/concrete shall be provided with protective footwear, hand gloves and goggles.
- b) Those engaged in handling materials, which is injurious to eyes shall be provided with protective goggles.
- c) Those engaged in welding works shall be provided with welder's protective eye shields.
- d) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiency safe intervals.
- e) *When workers are employed in sewers and manholes, which are in use, the contractors shall ensure that manhole covers are opened and manholes are ventilated at least for an hour before workers are allowed to get into them. Manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to public.*
- f) The contractors shall not employ men and women below the age of eighteen on the work of painting with products containing lead in any form. Whenever man above the age of eighteen are employed on the work of lead painting the following precautions shall be taken:
 - i) No paint containing lead products shall be used except in the form of paste or ready made paint.
 - ii) Suitable face masks shall be supplied for use by workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.

When work is done near any place where there is risk of drowning, all necessary equipment shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and

adequate provision made for prompt first aid, treatment of all injuries likely to be sustained during the course of work.

6.9 HOISTING MACHINES & TACKLES:

Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following:

- a) i) These be good mechanical construction, sound materials & adequate strength & free from patent defects & shall be kept in good repair & in good working order.
- ii) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality, adequate strength and free from patent defects.
- b) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years shall be in charge of any hoisting machine including any scaffold winch or give signals to operator.
- c) In case of every hoisting machine & of every chain ring hook, shackle, swivel & pulley block used in hoisting or lowering or as means of suspension, safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with safe working load. In case of a hoisting machine having a variable 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 of any gear referred to above in this paragraph shall be loaded beyond safe working load except for the purpose of testing.
- d) The contractors shall notify safe working load of each machine to the Engineer whenever he brings it to site of work and get it verified by a competent authority.

Motors, gearing transmission, electric wiring & another dangerous parts of hoisting appliances shall be provided with efficient safe guards, hoisting appliances shall be provided with such means as will reduce to the minimum risk of accidental descent of load, adequate precautions shall be taken to reduce to the minimum risk of any part of 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, shall be provided. Workers shall not wear any rings, watches and carry keys or other materials that are good conductors of electricity. All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in a safe condition & no scaffold, ladder or equipment shall be altered or removed, while it is in use. Adequate washing facilities shall be provided at or near places of work.

These safety provisions shall be brought to the notice of all concerned by display on a notice board at a prominent place at the work spot. Persons responsible for ensuring compliance with the safety provisions shall be named therein by the contractors.

To ensure effective enforcement of the rules and regulations relating to safety precautions, arrangements made by the contractors shall be open to inspection by the Architect or his representative and the inspecting officers.

Notwithstanding the above provision the contractors are not exempted from the operations of any other Act or rule in force.

7. MATERIAL TESTS AND WORKMANSHIP:

7.1 QUALITY OF MATERIALS. WORKMANSHIP AND TESTS:

All materials and workmanship shall be of the respective kinds described in the contract and in accordance with the Architect/Employer or their representative's instructions and shall be subjected, from time to time, to such tests as the Architect or his representative may direct at the place of manufacture or fabrication or on the site or at all or any of such places. The contractor shall provide such assistance instruments, machines, labour and materials, as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any material used & shall supply samples of materials before incorporation in the works for approval as may be required by Architect / Employer.

7.2 CONSTRUCTION OF PROTOTYPES OR SAMPLES OF WORK:

The contractor shall construct prototypes or samples of work as laid down in the contract or as instructed by the Architect. Such prototypes or samples of work, after approval by the Architect, shall serve as the standards to be achieved in the final construction.

7.3 COST OF SAMPLES:

All samples shall be supplied by the contractor at his own cost.

7.4 COST OF TESTS:

The cost of making any test according to specifications shall be borne by the contractor and contractor should arrange for all facilities like meters, instruments as required for carrying out such tests.

7.5 INSPECTION OF OPERATION:

The Architect/Employer or their representative shall at all times have access to the works and to the site and to all workshops and places where materials, manufactured articles or machinery are being obtained for the works and the contractor shall afford every facility for any every assistance in or obtaining the right to such access.

7.6 EXAMINATION OF WORK BEFORE COVERING UP:

No work shall be covered up or put out of view without the approval of the Architect or the Architect's representative and the contractor shall afford full opportunity to the Architect or the Architect's representative to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon. The contractor shall give due notice to the Architect's representative wherever any such work or foundations is or are ready or about to be ready for examination and the Architect's representative shall without unreasonable delay, unless he considers it is unnecessary and advises the contractor accordingly, attend for the purpose of examining and measuring such work or of examining such foundations.

7.7 UNCOVERING AND MAKING OPENING:

The contractor shall uncover any part or parts of the works of make openings in or through the same as the Architect may, from time to time,

direct and shall reinstate and make good such part or parts to the satisfaction of the Architect. If any such part or parts

have been covered up or put out of view after complaints with the requirements of clause 6.6 hereof and found to be executed in accordance with the contract the expenses of uncovering, making openings in or through, reinstating and making good the same shall be borne by the Employer, but in any other case all such expenses shall be borne by the contractor and shall be recoverable from him by the Employer and deducted by the Employer from any money due or which may become due to the contractor, without prejudice to any other remedy that may be available to the Employer in law.

7.8 REMOVAL OF IMPROPER WORK AND MATERIALS:

The Architect or his representative shall during the progress of the works, have power to order in writing from time to time:

- a) The removal from the site within such time or times as may be specified in the order of any materials which in the opinion of the Architect or his representative are not in accordance with the contract.
- b) The substitution of proper and suitable materials.
- c) The removal and proper re-execution notwithstanding a previous test thereof or interim payment therefore of a work which in respect of materials or workmanship is not in the opinion of the Architect or his representative in accordance with contract.

7.9 SUSPENSION OF WORK:

The contractor shall, on the written order by the Employer suspend the progress of the works or any part thereof for such time or times and in such manner as the Architect may consider necessary and shall during such suspension, properly protect and secure the work, so far as is necessary in the opinion of the Architect.

8. TIME OF COMPLETION AND TAKING OVER:

8.1 POSSESSION OF SITE:

Save in so far the contract may prescribe the extent of portions of the site of which the Architect is to be given possession from time to time and the order in which such portions will be available to him and subject to any requirement in the contract as to the order in which the work shall be executed, the Architect shall give to the contractor possession of so much of the site as may be required to enable the contractor to commence and proceed with the construction of the works in accordance with such reasonable proposals of the contractor as he will make in writing to the Architect and shall, from time to time as the work proceeds give the contractor possession of such further portions of the site as may be required to enable the contractor to proceed with the construction of the works in accordance with the said program or proposal.

8.2 TIME OF COMPLETION:

Time is deemed to be the essence of this contract and the whole of the works shall be completed within the time stipulated or within such extended time as has been allowed under clause 8.3.

8.3 EXTENSION OF TIME OF COMPLETION:

Should the amount of extra or additional work of any kind or changes in scope of work or other special circumstances of any kind whatsoever which may occur, be such as fairly to justify the contractor's request for extension of time for the completion of the works the Architect shall determine the amount of such extension and with the approval of the Employer shall intimate the contractor in writing provided that the Architect is not bound to take into account any extra or additional work or other special circumstances unless the contractor has within 28 days, after such work has been commenced or such circumstances have arisen, submitted to the Architect full and detailed particulars of any request to the extension of time to which he may consider to be justified.

8.4 EXTENSION OF COMPLETION TIME DUE TO STRIKE, FIRE, ETC.

If in the opinion of the Architect the progress of the work has at any time been delayed by strikes, fire, inclement weather, un-avoidable causalities etc., beyond the control of the contractor then the time of completion of the work may be extended for such reasonable time as the Architect may decide and this will be indicated in writing.

8.5 WORK TREATED AS COMPLETE:

The works shall not be treated as complete until:

- a) The site is clear from all materials, site shed, etc., and the Architect is satisfied with the job done by the contractor.
- b) The contractor has submitted the reconciliation statement regarding the stores received from the Employer, hand all the surplus and salvaged materials are returned to the stores.
- c) All equipment, tools, plant taken from the Employer have been returned by the contractor.
- d) Any other material, taken on loan/transfer from other agency have been returned by the contractor.
- e) All power and water supply connections taken for the execution of the works have been disconnected by the contractor.
- f) Rectification of any damage done by the contractor to the work executed have been satisfactorily done by the contractor.
- g) The works shall not be considered as completed until the Architect has certified in writing that they have been virtually completed & the Defects Liability Period shall commence from the date of such certificate.

8.6 TAKING OVER:

After completion of works or any substantial part of the works before the completion of the whole of the works, the contractor shall notify the Architects in writing, who within 15 days of receipt of the said notice shall give such certificate with respect to any substantial part of the works which has been both completed to the satisfaction of the Architect and occupied or used by the Employer or refuse to issue the same stating the reasons thereof in writing. When any such certificate is given in respect of a

part of the works, such part shall be considered as completed for the purpose of taking over and computation of the period of maintenance of such part, that is, such period shall commence from the date of completion of such part of the works as certified. The works in whole or part shall not, however, be treated as completed for the purpose of other relevant clauses hereof unless and until the provisions of clause 7.5 hereof are fully complied with.

8.7 MAINTENANCE:

For a period of Twelve Months commencing immediately after taking over of the work by Employer, the contractors liability shall be to replace the defective parts, rectify/reconstruct the defective work that may develop of his own construction or those of his sub-contractors approved by the Employer (under clause 2.1 & 2.2) arising solely from faulty materials or workmanship. If it is necessary for the contractor to rectify/reconstruct any defective portions of the work under the contract, the provision of this condition shall apply to the portions of work so replaced or renewed until the expiration of three months from the date of such replacement or renewal or until the end of the above mentioned period of Twelve Months, whichever may be later. If any defects be not remedied within a reasonable time the Employer may proceed to do the work at contractor's risk and expense, but without prejudice to any other rights which the employer may have against the contractor in respect of such defects. The contractor shall bear the cost of such repairs / rectifications carried out on his behalf at site. Immediately upon expiry of the maintenance period the company shall issue a final certificate indicating that the contractor has completed his obligation under the contract.

9. TERMINATION OF CONTRACT:

9.1 TERMINATION OF CONTRACT:

If the contractor has abandoned the contract or has failed to proceed with the work with diligently or the progress of any particular item or items is slow or he has failed to execute the work in accordance with the specifications, neglecting to carryout his obligation under the contract, then it shall be lawful for the Employer to terminate the contract forthwith under written notice and to proceed with the balance of the work through any other agencies. During the course of execution of the job, in case the contractor has done any substandard work, he shall be asked in writing to dismantle & re-do the same at his own expenses. If the contractor fails to comply with the above instructions immediately, then the Employer shall continue with the above rectification work, through another agency or agencies. Similarly, if the contractor goes slow on any particular item or items of work, the Employer shall have the right to execute this item or items through another agency or agencies, including its own department.

9.2 BACK CHARGING THE CONTRACTOR:

Extra cost and expenses incurred for completing the work or balance work or carrying out the rectification of any work as mentioned above through another agency or agencies including its own department shall be debited to contractor's account and shall be recovered from any money due or that may become due to the contractor without prejudice to any other remedy. that may be available to the Employer in law.

10. ALTERATIONS, ADDITIONS AND OMISSIONS:

10.1 VARIATION:

The Architect with the approval of the Employer shall be entitled to make any variation of the quality or quantity of the works or any part thereof that may in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion be desirable, he shall have power to order the contractor to do and the contractor shall do any of the following:

- a) Increase or decrease the quantity of any work included in the contract.
- b) Omit any portion of work.
- c) Change the character or quality or kind of any such work.
- d) Change the levels, lines, position and dimensions of any part of the works and,
- e) Execute additional work of any kind necessary for the completion of the works, and no such variation shall in any way initiate or invalidate the contract but the value, if any, of all such variations shall be taken into account in ascertaining the amount of the contract price.

10.2 ORDERS FOR VARIATIONS TO BE IN WRITING :

No such variation shall be made by the contractor without an order in writing of the Architect. Provided that no order in writing shall be required for increase or decrease in the quantity of any item of work where such increase or decrease is the result of the **actual** quantities exceeding or being less than those stated in the bill of quantities which are estimates. In such cases, the contractor shall be paid only for the actual quantity of work done as certified by the Architect at the accepted unit item rates and no compensation shall be allowed. Provided also that if for any reason the Architect shall consider it desirable to give any such order verbally, the contractor shall comply with such order but it must be followed by confirmation in writing of such verbal order given by the Architect, which shall be deemed to be an order in writing within the meaning of this clause.

10.3 EXTRA ITEMS:

If the contractor has been asked to execute any such item/ work in course of construction for which the tender rates have not been quoted by him, he must undertake such work. The rates for such additional work shall be determined by the Employer on the following lines, in the order of preference:

1. The rate to be derived from any one of the quoted rates for similar items of work in the tender.
2. Rates based on actual observation and/or analysis of labour and materials involved in such items. For this purpose the contractor shall submit to the Architect detailed analysis of the rate proposed by the contractor supported by relevant vouchers. While fixing rates for extra items an allowance of 20% of the cost will be provided towards contractors overheads, profits and establishments taken together including sales tax on work contract.

10.4 ITEMS OF ADHOC NATURE:

The contractor shall procure necessary materials and carry out miscellaneous work of ad hoc nature specifically provided with necessary tools and tackles as may arise during execution of the contract. The actual quantum of work shall be certified and settled by the Architect and payment for the same shall be fixed on the basis of actual cost plus overheads, profits and establishments taken at 15% of the cost.

10.5 CLAIMS:

The contractor shall send to the Architect's representative an account, giving full and detailed particulars with proper analysis of all claims for any additional expense to which the contractor may consider himself entitled and of all extra items of work ordered by the Architect, which he has executed, within one month of execution of such work, and no claim for payment for any such work, and no claim for payment for any such work will be considered which has not been included in such particulars. Provided always that the Architects shall be entitled to authorise payment to be made for any such work notwithstanding the contractor's failure to comply with this condition, if the contractor has at the earliest practicable opportunity notified the consultant in writing, that he intends to make a claim for such work.

11. MEASUREMENTS:

11.1 QUANTITIES:

The quantities set out in the bill of quantities are the estimated quantities of the work. They are not to be taken as the actual & correct quantities of the works, to be executed by the contractor in fulfillment of his obligations under the contract.

11.2 WORKS TO BE MEASURED:

The Architects shall, except as otherwise stated, ascertain the determine by measurement the value in terms of contract. He shall when he required any part or parts of the works to be measured, give notice to the contractor's authorized agent or representative, who shall forthwith attend or send a qualified agent to assist the Architect or representative in making such measurement, and shall furnish all particulars required by either of them. Should the contractor not attend or neglect or omit to send such agent, then the measurement made by the Architect or approved by him, shall be taken to be the correct measurement of the work and the same will be incorporated in the said measurement book.

11.3 METHOD OF MEASUREMENT:

The works shall be measured net in accordance to relevant BIS codes notwithstanding any general or local custom, except where otherwise specifically described or prescribed in the contract. The contractor shall maintain a measurement book and all running payment shall be made as per the actual measurements of the works of the contract.

11.4 PROVISIONAL SUMS:

"Provisional Sum" means a sum included in the contract and so designated in the bill of quantities for execution of works or the supply of goods, materials or services or for contingencies, which sum

may be used, in whole, or in part, or not at all, at the direction or discretion of the Architect. The contract price shall include only such amounts in respect of the work, supply or services to which provisional sums relate as the Architect shall approve or determine.

The contractor shall when required by the Architect, produce all quotations, invoices, vouchers, and accounts or receipts in connection with expenditure in respect of provisional sums.

12 SETTLEMENT OF DISPUTES:

12.1 MATTER TO BE SETTLED BY EMPLOYER:

All disputes and differences of any kind whatsoever arising out of or in connection with the contract whether during the progress of the works or after their completion shall be referred by the contractor to the Employer and the Employer shall within a reasonable time after their presentation make and notify decisions thereon in writing.

The decisions, directions, clarifications, measurements, drawings and certificates with respect to any matter the decision for which is specially provided for by these or other special conditions to be given and made by the Employer or by the Architect on behalf of the Employer are matters which are referred to hereinafter as exempted matters & shall be final and binding upon the contractor and shall not be set aside on account of non-observance of any formality, any omission, delay or error in proceeding in or about the same or on any other ground or for any reason and shall be without appeal.

In the event of any dispute or difference between the parties hereto as to the construction of operation of this contract, or the respective rights and liabilities of the parties on any matter in question, dispute or difference on any account or as to the with-holding by the Employer of any certificate to which the contractor may claim to be entitled to or if the Employer fails to make a decision within a reasonable time, then and if any such case, but except in any of the exempted matters referred to in the above clause, the contractor after 90 days of his presenting his final claim on the disputed matters, may demand in writing that the dispute or difference be referred to Arbitration. Such demand for Arbitration shall specify the matters which are in question, dispute or difference, and only such dispute or difference other than exempted matters of which the demands has been made and no other dispute or difference shall be referred to the Arbitration of an officer of the Employer to be nominated by the Director of the Employer for the time being or if there be no Director at the relevant time then by the Board of Directors of the Employer and the provisions of the Indian Arbitration Act, 1940 for the time being in force or of any other act of the legislature passed in substitution thereof or modifications thereof and for the time being in force shall apply to such Arbitration.

12.2 ARBITRATION:

The contractor shall not, except with the consent in writing of the Employer, the Architects, in any way delay the carrying out of the work by reason of such matter, question or dispute being referred to Arbitration but shall proceed with the work with all due diligence and shall, until the decision of the Arbitration is given, abide by the decision of the Architect and no award of the Arbitrator shall relieve the contractor of his obligations to adhere strictly to the Architect's instructions with regard to the actual carrying out of the work except as specifically affected by such award.

13. NOTICES:

13.1 SERVICE OF NOTICE ON CONTRACTOR:

All certificates, notices or written orders to be given by the Employer or by the Architect to the contractor under terms of the contract shall be served by sending by post or delivering the same to the contractor's place of business or such other address as the contractor shall nominate for this purpose.

13.2 SERVICE OF NOTICE ON EMPLOYER:

All notices to be given to the Employer under the terms of the contract shall be served by sending by post or delivering the same to the Employer's address.

14. CO-ORDINATION WITH OTHER AGENCIES OR CONTRACTORS APPOINTED DIRECTLY BY THE OWNER:

The contractor shall co-ordinate with the work of other agencies or contractors that may be employed or engaged by the Owner. The sequence of the work shall be so arranged that the work of other agencies are able to start their scope per the agreed bar chart for implementation and all the required pre-requisite site condition are arranged well before the start of their work.

SPECIAL CONDITIONS

GENERAL:

SPECIAL CONDITIONS OF CONTRACT shall be read in conjunction with GENERAL CONDITIONS OF CONTRACT and both form an integral part of contract. Where the two are at variance, the conditions stipulated in this as SPECIAL CONDITIONS shall supersede relevant GENERAL CONDITIONS.

1. **SPECIAL CONDITIONS:**

HELMETS :

As a measure of safety, persons employed on the site, Engineers and Supervisors shall wear a helmet of approved make at all times when they are at the site. No visitors shall be allowed on work site without wearing helmet.

Contractors shall make arrangements to provide safety helmets to all the persons employed on the site, Engineers and Supervisors at his cost.

Contractors shall display safety and warning signs at strategic locations at the site.

CHILD LABOUR:

Contractor or his Sub-contractor shall not employ any child labourers on the work site, either permanently or temporarily. It shall be the responsibility of the main Contractor to make sure that no child labour is employed at the site. Contractor shall indemnify the Employer against any consequences statutory or otherwise, that may arise out of employing child labour on the site.

TEMPORARY ELECTRICAL WIRING:

It shall be the responsibility of the main Contractor to make sure that the temporary wiring for construction activity shall adhere to minimum safety precautions as per Electricity Act. All wires/cables shall be drawn on wooden poles properly fixed and shall be drawn overhead.

2. **LABOUR SHEDS:**

Labour sheds shall be constructed with non-combustible materials like GI sheets or Asbestos sheets. Contractor will not be permitted to use combustible materials such as palm leaves etc., for the construction of the labour sheds.

3. **MATERIALS SUPPLY / PROCUREMENT:**

No materials will be supplied by the owner. If any increase on the material procurement cost/ labour, P&M will not be entertained for any kind of escalation till completion of the project.

4. BILLING. CERTIFICATION & PAYMENT OF BILLS:

BILLING:

The contractor shall prepare measured bills after completing the quantum of work mentioned In the Appendix-A and submit the same to the Architects for checking and issue of Certificates for Payment.

PAYMENT OF BILLS:

The contractor shall be paid by the Employer from time to time based on the certificate for payment issued by the architects as mentioned in the Appendix A.

5. REPAIR OF WORKS DONE BY OTHER AGENCIES:

The civil contractor shall make up any deficiency in the finishing of the areas damaged by other agencies in a workmanlike manner to achieve uniform finishing of the building at no extra cost.

6. MATERIAL TESTS:

The contractor shall provide such assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing.

The contractor shall install a compression testing machine at site to test concrete cubes and solid blocks.

The contractor shall maintain a record of all the test results in an approved format and periodically submit the same for Architect's/Employer's scrutiny.

7. PLANT & MACHINERY:

The contractor is obliged to furnish to the Employer detailed list of equipment, plant, machinery & personnel proposed to be deployed in this project.

8. CLIENT'S & ARCHITECT'S OFFICES & FACILITIES:

The contractor shall supply, erect and satisfactorily maintain in good repair until final completion of works, a well lighted temporary site office.

The contractor shall provide at all times for the duration of the contract survey instruments for the exclusive use of consultants as directed by consultants for carrying out of his duties in connection with the contract.

Such instruments which must be approved by the Architect, shall include but not limited to the following:

- One theodolite & tripod capable of reading to 20 seconds
- One level with horizontal circle and tripod.
- Two metric leveling staffs not less than 3.5mtr high.
- One 100 metre rustless steel band, one 30 metre rustless steel tape and two 30 metre linen tapes.

- An adequate number of ranging rods drop arrows, wooden setting-out pegs, etc.

The contractor shall be solely responsible for all such instruments and equipment's and shall ensure that they are at all times in good repair and adjustment.

10. SANITATION & DRAINAGE DURING CONSTRUCTION:

The contractor shall provide sanitation and drainage facilities on the site as stated subsequently.

The contractor shall strictly control the labour so that the site is not polluted, made dirty or littered with debris, wastes or the likes. Any person found creating mess or litter or pollution shall be removed from the site immediately at contractor's cost.

The contractor shall provide sanitation facilities at convenient locations on site to preserve the cleanliness of the site. The effluent shall be directed as follows:

- Waste water : Collection and pumping out and disposal off the site in approved manner.
- Sewage : Septic tank provision - sludge to be collected and disposed off at intervals as directed.

The location of the above provisions shall be as marked on the site mobilization scheme drawing.

11. DISCREPANCIES:

The contractor shall bring to the notice of the Architect any discrepancies within or between contract drawings and/or the other contract documents prior to preparation of working drawings and commencement of work and shall not proceed with work until the Architect gives clarifications and instructions to proceed.

12. REPORTS BY CONTRACTOR:

12.1 The contractor shall file daily category-wise labour return. The report shall indicate scheduled requirement against actual strength.

12.2 The contractor shall prepare weekly reports of planned and actual progress of work and subsequent week's scheduled work. These will also include material procurement status. These reports shall be submitted to Architect and shall be reviewed during weekly co-ordination meeting.

12.3 The contractor shall submit monthly report along with monthly bills.

12.4 Further progress charts and schedules shall be prepared by the

contractor as directed by the Architect.

- 12.5 The contractor shall submit re-conciliation statement of all the materials supplied by the Client, if any, along with every running bill.

SAFETY RULES

1.0 Safety Code and Safety Rules : The Safety conditions to be adhered to by the Contractor during the term of this Agreement shall include but shall not be limited to following :

- There shall be maintained in a readily accessible place first aid appliances including adequate supply of sterilized dressings and cotton wool.
- An injured person shall be taken to a public hospital without loss of time, in cases where the injury necessitates hospitalization.
- Suitable and strong scaffolds should be provided for workmen for all works that cannot safely be done from ground.
- No portable single ladder shall be over 8 meters in length. The width between the side rails shall not be less than 30 cm. (clear) and the distance between two adjacent rungs shall not be more than 30cm. When a ladder is used an extra mazdoor shall be engaged for holding the ladder.
- Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be one metre.
- No floor, roof or other part of the structure shall be so overloaded with debris or materials as to render it unsafe.
- Those engaged in welding works should be provided with welder's protective eye-shields and gloves. All persons at site shall wear shoes and protective safety helmets approved for construction sites.
- No paint containing lead or lead products shall be used except in the form of paste or readymade paint.
- Suitable facemasks should be supplied for use by the workers when the paint is applied in the form of spray or surface having lead paint dry rubbed and scrapped.
- Overalls shall be supplied by the Contractor to the painters and adequate facilities shall be provided to enable the working painters to wash during the period of cessation of work.
- The ropes used in hoisting or lowering material or as a means of suspension shall be of durable quality and adequate strength and free from defects.

1.1 Safety rules to be followed by the Contractor during execution of work :

The Safety rules to be adhered to by the Contractor during the term of this Agreement shall include but shall not be limited to following. The Contractor shall ensure that:

- All electrical equipment used by the Contractor will have double earthing and will be connected through an ELCB
- No temporary electrical connections with loose wire will be permitted. For all electrical connections, proper sockets and plugs will be used and wiring / cabling clamped.
- Electrical hand tools like drilling machine will be of 220 volts type.

- ELCB's will be used wherever power & electrical connections are taken by the Contractor.
- Fire fighting portable extinguishers will be used and located at appropriate locations.
- All staff working at heights will use safety belts and standard platforms with 42" height railing.
- All the staff working will as far as possible wear shoes.
- Standard ladders will be used, non standard ladders will not be permitted.
- Inflammable materials like Petrol, Kerosene, Wax etc., will not be allowed to be stored at site stores. Special storage space with fire protection arrangements will be provided.
- Each Contractor will keep a well furnished FIRST AID box with easy accessibility.
- Respiratory protective equipment should be available with the Contractor.
- Welding mechanics and electricians will wear rubber gloves.
- Personal protecting equipment like Ear Muffler, Goggles, Gloves, Safety Belt, Safety Helmet, Rubber Shoes, etc., should be used and available in Contractor's stores.
- Use of asbestos to be prevented.
- All scaffolding will be of steel wood and double stage.

1.2 **Statutory obligations, notices, fees and charges :**

The Contractor shall comply with and give all notices required by any Government authority, and instrument, rule or order made under any Act of Parliament or State Legislature or any regulation or Bye-law of any local authority relating to the work or with whose system the same is or will be connected. The Contractor before making any variation from the Contract Drawings or Contract Bills necessitated by such compliance shall give to the Company a written notice specifying and giving reasons for such variations and The Company along with the Consultant may issue instructions in regard thereto.

The Contractor shall pay and indemnify The Company against liability in respect of any fees or charges (including any rates and taxes) legally demandable under any Act of Parliament, or State Legislature instrument, rule or order or any regulation or Bye-law or any local authority in respect of the Work.

GENERAL SPECIFICATION

These GENERAL SPECIFICATIONS should be read along with the relevant specifications referred to the common and schedule of quantities, applicable to the work in addition to specifications given below and the drawings mentioned in these documents shall be deemed to apply to the work-unless mentioned otherwise in the tender documents, in which case the provisions in the tender document shall take precedence.

SPECIAL MATERIALS:

If the materials of a particular brand are specified in the schedule these shall be procured accordingly from approved manufacturers. These shall include materials such as: Bitumen and bituminous compounds, water proofing, hardening compounds, special paints, acoustic and insulation bonds and their finishing materials, etc.

The contractor shall procure necessary guarantees from the manufacturers and furnish the same to the consultants.

The use of white cement and silicon for grouting, waterproofing and other works is strictly prohibited unless permitted by the consultant for specific situations. Wooden wall plugs, other than Fischer make wall plugs, shall not be used.

SPECIFICATIONS FOR CONCRETE WORKS

CONCRETE GENERAL Proportion of ordinary cement concrete will be expressed as 1:3:6, 1:2:4, 1:1.5:3, etc. in the specifications. The first figure will be the quantity of cement by volume, the second figure will be dry coarse sand (fine aggregate) by volume and the third figure will be the quantity of coarse aggregate by volume. Cement shall be measured by weight. The weight is to be derived on the basis that 1 cubic meter of cement will weigh 1440 kgs. or one full bag of 50 kgs. will be assumed to be 35 ltrs. When the sand is wet or moist, suitable correction for bulking is to be given while proportioning. Consultants may allow measuring cement by volume.

Unless otherwise specified, the rates for all RCC will be exclusive of reinforcements. Reinforcements will be paid for separately.

Unless otherwise stated, for all RCC works, the size of coarse aggregate will be 20 mm and down size.

CEMENT CONCRETE PLAIN AND REINFORCED:

A) CEMENT: Cement shall comply in every respect with the requirements of the latest publication of IS: 269 and unless otherwise specified, ordinary Portland cement shall be used. No other make of cement but that approved by the consultants /Company will be allowed on works and the source of supply not to be changed without the approval of the consultants in writing. Test certificates to show that the cement used fully complies with the relevant I.S. specifications shall be submitted to

the consultants and notwithstanding this, the consultants may at their discretion order that the cement brought to site and which they may consider damaged or of doubtful quality for any reasons whatsoever shall be retested in an approved testing laboratory and fresh certificate of its soundness shall be produced. Cement ordered for retesting shall not be used for any work pending results of retest.

Cement shall be stored and neatly packed in piles not exceeding 10 bags high in weather proof sheds with raised wooden plank flooring to prevent deterioration by dampness or intrusion of foreign matter. It shall be stored in such a way as to allow the removal and use of cement in chronological order of receipt, i.e., the first received being first used. Cement deteriorated and/or clotted shall not be used on work but shall be removed at once from the site. Daily record of cement received and consumed shall be maintained by the contractor in an approved form and a copy submitted to the consultants/Company once a week.

Cement shall be purchased and stored in quantities guaranteeing that there is no shortage; for e.g., due to shortage of production or transport difficulties, etc.

B) FINE AGGREGATES: Sand shall conform to IS: 383. It shall pass through I.S sieve 4.75 mm (3/16 B.S) test sieve, leaving a residue not more than 5%. It shall be from a natural source or crushed stone screedings. It shall be washed if directed to reduce the percentage of deleterious substances to acceptable limits. Sand shall not contain any trace of salt and sand containing any trace of salt shall be rejected.

The fine aggregate for concrete shall be graded within limits as specified in IS: 383 and the fineness modulus shall range between 2.60 to 3.20. The fine aggregate shall be stacked carefully on a clean hard dry surface so that it will not get mixed up with deleterious foreign materials. If such a surface is not available, a platform of planks or corrugated sheets or brick floor or concrete floor shall be prepared. Sand shall be added in the desired proportion as required for the strength specified, with suitable correction for bulking.

C) COARSE AGGREGATES: Coarse aggregates shall conform to IS: 383. It shall consist of crushed or broken stone, 95% of which shall be retained on 4.75 mm IS test sieve. It shall be obtained from crushed granite, trap, basalt or similar approved stones from approved quarry. Coarse aggregate shall be chemically inert when mixed with cement and shall be angular in shape and free from soft friable thin porous laminated or flaky pieces. It shall be free from dust and other foreign matter. Gravel/shingle of desired grading may be permitted as a substitute in part or full in plain cement concrete if consultants are otherwise satisfied about the quality of aggregate.

D) WATER: Water used for mixing concrete shall be fresh, clean, free from oil, salts, acids, alkali and shall be in accordance with the clause 4.3 of IS 456- 1978. The contractor shall produce test results for approval by the consultants for mixing of water proposed to be used on the job, before casting any concrete.

E) MIXING OF CONCRETE:

1. MACHINE MIXED: aggregate shall be accurately measures out in boxes and mixed dry along with required cement, water shall then be added in measured quantity and mixing shall be continued until there is uniform distribution of the materials and the mass is uniform in color and consistency but in no case shall the mixing be done for less than 2 minutes. Only hopper loading mixer shall be used.

2. HAND MIXING: When hand mixing is permitted with the approval of the consultants, it shall be carried out on water tight mixing platform and care shall be taken to ensure that mixing is continued until the mass is uniform in color and consistency. If required by the consultants 10% extra cement has to be used if hand mixing is done.

CONSISTENCY: Only sufficient water giving due allowance for the moisture content of aggregate shall be added to the cement and aggregates during mixing to produce a mixture of sufficient workability to enable it to be well consolidated, to be worked into the corners of the shuttering and around the reinforcements where there is reinforcement to give the specified finish and to have specified strength.

Normally for every 50 kg of cement total water including moisture content of the aggregate should not be more than 34 liters for 1:3:6 mix, 32 liters for 1:2:4 mix, 30 liters for 1: 1 ½ :3 and 27 liters for 1:1:2.

If difficulty be experienced on placing the concrete of specified mix and approved consistency between and below reinforcement bars, in the bottom of beams and similar situations, the concrete shall have improved workability be increasing the proportion of water and corresponding additional quantity of cement and using aggregates of smaller size that specified as directed by the consultants for which no extra be paid.

The consistency shall be determined by making trial mixtures with dried aggregates, or when so instructed by test of laboratory made test cubes under the direction of consultants. Consistency may be measured by slump test using a standard cone or the consultants may direct the use of any other means of testing the consistency.

If the apparatus used for the slump test is a standard cone, when filled it shall be raised vertically clear of the concrete and the measurement of the slump shall be 300 mm minus the height of the slumped cone of concrete. Care shall be taken to prevent vibration of the samples being tested. The following slumps shall be adopted for different kind of works.

PLACING AND COMPACTING: Method of placing shall be such as to preclude segregation and as far as practicable, the placing shall be continuous.

Special care shall be taken in accordance with IS 456 while laying concrete under extreme weather. Concrete, during the operation of placing shall be thoroughly worked around the reinforcements, embedded fixtures, spaded against corners of the formwork by punning, rodding, or by any other approved means and thoroughly compacted by mechanical vibrators. The number and type of vibrator

to be used shall be subject to the approval of the consultants, and in general, immersion type vibrators shall be used.

Consolidation by using immersion vibrator will be in accordance with IS Code 3558.

Sufficient number of reserve vibrators in good working condition shall be kept on hand at all times, so as to ensure that there is no slacking or interruption in compacting.

ADMIXTURES: The use of admixtures may be allowed only if approved by the consultants and their decision in this regard shall be final.

TRANSPORTING: Concrete shall be conveyed from the place of mixing to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of any of the ingredients. If segregation does occur during transport, the concrete shall be remixed before being placed. Normally not more than 30 minutes shall lapse between mixing and consolidation in position.

CURING: All cement concrete after laying shall be protected from damages, till it sets and shall be cured thereafter for not less than 10 days. The work shall be protected from drying wind and direct sunrays. Water used for curing shall be free from sediments of any kind and generally fit for drinking.

VERTICAL JOINTS: At the end of any day's work or run of concrete, the concrete shall be finished off against temporary shutter stop, which shall be vertical and securely fixed. This stop shall be removed as soon as the weather permits.

Construction joints in concrete floors and walls of basement, water tanks, or any other structures in contact with water or earth, shall be provided with PVC stops of approved make coated on either side with hot asphalt. The longitudinal joints, in water stops, shall preferably be hot welded or overlapped at least 200mm.

STRENGTH OF ORDINARY CONCRETE: The contractors have to see that proper materials are used and the proportion and the correct water cement ratio just sufficient for the workability are maintained to see that the following minimum strength of concrete are obtained. To verify this, test cubes from the concrete used should be made and tested. The frequency of testing and the acceptability criteria will be according to IS 456-1978 and IS 516-1959.

Compressive strength of 15 cm cubes are 28 days after mixing, in kgs/sq.cm.

| PRELIMINARY TEST | WORKS TEST |
|------------------|------------|
|------------------|------------|

| | | |
|-------|---------------|---------------|
| 1:3:6 | 135 kg/sq.cm. | 100 kg/sq.cm. |
|-------|---------------|---------------|

| | | |
|-------|---------------|---------------|
| 1:2:4 | 200 kg/sq.cm. | 150 kg/sq.cm. |
|-------|---------------|---------------|

| | | |
|---------|---------------|---------------|
| 1:1.5:3 | 260 kg/sq.cm. | 200 kg/sq.cm. |
|---------|---------------|---------------|

| | | |
|-------|---------------|---------------|
| 1:1:2 | 325 kg/sq.cm. | 250 kg/sq.cm. |
|-------|---------------|---------------|

Six cubes shall be taken from any mix selected at random by the consultants/Engineers; three of them should be tested after 7 days and three after 28 days. The strength at 7 days must be 2/3 of the strength at 28 days. The criterion for acceptance is only the strength at 28 days.

CONCRETE FORMWORK AND SHUTTERING GENERAL:

Formwork shall be rigidly constructed of 12 mm thick new plastic coated plywood sheets for column, pedestals, beams, walls and fascias and steel or plywood for roof slab, canopies, floors, cover slabs, retaining walls, etc. Shuttering faces in contact with the concrete shall be free from adhering grout, projecting nails, splits, or other defects that are likely to mar the concrete surface. The shuttering shall be erected on battens, beams and steel props properly cross braced so as to make the form work rigid.

Form work shall be erected true to line and levels and to the required shapes as called for and shall be able to carry without deformation the full weight of wet concrete and live loads. It shall also withstand the effect of vibration without deflection, bulging, distortion and / or loosening of its component parts. Details of centering and form work shall be subject to the approval of the consultants. The completed form work shall also be subject to the approval by the consultants before placement of reinforcement. Contractor shall be responsible for sufficiency and adequacy of all form work centering and moulds.

The form work shall be designed so that the soffits of slab and the sides of beams may be removed first leaving the form work to the soffits of beams and their supports in position. Wedges shall be provided as to allow accurate adjustment of form work and its easy removal.

All joints shall be sufficiently tight to prevent leakages of grout. Chamfer fillets shall be provided at all corners wherever called on the drawings or as directed.

Clean-out holes shall be provided at the bottom of all columns, pier and wall form work and care shall be taken to remove any rubbish, wood shavings or any other foreign material before concreting. Temporary supports shall be provided as required and/or ordered by the consultants. Compressed air shall be used if required for cleaning the form work before concreting. Form work for walls, or water tanks, basements and other locations, for fascias, parapets and similar vertical members shall be held together rigidly by means of form ties of suitable length. The form ties shall be approved design and type and shall have a minimum working strength of 1500 kgs. The ties shall be free from lugs, cones, washers, etc. which leave a hole larger than 20 mm dia. or any depressions back on exposed surface of concrete.

Openings may be given with the approval of consultants at convenient places for washing down all the rubbish. These are to be closed before concreting.

SURFACE TREATMENT OF SHUTTERING: The surfaces of shuttering coming into contact with concrete shall be plastic coated plywood of approved make or as specified otherwise. The shuttering shall be thoroughly cleaned and coated if necessary before each use.

REMOVAL OF FORM WORK: All form work shall be removed without shock or vibration and shall be eased off carefully in order to allow the structure to take up its load gradually.

Forms shall not be disturbed until the concrete has adequately hardened to take up its own weight and the superimposed load coming on it and under no circumstance shall forms be struck until the concrete reaches the strength of at least twice the stress to which the concrete may be subjected at the time of striking. The side forms shall be so fixed that while removing them, the supporting forms and posts are not disturbed.

All the form work shall be kept in position until the expiry of a minimum period after concreting as specified below.

1. Forms supporting sides of beams, walls and columns - two days.
2. Bottoms of slabs up to 4.5 meter span - 7 days.
3. Bottoms of slabs above 4.5 meter span - 14 days.
4. Bottoms of beams up to 6 meter span - 14 days.
5. Bottoms of beams above 6 meter span - 21 days.
6. Bottoms of beams above 9 meter span - 21 days.

In the case of folded plate and shell roofs the contractor shall take approval for the pattern of shuttering along with program for de-shuttering. The tolerances of shuttering and stripping time will be as set forth in IS: 456. If directed, form shall be given an upward camber to ensure that the beams do not have any sag. Any honeycombing of minor nature shall be repaired neatly with cement mortar 1:2.

Any work showing signs of damage through premature and careless removal of form work, shall be reconstructed by the contractor at his own cost. Surface that has to remain exposed after removal of forms shall be carefully examined and any blemishes that are detected shall be removed.

SURFACE FINISH OF CONCRETE: Only cement mortar rendering of maximum 6 mm thickness may be permitted as finishing to concrete surface. Imperfect surfaces shall not be patched but shall be repaired by removal and replacement of the member as directed by the consultants.

If the formwork is to be paid for separately, measurements will be taken as per IS: 1200. The unit for payment shall be 1 sqm.

CONTROLLED CONCRETE

Controlled concrete shall be taken to mean that there shall be full field control of (1) predetermined grading of all aggregates that go into concrete and (2) Predetermined proportion of coarse aggregates, fine aggregates, cement and water to achieve the required strength.

Strength shall mean the acceptable field strength after 28 days of curing on the tests conducted on cubes from the concrete taken during concreting in the manner set forth in IS: 456. A statement of acceptable field strength is noted below.

Grade of concrete compressive strength of 15 cm cubes at 28 days after mixing

and tests conducted in accordance with relevant IS codes.

PRELIMINARY TEST WORKS TEST

MIN - Kg/sq. cm MIN - Kg/sq.cm

| | | | | | | | | |
|------|-----|-----|------|-----|-----|------|-----|-----|
| M 10 | 135 | 100 | M 15 | 200 | 150 | M 20 | 260 | 200 |
| M 25 | 320 | 250 | M 30 | 380 | 300 | M 35 | 440 | 350 |
| M 40 | 500 | 400 | | | | | | |

To arrive at the proportion to be adapted, to obtain the required grade of concrete the mix proportion shall be designed based on laboratory tests conducted using the aggregates actually available at site and which would be used for making the concrete. The design mix shall have suitable workability to enable it to be well consolidated and to be worked into the corners of the shuttering and around the reinforcements.

Where difficulty is likely to be encountered in placing and compacting concrete and where there is crowding of reinforcements, a separate mix is to be designed for the required strength and used without extra cost. The mix design along with the workability obtainable with the design mix shall be furnished to the consultants beforehand and approval obtained. A laboratory is to be established at the site to assess the moisture content of the aggregates as frequently as necessary and as instructed by the consultants based on which correction is to be applied to the quantity of water to be used for mixing.

All aggregates are to conform strictly to IS: 383. The aggregates shall be tested as frequently as directed by the consultants to see that their specification is same as adopted in the mix design. They must be stored on clean platform made for the purpose. Concrete shall be weighed batched.

The Dials of weigh batching unit to be used shall be checked with standard weights periodically. The conversion of weights to volume will be allowed by the consultants under special circumstances. Despite the design for several mixes the following quantities of cement are the minimum to be used for the different grades of the concrete.

| | | | | | |
|-----|---|-----------------|-----|---|-----------------|
| M15 | - | 280 kgs per Cum | M20 | - | 320 kgs per Cum |
| M25 | - | 350 kgs per Cum | M30 | - | 390 kgs per Cum |
| M35 | - | 325 kgs per Cum | M40 | - | 460 kgs per Cum |

PRECAST CONCRETE:

All precast concrete shall be cast over vibrating tables or by using form vibrators. The concrete mix shall conform in all respects to "controlled concrete" described in the appropriate paragraph under this section.

Exposed surfaces of precast members shall be finished as called for on the drawings. All jointing surfaces shall be wire brushed and hosed down until the aggregate is free from cement slurry. Castellations shall be provided wherever called for. Leave grouting holes, grooves inserts, projections, reinforcements, lifting hooks etc. to conform to the erection procedures. All edges and delicate projections likely to be damaged during handling and erection shall be protected by means of wooden cover fillets until placed in position.

DEFECTS IN CONCRETE:

Immediately on removal of form work, the surface of the concrete shall be examined by the contractor and any honeycombs or other imperfections shall be brought to the notice of the consultants. The acceptability or otherwise of such defective concrete shall be at the sole discretion of the consultants who may direct the contractor to repair the defective work or ask for demolition and replacement of such defective work at the risk and cost of the contractor.

PROTECTION OF CONCRETE:

All concrete shall be protected from damage by workmen, equipment, overload, wind and sun influence or any other causes.

All edges, corners, and projections of concrete members likely to be damaged shall be protected by means of cover fillets or as directed by the consultants.

All concrete structures underground shall receive a protective bitumen coating before backfilling.

It is necessary that the Engineer who is in charge of the construction of all concrete work, whether plain or reinforced shall superintend personally the whole construction and pay special attention to

1. Quality control in respect of selection of materials, proportioning, and mixing etc.
2. Transporting, Placing and consolidation of concrete.
3. Accuracy in cutting, bending, placing, and binding of reinforcement.
4. Accuracy in fabrication, assembly, and erection of form work.
5. Casting, handling, transportation, and erection of precast members.

REINFORCEMENT:

Steel reinforcement shall be either mild steel of tested quality high yield strength deformed bars of grade Fe- 415 conforming to IS: 1786 -1966 or as called for on the drawings. Fabric reinforcement where called shall be of hard drawn mild steel wire mesh conforming to IS: 1566-1967. Bars shall be free from deleterious materials, mill scale, loose rust, oil or paint. The contractor shall submit bar bending schedules for approval of the consultants prior to commencement of fabrication. These shall indicate the accurate dimensions and bending of bars as called for on the structural drawings. All steel shall be rigidly held in place with 18 gauge annealed steel wire. Cement mortar (1:2) blocks of required shape, M.S. chairs and spacer bars shall be used in order to ensure accurate positioning of reinforcement.

All reinforcing steel within the limit of a day's pour shall be in place and firmly wired at least one day, prior to the date of pour to permit inspection. The contractor shall also ensure that all conduits and inserts are in position before placing concrete.

Hooks where indicated shall be either a complete semi-circular turn with a radius of not less than four and not more than six bars diameters at the free end, or a 90 degree bend having a radius of not less than 4 bar diameters plus an extension of 12 bar diameters. Unless otherwise shown or specified on the drawings, all lapped by 50 times the diameter of bar. Not more than 33% (thirty three percent) of the bars shall have lapped joints at the same location. Only where specifically shown on the drawings, reinforcement shall have welded joints. Rate quoted for steel reinforcement work shall be deemed to include the cost to such welding wherever specified.

WORK RELATED PRECAUTIONS AND PRACTICES

The following technical instructions related to process of work, workmanship, use of materials etc shall be followed. This list is not the final but points expectations of IIA and its representing consultants.

These shall be complied with among others that form part of good practice of the industry to which the Contractor belongs and from time to time certain other relevant instructions regarding process of work, workmanship, use of materials etc shall be given to the contractor for following with respect to this project.

MASONRY WALLS:

- Proper mortar application on bed of masonry
- Blocks to be moist when placing for masonry
- Vertical joints mortar to be applied first and the block placed and pressed against it properly
- For 100 thick walls bands of concrete of 100mm depth with nominal reinforcement to be at every 900mm maximum from floor level onwards
- Mortar mix shall be 1:4 with proper sieved river sand free of all debris / organic / rubbish matter etc.
- Proper raking of joints to be done after completion of masonry work every day
- No hand filling of mortar is to be done at joints / to fill up broken edges of blocks

BANNED MATERIALS FROM SITE

- White cement for joint filling purposes or whatsoever
- Putty with any access / contact to the outside in any way
- Silicone sealant other than where specified / indicated
- Fevicol SR / such rubber based adhesives unless specified
- MS screws / MS nails / MS anchor bolts / MS clamps etc
- Cement grouting
- Broken material / damaged material / material that is twisted such as wood / toughened glass etc
- Razor blades / cutter blades etc for cleaning of glass surfaces
- Acid / acidic materials for whatsoever
- Water storage unless necessary
- Oil storage
- Packing tape – only 3M / equivalent masking tape to be used whereby the tape should not leave any gum marks / gum on removal
- Thinner material or such inflammable material beyond small quantities for purposes of cleaning etc.
- Defective tools / parts of materials for tools
- Used tools tile cutting blades etc etc shall be removed
- No betel nut / pan / pan parag / tobacco / guthkha chewing is allowed on site and no spitting at site is permitted.
- Cooking within the premises

JONTING MATERIALS

- For wood and ply only Fevicol SH / equivalent shall be used with adequate time given for curing
- Screws of appropriate length and diameter shall only be of galvanized steel or of SS 304 grade where specified so.
- Only epoxy grouting is permitted with spacers as per approval / indication
- Use of silicone sealant etc where required shall be done with 3M / equivalent material that is approved – the materials shall be pressed with a dip of finger in liquid dish washing agent for planning.

PROTECTION OF WORK DONE

- Protection of one's own material and work done is the responsibility of each agency independently irrespective of any influence by other agencies whatsoever.
- It is expected that each agency shall take care of the work done by other agencies and shall not damage it
- All sealanting and grouting work shall be done with proper protection with 3M masking tape and removed at the right time

CLEANING MATERIALS

- Environment friendly liquid dish washing agent to be used for cleaning of vitrified & ceramic floors
- Laminated wood floors shall be cleaned only with barely moist clean cloths and for removal of wipe marks due to dust it shall be done with clean soft dry cloth only. No wet mopping to be done of these floors.
- Glass cleaning shall be done only with glass polishing powder and with old news paper / soft moist cloth only. Only water moist cloths shall be used for the same.
- Cleanliness of site is essential at all times but minimum 2 times a day as the work is in progress.
- Hygiene is expected at site at all times.
- At handing over time all work shall be clean in all respects irrespective of agency involved

SKIRTING

- Only teak wood skirting is to be used to profile specified unless allowed otherwise
- Fixing with headless nails is disallowed
- Fixing shall be properly with wood plug / nylon plug with approved ss countersunk screws
- Fixing shall be in a manner whereby the floor is free to expand / contract below the skirting

FALSE CEILING

- Proper alignment and leveling to perfection shall be done of all the framing members
- No scratched / bent framing members / damaged ceiling tiles / broken edge tiles shall be used
- Colour of all members and ceiling tiles shall match
- Joints in framing members shall be at the visually appropriate place

- Proper GI hangers shall be provided as per manufacture's technical specification / brochure / guideline

PAINTING

- No brush marks / roller marks shall be discernable after finishing
- Proper preparation of surface
- Proper rubbing with appropriate fineness of surface requirement using the right sandpaper / emery paper
- Proper 2 coats of approved primer without causing surface aberration which can impact the final finish
- Proper final coats of paint with the right tools such as the roller diameter / length and texture / finish to get the best approved finish as per sample finish & colour approved
- No damages shall be accepted on hand over
- No patchiness in the entire surface of the painted surfaces to be visible – in that case entire planes shall have to be re-done at the contractors cost.

FROSTED STICKER

- 3M / equivalent sticker to be used
- Cutting shall be done to proper line and fixing to proper alignment
- At edge of glass partitions / glass doors a gap of 10 mm shall be left
- No corners upturning / dog ears shall be accepted
- No air bubbles shall be present
- No scratched materials shall be used
- Uniformly at all places all the widths and level shall be maintained
- No messing up of floor / any finishes around / any scratches on glass will be accepted

VITRIFIED TILE FLOORING

- Making all fixing of tiles on a solid bed of well set mortar bed and thereafter with trowel and epoxy grout
- Vitrified tiles shall be free of bending and defects / size / colour/ texture variation and shall be approved and selected to match the sample approved.
- No hollow space below any tile shall be accepted
- Use of spacers before epoxy grout shall be done as per approval
- Base preparation shall be done properly without any loose material and if required compact screed concrete with 10/6mm downsize aggregate shall be used with to get proper level before laying the floor tiles
- Skirting fixing shall be as per details provided with appropriate adhesive / mortar/ epoxy grout

UPVC DOORS & WINDOWS

- Proper sealanting of all joints in granite / tiles etc always with epoxy grout + silicon sealant before installation of any window / door makes it inaccessible for access for application
- Proper gaskets to be used and all windows to be watertight at all times within the glass and all around

the fame especially between the UPVC frame and the masonry / stone cladding / terracotta cladding etc.

- No non water-repellent material to be present between the UPVC windows and the masonry works
- Proper sealanting work to be done in stages
- Proper protection of the UPVC & gaskets & glass to be done after installation so that there are no scratches etc.
- Proper removal of foil protection on frame after work completion and proper cleaning to be done without any scratches / damages

WORKMANSHIP

- No short cuts in work process – always doing work in the proper process of technical workmanship without compromise
- No putty material / no non water repellent shall be present in any way in any gap between the outside and the inside including at the masonry / stone clad jambs for doors / windows
- Using the right tools and methods is critical for providing the right finish to the work
- Any work that may need extra guidance may be asked in advance of the work taken up since any defective work / deviation of detail etc shall not be accepted

SAFETY MEASURES

- Proper erection of railing at places next to cutouts etc.
- Protection against entry of rain into structure & consequent damages shall be the purview of the Contractor.
- Standard protection against fire hazards with respect to storage of material and use
- Material management shall be done in such a way as not to damage the structure / any work / work progress etc.

LIST OF APPROVED MAKES

CIVIL

| | |
|-------------------------------------|--|
| 1. STEEL | SAIL - TMT, TISCON - TMT, VIZAG STEEL (M/s.Rashtriya ispat Nigam Ltd.-RINL) |
| 2. CLAY BLOCKS (400 X 200 X 150mm) | Weiner Berger, Baliapatinam Tile works, Hulyar tile works. |
| 3. ACRYLIC EXTERIOR EMULSION PAINT | Apex Asian paints |
| 4. PLASTIC EMULSION PAINT | Premium emulsion Asian paints |
| 5. ENAMEL PAINT | Asian paints |
| 6. ALUMINIUM | Jindal, Indal, Hindalco, Bhoruka |
| 7. GLASS | Modi, Saint Gobain |
| 8. FLUSH DOOR | Kutty's Bond wood |
| 9. VITRIFIED TILES | RAK |
| 10. CERAMIC TILES | Nitco, Orient, Kajaria , RAK |
| 11. CERAMIC GLAZED TILES | Nitco, Orient, Kajaria, Somany |
| 12. CLAY TILES | Star, Shiva shakti, St.Antony |
| 13. MANGALORE TILES | Common Wealth, National, Star |
| 14. PATCH FITTINGS | Ozone. |

LIST OF APPLIED MATERIALS - HOSTEL BLOCK, IIAP

| SL. NO. | ITEMS | NOS. | MAKE | MODEL | COLOR | FINISH / MATERIAL | REMARK |
|----------|---|---------|----------|--|-------------|-------------------|------------------------------|
| I | PHE WORKS | | | | | | |
| 1.1 | WASHBASIN WITH SEMI PEDESTAL | 11 nos. | HINDWARE | VIVA Cat.No.10090 PEDESTAL Cat.No.11036 | SUPER WHITE | CERAMIC | |
| 1.2 | WATER CLOSET | 11 nos. | HINDWARE | ARMADA Cat.No.92036 | SUPER WHITE | CERAMIC | Wall Mounted without cistern |
| 1.3 | CONCEALED CISTERN | 11 nos. | HINDWARE | CONCEALO Cat.No. 506743 | | | |
| 1.4 | BASIN MIXER (PILLAR COCK) | 11 nos. | JAQUAR | FLORENTINE Cat.No.5011 | | CP | |
| 1.5 | BATH MIXER | 11 nos. | JAQUAR | FLORENTINE CaT.No.5079 | | CP | |
| 1.6 | BASIN SPOUT (BATH) | 11 nos. | JAQUAR | FLORENTINE CaT.No.5447 | | CP | |
| 1.7 | FLUSH VALVE | 11 nos. | HINDWARE | TRENDY FLUSH PLATE | | CP | |
| 1.8 | ANGULAR STOP COCK | 23 nos. | JAQUAR | FLORENTINE CaT.No.5053 | | CP | |
| 1.9 | CONCEALED STOP COCK | 11 nos. | JAQUAR | FLORENTINE CaT.No.5083 | | CP | |
| 1.1 0 | NAHANI TRAP | 25 nos. | | OPT-1 VIKING OPT-2 CHILLI | | SS | COCKROACH PROOF |
| 1.11 | SINK (DOUBLE BOWL WITH SINGLE DRAIN BOARD) | 1 no. | NIRALI | | | | |
| 1.12 | SINK COCK WITH REGULAR SWINGING SPOUT | 1 no. | JAQUAR | FLORENTINE Cat.No.5347 | | CP | |
| 1.13 | BOTTLE TRAP | 11 nos. | JAQUAR | ALLIED Cat.No.773 | | CP | |

| | | | | | | | |
|------|-------------------------------|---------|--------|---|--|----|--|
| 1.14 | WASTE COUPLING | 12 nos. | JAQUAR | ALLIED Cat.No.705 | | CP | |
| 1.15 | HEALTH FAUCET | 11 nos. | JAQUAR | ALLIED Cat. No. 573 Hand shower health faucet with 8mm dia. 1 m long flexible tube and wall hook | | CP | |
| 1.16 | TOWEL RACK | 11 nos. | JAQUAR | Continental Cat. No. 1181N | | CP | |
| 1.17 | SOAP DISH HOLDER | 11 nos. | JAQUAR | Continental Cat. No. 1131N | | CP | |
| 1.18 | TOILET PAPER HOLDER WITH FLAP | 11 nos. | JAQUAR | Continental Cat. No.1153N | | CP | |
| 1.19 | BIB COCK | 13 nos. | JAQUAR | Continental Cat. No.039 | | CP | |
| 1.20 | OVERHEAD SHOWER | 11 nos. | JAQUAR | ALLIED Cat. No. 1789 | | CP | |
| 1.21 | OVERHEAD SHOWER ARM | 11 nos. | JAQUAR | ALLIED Cat. No. 479 | | CP | |

BILL OF QUANTITIES

- **Summary sheet**

- **Bill of Quantities for**
 - **Civil**

 - **Electrical**

 - **PHE**

GRAND SUMMARY

**NAME OF THE WORK: “RENOVATION OF HOSTEL BLOCK AT
SECOND FLOOR OF STORES BUILDING
AT I.I.A, BANGALORE”**

| SL.NO. | DESCRIPTION | AMOUNT |
|---------------|------------------------------------|---------------|
| 1 | AMOUNT FOR CIVIL WORKS | |
| 2 | AMOUNT FOR ELECTRICAL WORKS | |
| 3 | AMOUNT FOR PHE WORKS | |
| | GRAND TOTAL | |

Amount in Words Rs.

Date :

Place:

Signature of the Contractor with Seal

“RENOVATION OF HOSTEL BLOCK AT SECOND FLOOR OF STORES BUILDING AT I.I.A, BANGALORE”

BILL OF QUANTITIES FOR CIVIL WORK

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|----------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| I | CIVIL WORKS | | | | | |
| 1.1 | Dismantling of masonry walls in cement mortar including sorting the dismantled materials, disposal of unserviceable materials, stacking the serviceable materials, providing and removing scaffolding wherever necessary, cost of all labour charges complete as per specifications | CUM | 30 | | | |
| 1.2 | Providing and constructing Aerated Aerocon block masonry of 200mm thk of standard size with special cement mortar 1:6 for superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications | SQM | 20 | | | |
| 1.3 | 100 thk. Solid cement block masonry wall - Providing & constructing approved quality solid concrete block masonry walls of 100mm thk. In cement mortar 1:6 for superstructure built to plumb-line including racking of joints, scaffolding, curing etc. complete. | SqM | 130 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 1.4 | Providing and laying in position reinforced cement concrete of mix 1:1.5:3 using 20mm and down size graded granite metal, machine mixed, concrete laid in layers not exceeding 15cms thick, well compacted in foundation, plinth and cills, including cost of all materials, labour, HOM of machinery, curing complete as per specifications | CUM | 3 | | | |
| 1.5 | Providing HYSD steel (cold, twisted) reinforcement for RCC works including straightening, cutting, bending, hooking, placing in position, lapping and / or welding , tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. | MT | 0.3 | | | |
| 1.6 | Providing and removing centering, shuttering, strutting, propping etc, complete removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes, thickness upto 20mm including cost of all materials, labour complete as per specifications | SQM | 20 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|----------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 1.7 | Providing and removing centering, shuttering, strutting, propping etc., for edges of slabs and breaks in floor, cills, lintels, plinth including cost of all materials, labour complete as per specifications | SQM | 13 | | | |
| 2 | FLOORING + SKIRTING | | | | | |
| 2.1 | Dismantling of existing nosing and flooring including sorting dismantled materials, disposal of unserviceable materials, stacking the serviceable materials, cost of all labour charges complete as per specifications(Tread+Risers+Landing) | SQM | 100 | | | |
| 2.2 | Dismantling of existing flooring including sorting dismantled materials, disposal of unserviceable materials, stacking the serviceable materials, cost of all labour charges complete as per specifications | SQM | 486 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 2.3 | Providing and laying treads using single piece slab flamed water cut / gang saw 19mm thk kashmir white granite 300mm wide with bull nosing on 2-sides & 2-line cutting for slip grip, laid over existing floor in CM 1:4 at 20mm thick , 3 lines of machine cut grooves in each tread of depth 4mm and width of 2mm, edge polishing in front and side too and pointed with epoxy grout for all joints including cost of all materials, cost of all labour charges and complete as per specifications | RMT | 80 | | | |
| 2.4 | Providing and laying risers using single piece slab mirror-polished , water cut / gang saw 19mm thk kashmir white granite 150 wide laid over existing floor in CM 1:4 at 20mm thick , edge polishing in front and side too and pointed with epoxy grout for all joints including cost of all materials, cost of all labour charges and complete as per specifications | RMT | 80 | | | |
| 2.5 | Providing and laying flooring using mirror polished, water cut/gang saw 19mm thk kashmir white flamed granite laid over existing floor in cm 1:4 at 20mm thick and pointed with epoxy grout for all joints including cost of all materials, cost of all labour charges complete as per specifications | SQM | 60 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 2.6 | Dismantling of existing skirting including sorting dismantled materials, disposal of unserviceable materials, debris from site, stacking the serviceable materials, cost of all labour charges complete as per specifications | RMT | 655 | | | |
| 2.7 | Providing and laying flooring using prepolished, water cut/gang saw 19mm thk flamed grey sadarahalli granite laid over existing floor in cm 1:4 at 20mm thick and pointed with epoxy grout for all joints including cost of all materials, cost of all labour charges and complete as per specifications | SQM | 70 | | | |
| 2.8 | Providing and laying treads using single piece slab flamed water cut/gang saw 19mm thk grey sadarahalli granite 300mm wide with bull nosig on 2-sides & 2-line cutting for slip grip, laid over existing floor in CM 1:4 at 20mm thick and pointed with eopxy grout for all joints including cost of all materials, cost of all labour charges and complete as per specifications | RMT | 65 | | | |
| | | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 2.9 | Providing and laying risers single piece slab mirror-polished, water cut/gang saw 19mm thk grey sadarahalli granite 150 wide laid over existing floor in CM 1:4 at 20mm thick and pointed with epoxy grout for all joints including cost of all materials, cost of all labour charges and complete as per specifications | RMT | 40 | | | |
| 2.10 | Providing and laying flooring with 8-10mm thk 600mm x 600mm RAK vitrified tiles - Satin Glow finish with Basic Rates of Rs.1000/smt with 3mm PVC spacers and epoxy grout of approved quality and make, fixed on top of existing flooring fixed with suitable adhesive, including cutting the tiles to the required size and fixing etc complete | SQM | 456 | | | |
| 2.11 | Providing and laying skirting with 8-10mm thk 600mm x 600mm RAK vitrified tiles - Satin Glow finish with Basic Rates of Rs.1000/smt with 3mm PVC spacers and epoxy grout of approved quality and make, fixed on existing plaster fixed on existing plaster with suitable adhesive, including cutting the tiles to the required size and fixing etc complete | RMT | 487 | | | |
| | | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 3 | DADO | | | | | |
| 3.1 | Dismantling of existing dado including sorting dismantled materials, disposal of unserviceable materials, stacking the serviceable materials, cost of all labour charges complete as per specifications | SQM | 154 | | | |
| 3.2 | Providing and laying dado with 6-8mm thk 300mm x 300mm Vitrified tiles with 3mm spacers and eopxy grout of approved quality and make, fixed on existing plaster with suitable adhesive, including cutting the tiles to the required size and fixing etc complete (Basic Price considered is Rs. 800/= per Sqmt) | SQM | 173 | | | |
| 3.3 | GRANITE COUNTER - Supplying of material & Execution - 19mm thk. SADARHALLI grey granite (all from one lot - gang saw water cut) with uniform thickness. Including cast iron / MS framework (for supporting of counter). Including of nosing, fixing, providing of drip groove on nosing edge. Inclusive of sealanting between under sink & counter-top as per details. | SQM | 4 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 4 | Doors Windows Ventilators (for details ref drawings) | | | | | |
| 4.1 | Dismantling existing doors, windows and ventilators of approx in all areas mentioned in the drawing including sorting dismantled materials, disposal of unserviceable materials, stacking the serviceable materials, cost of all labour charges complete as per specification | sqm | 220 | | | |
| 4.2 | Providing and fixing laminated door 32mm thick marine ply with teak wood frame + teak wood lipping + teak wood beading, 1mm thick laminate of greenply / equivalent including cost of materials, labour, transportation complete | sqm | 30 | | | |
| 4.3 | providing and fixing laminated door 32mm thick marine ply frame with 19mm thick granite with chamfered edges + teak wood lipping + teak wood beading, 1mm thick laminate of greenply / equivalent including cost of materials, labor, transportation complete | SQM | 23 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 4.4 | Providing and fixing ventilators with SS mesh + fixed louvers in frosted glass of 6mm thk in in frames sections made of aluminium box section 50 x 100mm including the bottom in drip section; as per approved drawings; including cost of materials, labor charges atc complete as per specifications | SQM | 5 | | | |
| 4.5 | Providing and fixing ventilators with 12mm thk marine ply box frame + teakwood lipping +8mm thk clear toughened glass with 19mm thk marine ply beading on top of cill , as per architectural drawing include cost of materials, labor, transportation complete. | SQM | 50 | | | |
| 4.6 | Polishing existing top rail in teak wood railing with brushing, cleaning, polishing with melamine finish including cost of all materials, labour, scaffolding etc complete as per specification | RMT | 25 | | | |
| 4.7 | Polishing existing railing with brushing, cleaning, painting of MS work in 2 coats complete including cost of all materials, labour, scaffolding etc complete as per specification | RMT | 25 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 5 | MS WORKS & SKYLIGHTS + ROOF | | | | | |
| 5.1 | Providing and fixing M.S tubular handrail of 50mm dia, consisting of horizontal rods of 12mm dia. 4nos , vertical balustrades of 50x6mm thk flat bent to profile / cut+weld as per details., including cutting, welding, bolting , with primer +painting etc. complete. (Railing height of 1.0m height unless otherwise mentioned in drawing) | RMT | 35 | | | |
| 5.2 | Dismantling of existing skylights with mesh including sorting dismantled materials, disposal of unserviceable materials, stacking the servieale materials, cost of all labour charges complete as per specifications | SQM | 16 | | | |
| 5.3 | Providing and fixing 10mm thk clear toughened glass as Roof skylights with necessary Aluminium frame work of 25x75mm AL-Section + AL Brackets + Flashing as per drawings with proper sealanting all around with necessary screws for fixing the sheet including cost of all materials, labour, transportation complete | SQM | 18 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 5.4 | Providing and fixing ventilators above skylights with SS mesh + 8mm thk clear toughened fixed glass with glass to glass joint + fixed louvers in frosted glass of 6mm thk in in frames sections made of Aluminium 50 x 100mm box section as per approved drawings including cost of materials, labor charges atc complete as per specifications | SQM | 26 | | | |
| 5.5 | Providing, fabricating, transporting, hoisting and erecting in position Structural Steel Works comprising of beams, columns, trusses, purlins, bracings, gantry, girders, and inserts etc with necessary hot rolled sections like angles, channels, I-sections, plates etc conforming to IS:2062 including all fasteners like GI bolts, GI nuts, GI washers etc for connections, cutting, welding and painting two coats of approved brand of enamel paint over a coat of zinc chromate primer after preparing of surface with phosphating solution to remove scales, rust etc. COLUMNS-100x100x3.2mm thk SHS BRACKET -100x75x2.5mm & PURLINS - 75x38x2.5mm | MT | 2 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|----------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 5.6 | Providing and fixing Galvalume Trapezoidal profiled steel roof sheeting (0.5mm total coated thickness) in two layers with 100mm thick rock wool insulation laid between the sheets including fixing "Z" sub-girts 100mm deep, with required overlaps using self drilling and tapping screws of approved brand as per drawings | SQM | 70 | | | |
| 5.7 | Providing and fixing 100mm thk. Terracotta Jali Work fixed using Cement Mortar 1:6 including cost of all materials, labour complete works as per specification | SQM | 50 | | | |
| 6 | PLASTERING AND PAINTING | | | | | |
| 6.1 | Internal Plastering - providing 12mm thick cement plaster in single coat with cement mortar 1:3 to masonry including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labor, curing lime rendering if necessary complete as per specification | SQM | 300 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 6.2 | External Waterproof cement plastering - Supplying of material & Execution - 25mm thk. Plastering of uniform level & finish in 2-layers over Aerocon Block Masonary, Including cement based water proofing compound, including rounding off corners wherever necessary required smooth rendering, providing and removing scaffolding, including cost of materials, labor, curing lime rendering if necessary complete | SQM | 150 | | | |
| 6.3 | Internal Painting - providing and applying painting in two coats with patti and acrylic premium emulsion of ASIAN PAINTS brand with lustre finish on internal wall and column surface to give even approved shade after thoroughly brushing the surface, including preparing the surface even and sand paper smooth, cost of materials, labor complete as per specifications | SQM | 1435 | | | |
| 6.4 | Internal Painting - providing and applying painting in two coats with patti and acrylic premium emulsion of ASIAN PAINTS brand with lustre finish on ceiling and flight soffits to give even approved shade after thoroughly brushing the surface, including preparing the surface even and sand paper smooth, cost of materials, labor complete as per specifications | SQM | 500 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|----------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 6.5 | External Painting - providing and applying painting in two coats with Apex Ultima or of approved brand on external wall surface including cost of materials, labor complete as per specifications | SQM | 1000 | | | |
| 7 | FALSE CEILING | | | | | |
| 7.1 | Providing and installing 12mm thk Gypsum board false ceiling with GI Sections including cost of material, labor charges complete as per specifications. | SQM | 175 | | | |
| 8 | FROSTED STICKER | | | | | |
| 8.1 | FROSTED STICKER (FOR GLASS) - Supplying of material & Execution - 3M froasted sticker as per design fixed on clear glass ventilator. (Opaque, Vinyl 50sq.m of ULTRA or equivalent make for fixing or glass and other opaque surfaces etc.) | SQM | 32 | | | |
| 9 | WATERPROOFING | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 9.1 | Providing and installing waterproofing on terrace with two plies of heavy duty poly master an initial coat of flex - shield roof coating with proper laps and 2nd coat of flex - shield with edges, corner and joints properly sealed and after curing aluminium roof shield is applied including cost of all materials, labour complete | SQM | 660 | | | |
| 9.2 | Providing and installing waterproofing for toilets with cinder filling and water proofing the top surface of the muddy drawn,the base slab to be waterproofed with concrete primer flex shield roof coating and the top surface would be water proofed with 2 laps of flex shield and one ply of heavy duty poly - master on it including cost of materials, labour, curing complete. | SQM | 70 | | | |
| 9.3 | Providing and installing waterproofing for all flashing for all edges, corners and joints properly sealed with heavy duty patching compound and heavy duty pathching fabric and one more coat of heavy duty patching compound on it including cost of all materials, labour, curing complete | SQM | 210 | | | |
| | TOTAL carried to SUMMARY | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|-----------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| II | ELECTRICAL WORKS | | | | | |
| A. | EARTHING SYSTEM | | | | | |
| 1 | Supply & fixing of following GI wires & tapes on existing tray/ trench /ground / PVC pipe / walls including all necessary fixing accessories, and effecting connections with copper riveting / welding etc. as approved. | | | | | |
| a. | 8 SWG bare GI wire. | RM | 50 | | | |
| B. | DISTRIBUTION BOARDS | | | | | |
| 1 | Supply, installation, testing and commissioning of necessary MCB's B/ C series & minimum 10kA breaking capacity, ELCB's in distribution boards including dressing, ferruling, thimbling of wires etc. complete as per specifications and details as follows: | | | | | |
| | Each DB shall have separate neutral links of rating not less than 100A for each phase. The main incoming neutral link shall be in addition to three outgoing neutral links and shall be of same rating. | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|-----------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| i. | 8 WAY TPN DB (MDS Make Model no. 607727 or equivalent in MGE) | | | | | |
| | Incomer: | | | | | |
| | 1 No. 40A, 4P MCB & 3 Nos. 40A/100mA DP ELCB's each per phase. | | | | | |
| | Outgoings | | | | | |
| | 24 nos. 6A/10A/16A/20A/25A SP MCB's, as specified in drawings. | | | | | |
| | 8 WAY TPN DB as described above. | Nos. | 1 | | | |
| ii. | 6 WAY SPN DB-INVERTER (MDS Make Model no. 607721 or equivalent in MGE) | | | | | |
| | Incomer: | | | | | |
| | 1 No. 25A, DP MCB & 1 No. 40A/100mA DP ELCB's each per phase. | | | | | |
| | Outgoings | | | | | |
| | 4 nos. 6A/10A/16A/20A/25A SP MCB's, as specified in drawings. | | | | | |
| | 4 WAY SPN DB as described above. | Nos. | 1 | | | |
| C. | FIXING OF LIGHT FITTING AND FANS (The fixtures will be provided by the Institute) | | | | | |
| 1 | Fixing, testing & commissioning of following light fitting: (Price shall be included of all necessary fixing hardware, lamps, electronic ballast & necessary chipping / drilling in wall/ceiling as requires) | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| a | HANGING LIGHT (Phillips Made model no. FPG 303) | Nos | 4 | | | |
| b | CEILING MOUNTED FIXTURE (Phillips Made model no. FPG 703) | Nos | 19 | | | |
| c | CEILING MOUNTED FIXTURE (Phillips Made model no. FCZ 300) | Nos | 11 | | | |
| d | CEILING MOUNTED FIXTURE (Phillips Made model no. FCG 322) | Nos | 4 | | | |
| e | CEILING MOUNTED FIXTURE (Phillips Made model no. FCZ 300) | Nos | 2 | | | |
| f | CEILING MOUNTED FIXTURE (Phillips Made model no. FCG 300) | Nos | 2 | | | |
| g | CEILING MOUNTED FIXTURE (Phillips Made model no. FCG 322) | Nos | 2 | | | |
| h | CEILING MOUNTED FIXTURE (Phillips Made model no. FCG 300) | Nos | 10 | | | |
| i | WALL MOUNTED FIXTURE (Phillips Made model no. FWG 702) | Nos | 19 | | | |
| j | WALL MOUNTED FIXTURE (Phillips Made model no. FWG 300) | Nos | 2 | | | |
| k | WALL MOUNTED FIXTURE (Phillips Made model no. FWG 307) | Nos | 19 | | | |
| l | WALL MOUNTED FIXTURE (Phillips Made model no. EWP 306) | Nos | 2 | | | |
| m | WALL MOUNTED FIXTURE (Phillips Made model no. DCP 721) | Nos | 2 | | | |
| n | WALL MOUNTED FIXTURE (Phillips Made model no. EWP 306) | Nos | 2 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|-----------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| o | TAST LIGHT FIXTURE (Phillips Made model no. TMS 022 including ZMS 022 MB Bracket for conduit mounting) | Nos | 2 | | | |
| p | 1200mm dia (4'Dia) circular suspended ceiling fans (Crompton Greaves, Khaitan, USHA made) | Nos | 2 | | | |
| q | 300mm dia Exhaust fan with all fixing accessories. | Nos | 11 | | | |
| r | Mirror Light (Phillips Made model no. FWZ 301) | Nos | 11 | | | |
| s | Floor Light Fixture (Phillips Made model no. EPP 300) | Nos | 11 | | | |
| 2 | Removing, storing, cleaning & re-fixing of following existing electrical fixture & fans. (Price shall includes of repalcing of any damaged part/lamp of ballast & re-painting of fitting & fixture etc.) | | | | | |
| a | Existing 1200mm dia ceiling suspended fans | Nos. | 11 | | | |
| b | Existing tube lights | Nos. | 10 | | | |
| D. | CONDUITS FOR SUBMAIN / CIRCUIT & POINT WIRING | | | | | |
| 1 | Providing and fixing in position the following heavy duty ISI marked PVC conduit including all accessories (i.e clamps, nuts, bolts, bends, junction boxes, pull boxes etc.) concealed or exposed as called for including necessary civil work such as chase cutting & making good in all respects as the case may | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| | be: | | | | | |
| a. | 20mm dia. | RM | 600 | | | |
| b. | 25mm dia. | RM | 400 | | | |
| c. | 32mm dia. | RM | Rate | | | |
| d. | 40mm dia. | RM | Rate | | | |
| 2 | Providing and fixing in position the following PVC opeable rectangular casig & capping including bends, junction boxes, pull boxes and necessary civil works such as making good of the wall for surface fixing which shall include saddles and supports. | | | | | |
| a. | 25mm x 20mm | RM | 400 | | | |
| b. | 32mm x 20mm | RM | 150 | | | |
| 3 | Providing & fixing of following sizes 18 G M.S. anodised Outlet boxes with earth point, at its position concealed or exposed as called for including necessary civil work such as chase cutting & making good in all respects as the case may be: | | | | | |
| a. | 8" x 3" x 2" Boxes. | Nos. | 24 | | | |
| b. | 4" x 3" x 2" Boxes. | Nos. | 72 | | | |
| c. | 5" x 3" x 2" Boxes. | Nos. | 25 | | | |
| d. | 3" x 3" x 2" Boxes. | Nos. | 8 | | | |
| 4 | Supply & fixing of following sizes of heavy duty PVC flexible conduit including PVC coupler on both ends complete with all fixing | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|-----------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| | accessories. | | | | | |
| a. | 20mm dia. | RM | 100 | | | |
| b. | 25mm dia. | RM | 100 | | | |
| E. | SUBMAIN /CIRCUIT/ POINT WIRING | | | | | |
| 1 | Supply, laying, testing and commissioning of wiring with PVC insulated stranded copper conductor wire 660 /1100 V grade in existing surface / recessed conduit including ferruling, terminations at both ends with suitable lugs, hylem pull box cover etc. complete as required for following: | | | | | |
| a. | 4 x 16 sq.mm Cu. Wiring cable + 2 x 4sq.mm Cu. Solid green PVC insulated Earth wire in existing conduit | RM | 50 | | | |
| b. | 2 x 6 sq.mm Cu. Wiring cable + 1 x 2.5sq.mm Cu. Solid green PVC insulated Earth wire in existing conduit | RM | 200 | | | |
| c. | 2 x 4 sq.mm Cu. Wiring cable + 1 x 2.5sq.mm Cu. Solid green PVC insulated Earth wire in existing conduit | RM | Rate | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 2 | Wiring for light, ceiling fan, exhaust fan, call bell & 5 A plug points in existing conduits with FR PVC insulated stranded copper conductor wires a from DB via switch to the point of any length with providing and fixing of PVC connector, hylem junction box cover, fan cover etc. complete in all respects including testing & commissioning as required for following. | | | | | |
| a. | From DB to first point 2 x 2.5 sq.mm Cu. Wiring cable + 1 x 1.5sq.mm Cu. Solid green PVC insulated Earth wire in existing conduit. | RM | 1200 | | | |
| b. | Loop point 2 x 1.5 sq.mm Cu. Wiring cable + 1 x 1.5sq.mm Cu. Solid green PVC insulated Earth wire in existing conduit. | RM | 1900 | | | |
| c. | 6/16A power point 2 x 4.0 sq.mm Cu. Wiring cable + 1 x 2.5sq.mm Cu. Solid green PVC insulated Earth wire in existing conduit. | RM | 1050 | | | |
| d. | 3 x 6 mm ² stranded copper conductor wire etc. complete as required in existing conduit. | RM | 100 | | | |
| e. | FR PVC insulated and sheathed copper conductor flexible cable of 3 x 1.5 sq. mm size. | RM | 40 | | | |
| | | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|-----------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| F. | SWITCH PLATES & SOCKET OUTLETS | | | | | |
| 1 | Supply, fixing, testing & commissioning of modular type switches, shuttered switched socket outlets, electronic fan regulator , 1 phase / 3 phase, 16A, 20A, 32A metal clad sockets with DP/TPN MCB & plug top for these metal clad sockets. | | | | | |
| a. | 6A one way switch in existing box. | Nos. | 85 | | | |
| b. | 6A (5 pin) switched socket outlet in existing box. | Nos. | 45 | | | |
| c. | 6A/16A (6 pin) switched socket outlet in existing box. | Nos. | 26 | | | |
| d. | 6A one way switch with 1 no. electronic fan regulator. | Nos. | 30 | | | |
| e. | 20A, 1 phase metal clad socket outlet with 20A DP MCB & plug top. | Nos. | 11 | | | |
| f. | 32A, 1 phase metal clad socket outlet with 32A TP MCB & plug top. | Nos. | 2 | | | |
| g. | 1 Module Blank Plate | Nos. | 40 | | | |
| h. | 3 pin, 6A ceiling rose of approved make & shade. | Nos. | 22 | | | |
| | | | | | | |
| 2 | Supply and fixing of following sizes of modular front plates screw less along with necessary raparound, fixing accessories. | | | | | |
| a. | 1 module | Nos. | 10 | | | |
| b. | 2 module | Nos. | 10 | | | |
| c. | 3 module | Nos. | 8 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|-----------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| d. | 4 module | Nos. | 72 | | | |
| e. | 5 module | Nos. | 25 | | | |
| f. | 6 module | Nos. | Rate | | | |
| g. | 8 module | Nos. | 24 | | | |
| G. | TV, TELEPHONE & DATA | | | | | |
| 1 | Providing and fixing in position the following heavy duty ISI marked PVC conduit including all accessories (i.e clamps, nuts, bolts, bends, junction boxes, pull boxes etc.) concealed or exposed as called for including necessary civil work such as chase cutting & making good in all respects as the case may be: | | | | | |
| a. | 20mm dia. | RM | 200 | | | |
| b. | 25mm dia. | RM | 250 | | | |
| c. | 32mm dia. | RM | Rate | | | |
| 2 | Supply, fixing, testing & commissioning of modular type shuttered socket outlets. | | | | | |
| a. | Telephone socket RJ - 11. | Nos. | 12 | | | |
| b. | Co-axial Socket - 1 Point | Nos. | 12 | | | |
| c. | Data socket RJ - 45. | Nos. | 12 | | | |
| 3 | Supply, laying, testing & commissioning of Co-axial RG-6 cable with foam polythene in existing conduits. | RM | 550 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 4 | Supply and laying Cat-6 cable in existing conduits for Data networking (1 Box = 305 RM). | Box | 3 | | | |
| 5 | Supply, laying, testing & commissioning of tinned copper PVC insulated and sheathed, un armoured telephone cables in existing pipe on walls, ceiling, existing cable trays complete with clamps, cable markers etc. including ferruling and termination at both ends complete as required for following. | | | | | |
| a. | 20 pair Tel. Cable | RM | 50 | | | |
| b. | 40 pair Tel. Cable | RM | Rate | | | |
| 6 | Supply, installation testing & commissioning of telephone tag block with KRONE terminal connectors in lockable sheet powder coated steel enclosure surface or concealed in wall including chase-cutting and making good as required for following. | | | | | |
| a. | 50 pair tel. tag block | Nos. | Rate | | | |
| b. | 40 pair tel. tag block | Nos. | Rate | | | |
| c. | 20 pair tel. tag block | Nos. | 2 | | | |
| 7 | Supply, laying, testing and commissioning of 0.5mm dia tinned copper PVC insulated and PVC sheathed un armoured telephone cables in already laid conduits including marking, end terminations etc. complete as required. | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|--|----------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| a. | 0.61mm dia tinned copper 4 pair (Office) | RM | Rate | | | |
| b. | 0.61mm dia tinned copper 2 pair (Intercom) | RM | 600 | | | |
| 8 | Providing, fixing hylem sheet cover 2mm thick of required size for low voltage systems including brass screw and cup washer etc. complete as required. | sq. inch | Rate | | | |
| 9 | Providing & fixing of splitter in MS junction box for TV network. | | | | | |
| a. | 3 way splitter | Nos. | 8 | | | |
| 10 | Providing, fixing os MS junction boxes 2mm thick sheet of 250x200x75mm size for TV systems including brass screw and cup washer etc. complete as required. | Nos. | 1 | | | |
| | Total carried to summary | | | | | |
| | | | | | | |
| | | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|----------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| I | PLUMBING WORKS | | | | | |
| | Note: | | | | | |
| a. | All Vitreous china wares, Accessories, Bath tubs, Jacuzzi, Kitchen sinks, Hand driers, C.P. brass fittings, accessories, and hanging/fixing materials ie. Chairs, brackets, nuts, bolts and screws shall be supplied at site as per section made by Architect, Consultants and Owner) | | | | | |
| b. | Scope to include supply of material, loading / unloading, storing, handling, shifting to respective floor/room, installation, testing & commissioning. | | | | | |
| A | Sanitary Fixtures & C.P. Brass Fittings | | | | | |
| 1 | Supply & Fixing vitreous china wall/floor mounting type (European type) water closet with C.P. Bolts, nuts, C.I. Chair or other hanging/fixing arrangement solid plastic seat with lid, C.P. brass hinges and rubber buffers, 32 mm dia flush pipe with clamp and adaptor, low level flushing cistern, C.P. brass screws and washers complete, including cutting and making good the walls floors where required. (Hindware Make ARMADA Cat.No.92036 & cistern is CONCEALO Cat.No. 506743) | Each | 11 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 2 | Supply & Fixing vitreous china wash basin semi pedestal type with waste coupler, 32mm CP cast brass bottle trap and pipe to wall with CP wall flange and rubber adopter for waste connection complete, including cutting and making good the walls where required. (Was basin: Make Hindware Viva Cat no.10090) (PEDESTAL Cat No. 11036,) (Bottel trap: Make Jaquar Allied Cat No.773) (Waste Coupling: Make Jaquar Allied Cat. no. 705) | | | | | |
| a | With CP brass single lever mixer (Make Jaquar Florentine Cat.No. 5011) | Each | 12 | | | |
| 3 | Supply & Fixing C.P. Shower set comprising of: | | | | | |
| a | One No. CP brass concealed divertor mixer. (Make jaquar Florentine Cat.No.5079) | | | | | |
| b | One No. CP brass OH shower arm with shower head. (Shower arm Make Jaquar Allied Cat No.479) (Shower Head Make jaquar Allied Cat No.1789) | | | | | |
| c | Including cutting and making good the walls where required. | | | | | |
| | Shower set as described above. | Each | 11 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| 4 | Supply & Fixing of CP bib cock of approved make, etc., complete with all accessories. Make Jaquar Continetal Cat. No. 039) | Each | 13 | | | |
| 5 | Supply & Fixing 15 mm C.P. brass Angle valve with C.P. copper connecting pipe, 375 mm long & nuts, washer and C.P. brass flange complete, including cutting and making good the wall where required. Make Jaquar Florentine Cat.no.5053 | Each | 24 | | | |
| 6 | Supply & Fixing stainless steel sink with R.S. or C.I. brackets, 40 mm dia C.P. waste with chain and plug, 40 mm dia C.P. Bottle trap with cleaning eye including painting of brackets cutting and making good the walls and floors complete. | | | | | |
| a | Single bowl with single drain board. | Each | 1 | | | |
| b | Double bowl with single drain board with swan cock (Make Nirali sink & Jaquar make Swan cock model no. Florentine Cat.No.5347) | Each | 1 | | | |
| 7 | Supply & Fixing 15 mm C.P. brass health foucet with angle valve and C.P. brass flange complete, including cutting and making good the wall where required. (Make Jaquar Allied Cat.No.573 Hand | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| | shower health faucet flexible tube with 8mm dia 1mtr long Tube and wall hook) | Each | 11 | | | |
| 8 | Supply & Fixing C.P brass Toilet paper holder with stainless steel roller complete, including cutting and making good the walls where required. (Make Jaquar Continental cat.No. 1153N) | Each | 11 | | | |
| 9 | Supply & Fixing Stainless steel lavatory mounted liquid soap dispenser with spout, shank, and fluid bottle complete in all respects including cutting and making good the walls required. (Make Jaquar Continental Cat.No. 1131N) | Each | 11 | | | |
| 10 | Supply & Fixing CP brass Towel rack complete with brackets fixed to PVC rawl plug with C.P. brass screws complete in all respects including cutting and making good the walls required. (Make Jaquar Continental Cat.No 1181N) | Each | 11 | | | |
| 11 | Providing and fixing PVC 110mm dia Nahani trap With SS grating including fixing to the floor with cement mortar. (Model No: OPT-1 VIKING, OPT-2 CHILLI) | Each | 25 | | | |
| 12 | Supply & Fixing Concealed Stop Cock complete with C.P. brass screws complete in | Each | 11 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|-----------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| | all respects including cutting and making good the walls required. (Make Jaquar Florentine Cat.No.5083) | | | | | |
| B. | Soil, Waste & Vent Pipes & fittings | | | | | |
| 1 | Providing and fixing sand cast iron soil, waste and vent pipe conforming to IS: 1729 including all fittings (plain or door) e.g. bends, junction, cowls, offsets, access pieces, jointing with refined pig lead of 25 mm deep lead joints including cutting chase or holes in walls and floors and making good where required. (vent pipes) | | | | | |
| a. | 50 mm dia. | RM | 1 | | | |
| 2 | Providing and fixing spun cast iron P or S trap of self cleaning design with or without vent arm setting in cement concrete 1:2:4 mix complete including cost of cutting and making good the walls and floors where required. | | | | | |
| a | 100 mm inlet and 100 mm outlet | Each | 12 | | | |
| b | 100 mm inlet and 75 mm outlet | Each | 10 | | | |
| 3 | Providing & laying uPVC pipes 6 Kg/cm ² conforming to IS: 4985 including fittings wherever required e.g., tees, bends of any | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| | degree, couplings, adapters, plugs, unions etc. and jointing as manufacturer recomondation etc. complete. (For Soil & Waste water) | | | | | |
| a | 110 mm O.D pipe | RM | 240 | | | |
| b | 75 mm O.D pipe | RM | 350 | | | |
| 4 | Providing & laying uPVC pipes 6 Kg/cm ² confirming to IS: 4985 including fittings wherever required e.g., tees, bends of any degree, couplings, adapters, plugs, unions etc. and jointing as manufacturer recomondation etc. complete. (For rain water) | | | | | |
| a | 110 mm O.D pipe | RM | 180 | | | |
| b | 75 mm O.D pipe | RM | 20 | | | |
| 5 | Providing and fixing SS grating with frame (Neer or equivalent) including fixing to the floor with cement mortar. | | | | | |
| a) | 125 mm dia | Each | 24 | | | |
| 6 | Providing and laying cement concrete 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm and down gauge) 75 mm in bed and all round GI/CI soil and waste pipe under floor including shuttering | | | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------|---|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| | and centering. | | | | | |
| a | 75 mm dia | RM | 60 | | | |
| b | 100/110 mm dia | RM | 60 | | | |
| 7 | Providing and fixing uPVC cleanout plug male threaded joint with socket caulked to soil pipe including necessary fixing accessories. | | | | | |
| a | 75 mm dia | Each | 11 | | | |
| b | 110 mm dia | Each | 12 | | | |
| 8 | Providing and fixing in position stainless steel cockroach trap consisting of 0.45 mm thick inner and outer cup and 1.00 mm thick top grating (Jali) with ring to be fixed inside C.I. or uPVC 'P' traps with cement concrete. | | | | | |
| a | 129x129 mm square | Each | 2 | | | |
| 9 | Making khurras 45x45 cms with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) over PVC sheet 1 m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement: 3 coarse sand) and a coat of neat cement rounding the edges and making the finishing the outlet complete. | Each | 11 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|-----------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| C. | Water Supply | | | | | |
| 1 | Providing and fixing G.I. pipes complete (I:S 1239 medium class) with G.I.fittings, flanges & clamps, including cutting and making good the walls etc. complete (Internal works) | | | | | |
| a | 40 mm nominal bore | RM | 100 | | | |
| b | 50 mm nominal bore | RM | 50 | | | |
| c | 20 mm nominal bore | RM | 200 | | | |
| 2 | Constructing masonry chamber 60x60x75 cms inside with 75 class designation brick work in cement mortar 1:5 (1 cement : 5 fine sand)for sluice valve with 560 mm dia heavy duty SFRC manhole cover with frame and R.C.C. top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 mix (1 cement : 5 fine sand and 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick finished with a floating coat of neat cement and outside plaster finished rough complete as per standard design. | Each | 6 | | | |
| 3 | Constructing masonry chamber 30x30x50 cms inside with 75 class designation brick | Each | 6 | | | |

| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|-----------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| | work in cement mortar 1 : 5 (1 cement : 5 fine sand) for sluice valve, with 300x300 mm SFRC cover with frame, necessary excavation foundation concrete 1 : 5 : 10 mix (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1 : 3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement and outside plaster finished rough complete as per standard design. | | | | | |
| 4 | Making connection to the existing water main including cutting and providing adaptor/union as per site requirement and making good the same complete in all respects for 50 mm dia. | Each | Rate | | | |
| 5 | Providing and fixing high pressure ball cock with copper floats. | Each | Rate | | | |
| D. | Miscellaneous items | | | | | |
| 1 | Providing and fixing antimosquito overflow grating 150 mm dia (for underground tanks only). | Each | 1 | | | |
| 2 | Providing and fixing M.S. structural work fabricated from standard sections e.g. M.S. rounds, angles, channels including cutting to size, drilling, welding, fixing and welding to | | | | | |

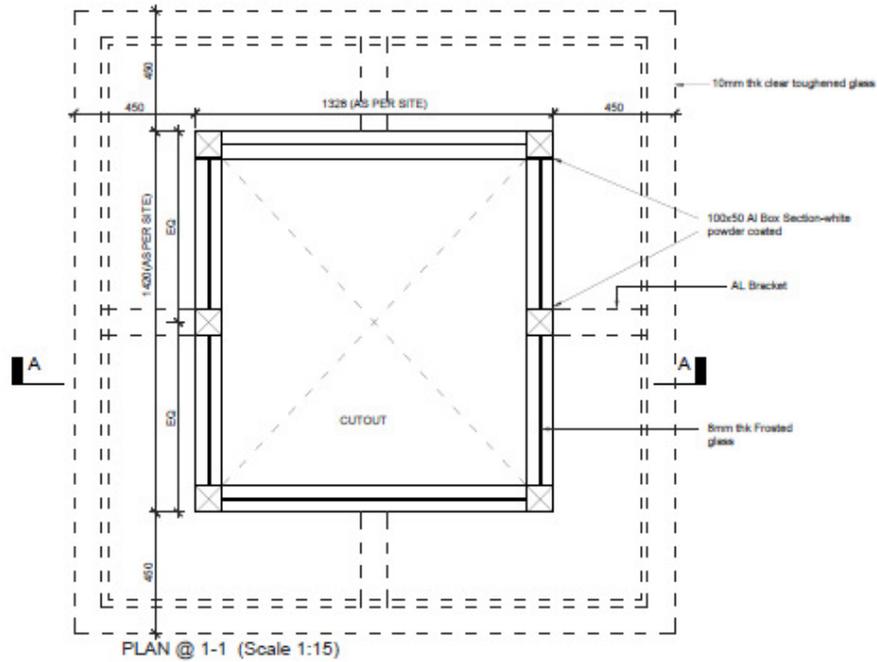
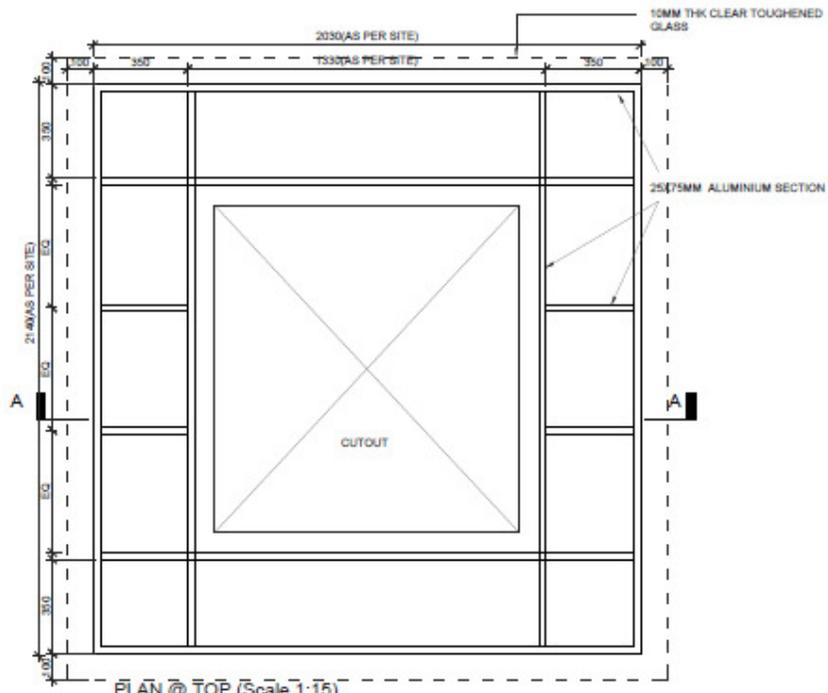
| SL. NO. | ITEM OF WORK | UNIT | QUANTITY | RATE (Rs.) | | AMOUNT (Rs.) |
|---------------------------------|--|------|----------|------------|----------|--------------|
| | | | | in figures | in words | |
| | insert plates in RCC structural members as directed by Engineer-in-Charge including cutting and making good the walls and floors (for pipe supports from floor in plant room, M.S. ladders and manhole covers for water tanks only). | Kg | 300 | | | |
| 3 | Providing and fixing M.S. slotted angle iron 40x40x2 mm thick with stove enamel finish & fixed to brick masonry or RCC walls with 12 mm dia bolts embedded in cement concrete blocks 1:2:4 mix (1 cement: 2 coarse sand: 4 stone aggregate 12.5 mm nominal size) 100x100x100 mm size for masonry walls & with expandable anchor fasteners on RCC spaced not exceeding 600 mm with 15 mm dia G.I. spacer between wall & angle complete as directed by Engineer-in-Charge. | RM | 75 | | | |
| TOTAL carried to SUMMARY | | | | | | |

Part - III

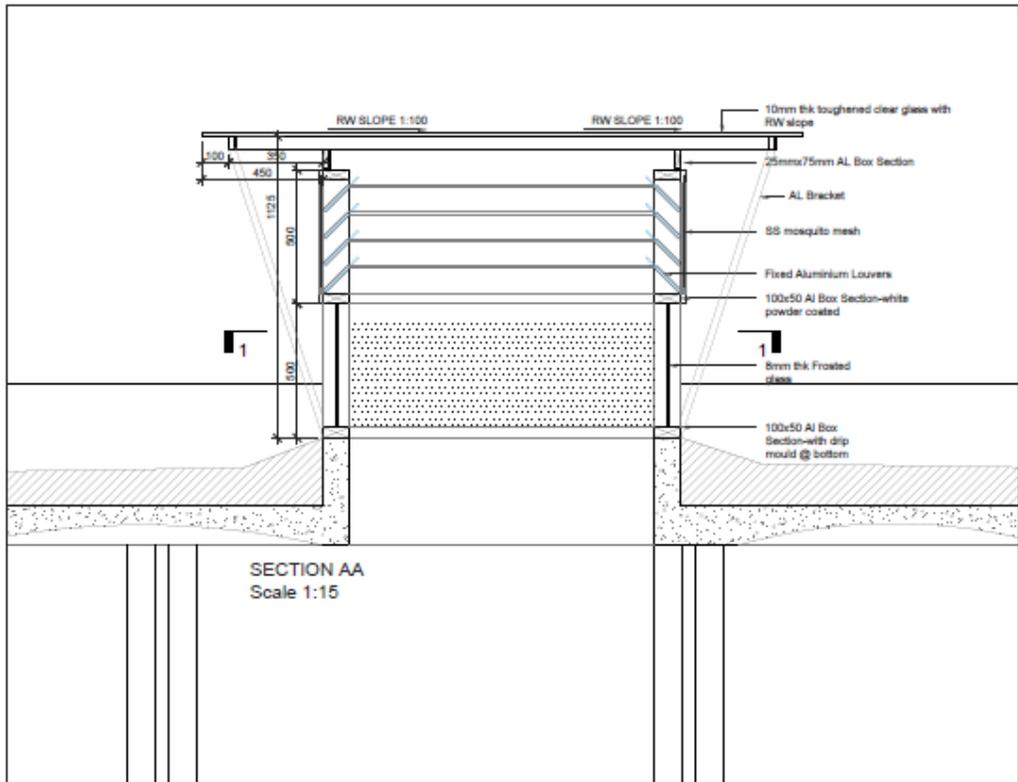
DRAWINGS

 CIVIL

 ELECTRICAL



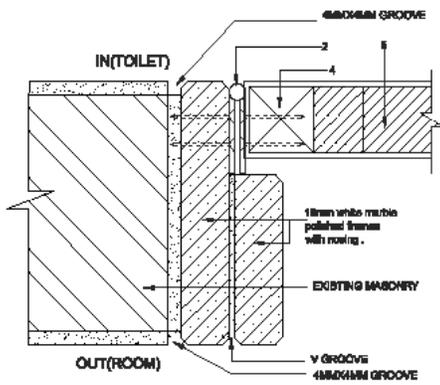
| Project Name and Address: PROPOSED REPAIR/RENOVATION OF IAFI, COIMBATORE (Model Sheet) | | Client: Indian Institute of Astrophysics, Hanamangala, Bangalore | Contractor:  ANANDHI GLOBAL BUILDERS PVT. LTD. Plot No. 10, Sector 10, Phase 1, Gurgaon, Haryana - 122001, India Contact: 01299 200000 Website: www.anandhiglobalbuilders.com | Architect/Consultant: | Contractor: | <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Revisions</th> <th>Date</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table> | Sl. No. | Revisions | Date | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Drawing Title: WINDOW DETAIL | Drawing No.: A-DET-02a 00 |
|--|-----------|---|--|------------------------------|--------------------|--|-----------------------|----------------------------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-------------------------------------|
| Sl. No. | Revisions | Date | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| FOR TENDER PURPOSE | | | | | | | Scale: 1:15 | Date: 08/08/2023 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



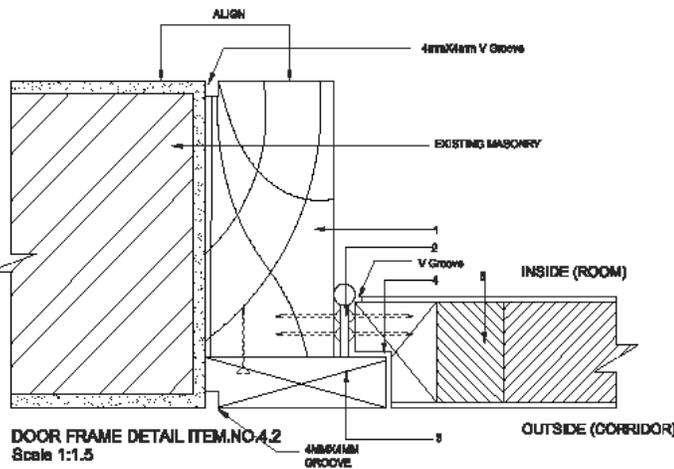
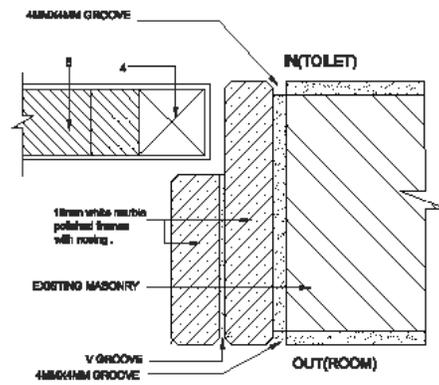
SECTION AA
Scale 1:15

FOR TENDER PURPOSE

| Project Name and Address: PROPOSED EQUIPMENT @ SAI, KORMANKALA (H-0401 Block) | Client: Indian Institute of Astro Physics, Kormankala, Bangalore | Architect:  ARCHITEKA & ASSOC ARCHITECTS PVT. LTD. 25/25A, 2nd Floor, Kormankala, Bangalore - 560074 Email: info@architeka.com Website: www.architeka.com Architeka, Inc. © 2016 | Structural Consultant: | Consultant: | <table border="1"> <thead> <tr> <th>No.</th> <th>Revisions/Date</th> <th>Date</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table> | No. | Revisions/Date | Date | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Drawing Title: ENCLOSURE DETAIL Drawing No: A-DET-02b Project Name: SAI, KORMANKALA Project Location: KORMANKALA, BANGALORE Project No. / Revision: A-DET-02b / 01 Date: 15/07/2016 | Drawing by: A-DET-02b Checked by: Date: Scale:  |
|---|--|---|--------------------------------|---------------------|---|-----|----------------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| No. | Revisions/Date | Date | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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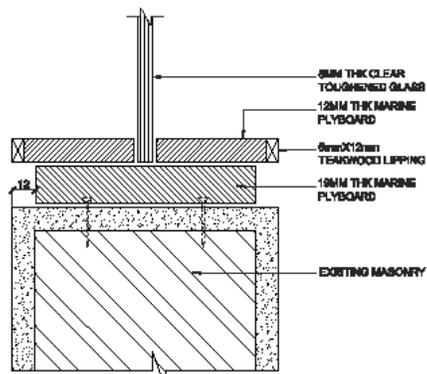
DOOR FRAME DETAIL ITEM.NO.4.3
Scale 1:1.5



DOOR FRAME DETAIL ITEM.NO.4.2
Scale 1:1.5

DETAIL DESCRIPTION

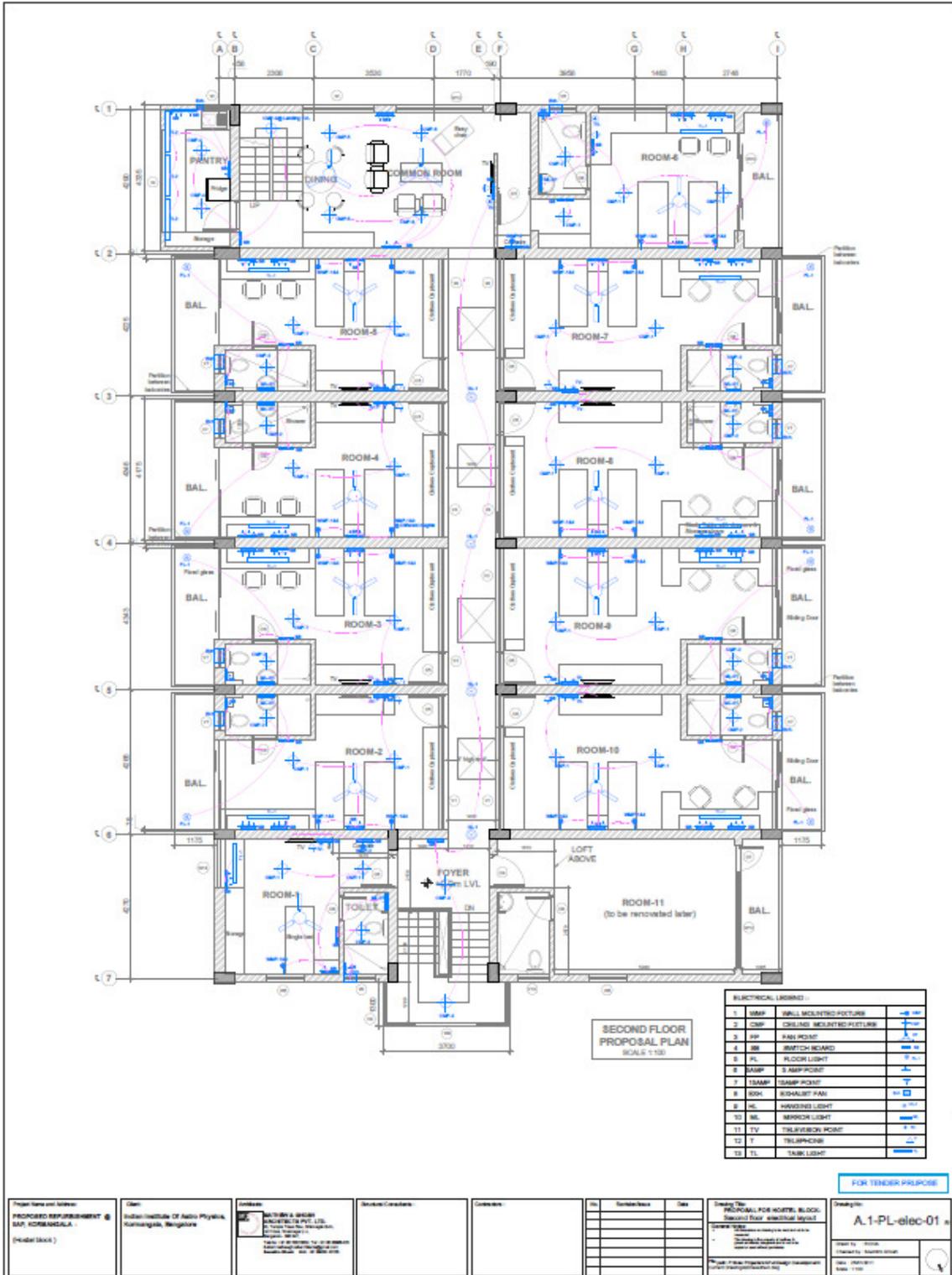
1. 18MM X 12MM (OR TO ALIGN) TEAKWOOD FRAME
2. HINGE AS PER APPROVED SAMPLE (86)
3. 12MM X 19MM TEAK WOOD BEADING
4. 12MM X 32MM TEAK WOOD LIPPING TO PROFILE
5. 32MM THK MARINE BOARD (SWP) WITH LAMINATE CLADDING ON BOTH SIDES



VENTILATOR FRAME DETAIL ITEM.NO.4.5
Scale 1:2

NEW DESIGN APPROVED

| <p>Project Name: INDIAN INSTITUTE OF ASTROPHYSICS (Gandhi Block)</p> | <p>Client: Indian Institute of Astrophysics, Bengaluru, Karnataka, Bangalore</p> | <p>Contract No: INDIA INSTITUTE OF ASTROPHYSICS</p> | <p>Product Name: INDIA INSTITUTE OF ASTROPHYSICS</p> | <p>Version: INDIA INSTITUTE OF ASTROPHYSICS</p> | <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Description</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | Sl. No. | Description | Date | | | | | | | | | | <p>Drawing Title: INDIA INSTITUTE OF ASTROPHYSICS</p> <p>Scale: INDIA INSTITUTE OF ASTROPHYSICS</p> <p>Project No: INDIA INSTITUTE OF ASTROPHYSICS</p> <p>Sheet No: A-DET-01</p> <p>Drawn by: INDIA INSTITUTE OF ASTROPHYSICS</p> <p>Checked by: INDIA INSTITUTE OF ASTROPHYSICS</p> <p>Date: INDIA INSTITUTE OF ASTROPHYSICS</p> |
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| Sl. No. | Description | Date | | | | | | | | | | | | | | | | |
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| Project Name and Address: PROPOSED REPAIR/RENOVATION INDIAN INSTITUTE OF ASTROPHYSICS (Hoshangabad) | Client: Indian Institute of Astrophysics, Hoshangabad, Bangalore | Consultant: Srinivas & Srinivas ENGINEERS & ARCHITECTS P. No. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000 | Drawing Title: PROPOSAL FOR HOTEL BLOCK Second Floor electrical layout | Drawing No: A.1-PL-elec-01 |
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