1.0	Abstract of Cost, General Information and Press Notice Inviting Tender

CONSTRUCTION OF HEALTH CENTER AT IISER, MOHALI, PUNJAB. (COMPOSITE TENDER) (S.H: CIVIL, PUBLIC HEALTH, FIRE FIGHTING & ELECTRICAL WORK)

ABSTRACT OF COST

S.No	*Part*	*Description*	*Total Amount carried over from the schedules of quantities (In Rs.)*
1	**PART-A**	**CIVIL WORK**	
2	**PART-B**	**PUBLIC HEALTH WORK**	
3	**PART-C**	**FIRE FIGHTING WORK**	
3	**PART-D**	**INTERNAL ELECTRICAL WORK**	
		GRAND TOTAL (In Figures)	
		GRAND TOTAL (In words)	

(Signature of the agency with stamp)

T E N D E R D O C U M E N T S

(General Information)

Name of the work	**:**	**CONSTRUCTION OF HEALTH CENTER AT IISER, MOHALI, PUNJAB. (COMPOSITE TENDER) (S.H: CIVIL, PUBLIC HEALTH, FIRE FIGHTING & ELECTRICAL WORK)**
Employer	**:**	Director, IISER, Mohali.
Tender Issued to	**:**	_____ _____ _____
Estimated Cost	**:**	**Rs. 30821217/-** **(Civil, PH & FF = Rs. 26526772/-+ Elect. Rs. 4294445/-)**
Security Deposit	**:**	@ 5% of tendered value
Performance Guarantee	**:**	@ 5% of tendered value
Cost of Tender	:	Rs 1500/-
Earnest Money	**:**	**Rs. 6,16,425/-**
Completion Period	**:**	12 Months
Last date of Sale of tenders	**:**	To be downloaded from IISER website
Date of submission	**:**	12.09.2011 up to 3.00 PM
Date of Opening of Tender	**:**	12.09.2011 at 3.30 PM in the office of the Executive Engineer, IISER Mohali.
Division	**:**	I.W.D

INDIAN INSTITUTE OF SCIENCE EDUCATION & RESEARCH, MOHALI

PRESS NOTICE INVITING TENDER
DNIT NO. IISER/EE-E.O/TENDER-P/11/5

Sealed Percentage Rate Tenders' are invited by the undersigned for and on behalf of Board of Governor's, IISER, Mohali from approved and eligible contractors of C.P.W.D. OR those of appropriate class of contractors enlisted with Department Posts and Telecommunications/ Railways/ M.E.S./ U.T. Administration/ Chandigarh Housing Board/ HUDA / PUDA/ State PWD's & State Electricity Boards dealing with building & roads / Electrical works for the following work on the prescribed Performa obtainable from the office of the undersigned on payment of Rs. 1,500/- (Rupees One thousand five hundred only) (Non-refundable) for each tender documents in the shape of Bank Demand Draft drawn in favour of the Registrar, IISER, Mohali which shall be payable at Chandigarh. The tenders shall be received upto 3.00 P.M. & opened at 3.30 P.M. as per schedule of bidding as given below in the presence of tenderers or their authorized representatives who may like to be present at that time.

S.No.	Description	Est. Cost (Rs.)	Earnest Money (Rs.)	Time Limit
1.	**CONSTRUCTION OF HEALTH CENTER AT IISER, MOHALI, PUNJAB. (COMPOSITE TENDER)** Civil, P.H. & F.F. work : Rs. **2,65,26,772/-** Elect. Work : Rs. **42,94,445/-** **Total** : **Rs. 3,08,21,217/-**	**3,08,21,217/-**	**6,16,425/-**	12 months

The schedule of bidding will be as follows:

Last Date for Receiving application	Last Date for Issue of tenders	Last Date for Submission of tenders	Date of Opening of tenders
-	To be downloaded from Website: www.iisermohali.ac.in	12.09.2011 uto 3:00 PM	12.09.2011 uto 3:30 PM

TERMS AND CONDITIONS:

1. The tender forms shall be issued to the agency only on the submission of the following documents:

(a) Eligible contractors shall submit at the time of request of purchase of Tender forms Proof of having enlistment in appropriate class with the deptts. as indicated above alongwith definite proof from appropriate authority, which shall be to the satisfaction of the Competent Authority of the Institute of having completed satisfactorily similar works during the last seven years ending last day of the month previous to the one in which the tenders are invited as detailed below:-

i) **For Civil works**:- Three similar works of each value not less than **Rs. 110.00 lacs** OR two similar works of each value not less than **Rs. 130.00 lacs OR** one similar work of each value not less than **Rs. 210.00 lacs** (**Similar works means Civil works in Buildings)**.

ii) **For Electrical works**:- Three similar works of each value not less than **Rs 17.00 lacs OR** two similar works of each value not less than **Rs. 21.00 lacs OR** one similar work of each value not less than **Rs. 34.00 lacs Building** (**Similar works means Electrical works in Buildings)**. Eligible contractors must also submit the consent of associating electrical contractor of appropriate class alongwith Proof of valid electrical license issued from U.T. Electricity Department / any state electricity boards.

(b) An affidavit that I/We undertake and confirm that eligible similar works(s) has/have not been got executed through another contractor on back to back basis

(c) Valid PAN No.

2. The Agency should also submit a copy of the partnership deed if any and power of attorney duly attested and countersigned by the agency at the time of application.

3. The agency should have had average annual financial turnover of Rs. 155.00 lacs on construction works during the last three years ending 31st March 2011 & same should be duly audited by a Chartered Accountant.

4. The agency should not have incurred any loss in more than two years during the last five years ending 31st March 2011.

5. The agency should have a solvency of Rs. 125.00 lacs & same should be certified by his bankers.

6. All the disputes concerning this tender in any way are subject to Chandigarh Jurisdiction only.

7. In case of date of issue/Receipt of tenders is declared/happens to be public holiday, the tenders will be received on the next working day.

8. Detailed N.I.T. can be seen in the division office during working hours.

9. IISER reserves the right to accept/reject any or all tenders without assigning any reason thereof.

10. Conditional tender and tenders not filled both in figures & words are liable to be rejected.

Website http: // IISER.nic.in

Executive Engineer,
IISER, Mohali.

2.0	Notice Inviting Tender

NOTICE INVITING TENDER

1. The Executive Engineer, IISER, Mohali on behalf of the Director, IISER, Mohali invites "Sealed Percentage Rate Tenders" from approved and eligible contractors of C.P.W.D. OR those of appropriate class of contractors enlisted with Department Posts and Telecommunications/ Railways/ M.E.S./ U.T. Administration/ Chandigarh Housing Board/ HUDA/ PUDA/ State PWD's & State Electricity Boards dealing with building & roads / Electrical works for the work of

CONSTRUCTION OF HEALTH CENTER AT IISER, MOHALI, PUNJAB. (COMPOSITE TENDER) (S.H: CIVIL, PUBLIC HEALTH, FIRE FIGHTING & ELECTRICAL WORK)

The enlistment of the contractors should be valid on the last date of sale of tenders.

In case only the last date of sale of tender is extended, the enlistment of contractor should be valid on the original date of sale of tenders.

In case both the last date of receipt of application and sale of tenders are extended, the enlistment of contractor should be valid on either of the two dates i.e. original date of sale of tender or on the extended date of sale of tenders.

1.1. The work is estimated to cost **Rs. 3,08,21,217/-.** This estimate, however, is given merely as a rough guide.

1.1.1. The authority competent to approve NIT for the combined cost and belonging to the major discipline will consolidate NITs for calling the tenders. He will also nominate Division which will deal with all matters relating to the invitation of tenders.

For composite tender, besides indicating the combined estimated cost put to tender, should clearly indicates the estimated cost of each component separately. The eligibility of tenderer will correspond to the combined estimated cost of different components put to tender.

1.2 Tenders will be issued to eligible contractors provided they produce definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, of having satisfactorily completed similar works of magnitude specified below:-

CRITERIA OF ELIGIBILITY FOR ISSUE OF TENDER DOCUMENTS

1.2.1 **For works estimated to cost up to Rs. 15 Crore**:-

Eligible contractors shall also submit at the time of request of purchase of Tender forms Proof of having enlistment in appropriate class with the deptts. as indicated above alongwith definite proof from appropriate authority, which shall be to the satisfaction of the Competent Authority of the Institute of having completed satisfactorily similar works during the last seven years ending last day of the month previous to the one in which the tenders are invited as detailed below :-

i) **For Civil works**:- Three similar works of each value not less than **Rs. 110.00 lacs** OR two similar works of each value not less than **Rs. 130.00 lacs OR** one similar work of each value not less than **Rs. 210.00 lacs** (**Similar works means Civil works in Buildings)**.

ii) **For Electrical works**:- Three similar works of each value not less than **Rs 17.00 lacs OR** two similar works of each value not less than **Rs. 21.00 lacs OR** one similar work of each value not less than **Rs. 34.00 lacs Building** (**Similar works means Electrical works in Buildings)**. Eligible contractors must also submit the consent of associating electrical contractor of appropriate class alongwith Proof of valid electrical license issued from U.T. Electricity Department / any state electricity boards.

1.2.2 **To become eligible for issue of tender, the tenderer shall have to furnish an affidavit as under** :-

I/We undertake and confirm that eligible similar works(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/we shall be debarred for tendering in IISER in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

2. Agreement shall be drawn with the successful tenderer on General Conditions of Contract for works which is available from the Engineer Incharge. Tenderers shall quote their rates as per various terms and conditions of the said form which will form part of the agreement.

3. The time allowed for carrying out the work will be **Twelve months** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the tender documents.

4. The site for the work is available

OR

The site for the work shall be made available in parts as specified below:-

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5. a) The last date of issue of applications shall be -To be downloaded form IISER website.

The last date of sale of tender documents shall be-To be downloaded form IISER website.

b) Tender document consisting of plans, specifications, the schedule of quantities of the various classes of work to be done and the set of terms & conditions of contract to be complied with by the contractor whose tender may be accepted and other necessary documents can be downloaded from IISER website. Tender documents, must accompany tender fee of **Rs.1,500/-** in the shape of crossed Indian Postal order / Bank draft in the name of Registrar IISER Mohali payable at Chandigarh as cost of tender.

6. (i) Tenders shall be accompanied with Earnest money of Rs. **6,16,425/-** in the shape of Deposit at Call receipt of a scheduled bank/ demand draft of a scheduled bank issued in favour of the Registrar IISER Mohali, Payable at Chandigarh.

ii)) The tender and the earnest money shall be placed in separate sealed envelopes, each marked "Tender" and "Earnest Money & Tender Fee" respectively. Both the envelopes shall be submitted together in another sealed envelope with the name of work and due date of opening written on envelope, which will be received by the I.W.D. Division upto 3.00 PM on 12.09.2011 and will be opened by him or his authorized representative in his office on the same day at 3.30 PM. The envelop marked "Tender" of only those tenderers shall be opened, whose earnest money, placed in the other envelope, is found to be in order. No interest will be paid on the earnest money.

7. The contractor whose tender is accepted, will be required to furnish performance guarantee of 5% (Five Percent) of the tendered amount within the period specified in Schedule F. This guarantee shall be in the form of Deposit at Call receipt of any scheduled bank/Banker's cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay order of any scheduled bank or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F'. including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor.

8. The description of the work is as follows:

CONSTRUCTION OF HEALTH CENTER AT IISER, MOHALI, PUNJAB. (COMPOSITE TENDER) (S.H: CIVIL, PUBLIC HEALTH, FIRE FIGHTING & ELECTRICAL WORK)

Copies of other drawing and documents pertaining to the works will be open for inspection by the tenderers at the office of above mentioned officer.

Tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Institute and local conditions and other factors having a bearing on the execution of the work.

9. The competent authority on behalf of the Director, IISER Mohali does not bind itself to accept the lowest or any other tender and reserves to itself the authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer shall be summarily rejected.

10. Canvassing whether directly or indirectly, in connection with tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.

11. The competent authority on behalf of Director, IISER Mohali reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.

12. The contractor shall not be permitted to tender for works in the Institute's Engineering Department (responsible for award and execution of contracts) in which his near relative is posted as Divisional Accountant or as an officer in any capacity between the grades of Executive Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relative to any Group A & B officer in the Institute's Engineering Department. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Institute/debarring for further tendering in the Institute for at least 5 years.

13. No Engineer or other officers employed in Engineering or Administrative duties in Engineering Department of the Institute is allowed to work as a contractor for a period of one year after his retirement from Institute's service without the previous permission of the competent authority in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of the competent authority as aforesaid before submission of the tender or engagement in the contractor's service.

14. The tender for the works shall remain open for acceptance for a period of One hundred twenty (120) days from the date of opening of tenders/ One hundred twenty days from the date of opening of financial bid in case tenders are invited on 2/3 envelop system (strike out as the case may be) if any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications

in the terms and conditions of the tender which are not acceptable to the department, then the Institute shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the tenderer shall not be allowed to participate in the re-tendering process of the work.

15. This Notice inviting tender shall form a part of the contract document. The successful tenderer/ contractor, on an acceptance of his tender by the Accepting Authority, shall within 15 days from the stipulated date of start of the work sign the contract consisting of:

a) The Notice Inviting Tender, all the documents including additional conditions, specifications and drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.

b) Standard Form 7/8.

16. For Composite Tenders

16.1.1 The Engineer Incharge of the major component will call tenders for the composite work. The cost of tender document and Earnest Money will be fixed with respect to the combined estimated cost put to tender for the composite tender.

16.1.2 The tender document will include following three components:

Part A:- Form-6, Form-7/8 including schedule A to F for major component of the work, Standard General Conditions of Contract or latest edition as applicable with all amendments/modifications.

Part B:- General/specific conditions, specifications and schedule of quantities applicable to major component of the work.

Part C: Schedule A to F for minor component of the work. (Engineer in charge of major component shall also be competent authority under clause 2 and clause 5 as mentioned in schedule A to F for major components) General/specific conditions, specifications and schedule of quantities applicable to minor component(s) of the work.

16.1.3 The tenderer must associate with himself, agencies of the appropriate class eligible to tender for each of the minor component individually.

16.1.4 The eligible tenderers shall quote rates in terms of overall percentage above or below the total estimated amount put to tender must be filled both in figures and words on the last page of schedule of quantities. It will be obligatory on the part of the tenderer to sign the tender document for all the components (The schedule of quantities, conditions and special conditions etc.)

16.1.5 After acceptance of the tender by competent authority, the Engineer in charge of major component of the work shall issue letter of award on behalf of the Director. After the work is awarded, the main contractor will have to enter into one agreement with Engineer in charge of major component and has also to sign two or more copies of agreement depending upon number of Engineer Incharge of minor components. One

such signed set of agreement shall be handed over to Engineer in charge of minor component. Engineer Incharge of major component will operate part A and part B of the agreement. Engineer in charge of minor component(s) shall operate Part C along with Part A of the agreement.

16.1.6 Entire work under the scope of composite tender including major and all minor components shall be executed under one agreement.

16.1.7 Security Deposit will be worked out separately for each component corresponding to the estimated cost of the respective component of works. The Earnest Money will become part of the security deposit of the major components of work.

16.1.8 The main contractor has to associate agency(s) for minor component(s) conforming to eligibility criteria as defined in the tender document and has to submit detail of such agency(s) to Engineer-in-charge of minor component(s) within prescribed time. Name of the agency(s) to be associated shall be approved by Engineer-in-charge of minor component(s).

16.1.9 In case the main contractor intends to change any of the above agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge of minor component. The new agency/agencies shall also have to satisfy the laid down eligibility criteria. In case Engineer-in-charge is not satisfied with the performance of any agency, he can direct the contractor to change the agency executing such items of work and this shall be binding on the contractor.

16.1.10 The main contractor has to enter into agreement with the contractor(s) associated by him for execution of minor component(s). Copy of such agreement shall be submitted to Engineer in charge of each minor component as well as to Engineer in charge of major component. In case of change of associate contractor, the main contractor has to enter into agreement with the new contractor associated by him.

16.1.11 Running payment for the major component shall be made by Engineer Incharge of major discipline to the main contractor. Running payment for minor components shall be made by the Engineer-incharge of the discipline of minor component directly to the main contractor.

16.1.12 Final bill of whole work shall be finalized and paid by the Engineer Incharge of major component. Engineer(s) in charge of minor component(s) will prepare and pass the final bill for their component of work and pass on the same to the Engineer Incharge of major component for including in the final bill for composite contract.

16.1.12It will be obligatory on the part of the tenderer to sign the tender document for all the components before the first payment is released.

17. No price preference to any corporate society/Registered society, Govt. Public Sector undertakings / bodies shall be given and tenders shall be exclusively dealt with on merit.

18. The contractor shall comply with the provisions of the Apprentices Act 1961, minimum wages Act 1948, Workmen's compensation Act 1923, contract labour (Regulation and Abolition Act 1970), payment of wages Act 1938, Employer's liability Act 1938, Maternity Benefits Act 1961, and the Industrial disputes Act 1947 as applicable and the rules and regulations issued there under and by the local Administration / Authorities from time to time as well all provisions of law applicable to workmen. Failure to do so shall amount to breach of the contract and the Engineer-in-Charge may at his discretion terminate the

contract. The Contractor shall also be liable for any pecuniary liability arising on account of violation by him of any of the said Acts and shall indemnify the Institute on that account. Institute will not be liable for any act or omission on the part of the contractor in so far as any violation of any of the aforementioned acts.

19. Each tenderer shall submit only one tender; either by him or as partners in a joint venture. A tenderer who submits or participates in more than one tender will be disqualified.

20. Unless otherwise stated, the contract shall be for the whole wo5rk as described in the "Schedule of items of Works" and the drawings. The contractor shall be bound to complete the whole work as described in the schedule of items of works and the drawings, including additional items, if any, as per drawings and instructions. The issuance of certificate of completion as issued by the Engineer-in-Charge shall be mandatory and will be conclusive proof of completion of work.

21. Interpretations, corrections and changes to the Tenders Documents shall be made by Addendum, if required.

22. Each Tenderer shall ascertain prior to submitting his Tender that he has received all Addenda issued and he shall so acknowledge their receipt in his Tender.

23. Following documents shall accompany the tenders:

i) Demand draft/Deposit at call receipt from a Scheduled Bank towards earnest money.
ii) Partnership deed or Registration Certificate of the Firm or Company as the case may be.
iii) Power of Attorney

24. The provisions in the Tender documents shall govern over the contents of the above paragraphs if in contradiction or variation.

25. The contractor shall comply with the provisions of prevalent ESI Act.

26. The contractor shall comply with the provisions of GRIHA.

Executive Engineer,
IISER, Mohali.

3.0	Tender And Contract

Tender Form 7/8

Percentage Rate Tender & Contract For Works

Tender for the work **CONSTRUCTION OF HEALTH CENTER AT IISER, MOHALI, PUNJAB. (COMPOSITE TENDER) (S.H: CIVIL, PUBLIC HEALTH, FIRE FIGHTING & ELECTRICAL WORK)**

(i) To be submitted by 1500 hours on 12.09.2011

(ii) To be opened in the presence of tenderers who may be present at 1530 hours on 12.09.2011 in the office of the _____.

Issued to : _____
_____

Signature of officer issuing the documents _____

Designation _____

Date of issue _____

TENDER

I/we have read and examined the notice inviting tender, schedule A,B,C,D,E & F specifications applicable, Drawings and Designs, General Rules and Directions, conditions of Contract, clauses of contract, special conditions, schedule of rate and other documents and rules referred to in the conditions of contract and all other contents in the tender document for the work.

I/we hereby tender for the execution of the work specified for the Institute within the time specified in schedule 'F' viz. schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instructions in writing referred to in Rule-1 of general rules and Directions and in Clause 11 of the conditions of contract and with such materials as are provided for, by, and in respects in accordance with, such conditions so far as applicable.

I/we agree to keep the tender open for 120 days from the due date of its opening / 120 days from the date of opening of financial bid in case tenders are invited on 2/3 envelop system (strike out as the case may be) and not to make any modifications in its terms and conditions.

A sum of **Rs. 6,16,425/-** is hereby forwarded in the shape of deposit at call receipt of a scheduled bank/ demand draft of a scheduled bank in favour of the Registrar, IISER Mohali payable at Chandigarh as earnest money. If I/We, fail to furnish the prescribed performance guarantee within prescribed period. I/We agree that the said the Director, IISER or his successors, in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I/We fail to commence work as specified, I/We agree that Director, IISER or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise the

said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form. Further, I/We agree that in case of forfeiture of Earnest Money & Performance Guarantee as aforesaid. I/We shall be debarred for participation in the re-tendering process of the work.

I/We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/We shall be debarred for tendering in Institute in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

I/We hereby declare that I/We shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information/derived there from to any person other than a person to whom I/We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety of the Institute.

Dated:- Signature of Contractor

Postal Address:

Witness:

Address: Telephone No.:

Fax No.:

Occupation: E-Mail.:

A C C E P T A N C E

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of the Institute for a sum of Rs._____

The letters referred to below shall form part of this contract agreement:

i) _____

ii) _____

iii) _____

,

Dated_____

4.0	General Rules And Directions

General Rules & Directions

1. All works proposed for execution of contract will be notified in a form of invitation to tender pasted in public places and signed by the officer inviting tender or by publication in News papers as the case may be.

   This form will state the work to be carried out, as well as the date for submitting and opening tenders and the time allowed for carrying out the work, also the amount of earnest money to be deposited with the tenderer, and the amount of the security deposit and performance guarantee to be deposited by the successful tenderer and the percentage, if any, to be deducted from bills: Copies of the specifications, designs and drawings and any other documents required in connection with the work signed for the purpose of identification by the officer inviting tender shall also be opened for inspection by the contractor at the office of officer inviting tender during office hours.

2. In the event of the tender being submitted by a firm, it must be singed separately by each partner thereof or in the event of the absence of any partner, it must be singed on his behalf by a person holding a power-of attorney authorizing him to do so, such power of attorney to be produced with the tender, and it must disclose that the firm is duly registered under the Indian Partnership Act, 1952.

3. Receipts for payment on account of work, when executed by a firm, must also be signed by all the partners, except where contractors are described in their tender as a firm, in which case the receipts must be signed in the name of the firm by one of the partners, or by some other person having due authority to give effectual receipts for the firm.

Applicable for Percentage Rate Tender only (Form- 7)

4 A. In case of Percentage Rate Tenders, tenderer shall fill up the usual printed form, stating at what percentage below/above (in figures as well as in words) the total estimated cost given in Schedule of Quantities at Schedule-A, he will be willing to execute the work. The tenders submitted shall be treated as invalid if:

(i) The contractor does not quote percentage above/below on the total amount of tender or any section/sub head of the tender.

(ii) The percentage above/below is not quoted in figures & words both on the total amount of tender or any section/sub head of the tender.

(iii) The percentage quoted above/below is different in figures & words on the total amount of tender or any section/sub head of the tender:-

Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort including conditional rebates, will be summarily rejected. No single tender shall include more than one work, but contractors who wish to tender for two or more works shall submit separate tender for each. Tender shall have the name and number of the works to which they refer, written on the envelopes.

4B. In case the lowest tendered amount (estimated cost + amount worked on the basis of percentage above/below) of two or more contractors is same, such lowest contractors will be asked to submit sealed revised offer in the form of letter mentioning percentage above/below on estimated cost of tender including all sub sections/sub heads as the case may be, but the revised percentage quoted above/below on tendered cost or on each sub section/sub head should not be higher than the percentage quoted at the time of submission of tender. The lowest tender shall be decided on the basis of revised offers.

In case any of such contractor refuses to submit revised offer, then it shall be treated as withdrawal of his tender before acceptance and 50% of earnest money shall be forfeited.

If the revised tendered amount of two or more contractors received in revised offer is again found to be equal , the lowest tender, among such contractors, shall be decided by draw of lots in the presence of Engineer-in-charge of major & minor component(s) (also Director, IISER in case Horticulture work is also included in the tender).

In case all the lowest contractors those have quoted same tendered amount, refuse to submit revised offers, then tenders are to be recalled after forfeiting 50% of EMD of each contractor.

Contractor(s), whose earnest money is forfeited because of non-submission of revised offer, shall not be allowed to participate in the re-tendering process of the work.

5. The officer inviting tender or his duly authorised assistant, will open tenders in the presence of any intending contractors who may be present at the time, and will enter the amounts of the several tenders in a comparative statement in a suitable form. In the event of a tender being accepted, a receipt for the earnest money shall thereupon be given to the contractor who shall thereupon for the purpose of identification sign copies of the specifications and other documents mentioned in Rule-I. In the event of a tender being rejected, the earnest money shall thereupon be returned to the contractor remitting the same, without any interest.

6. The officer inviting tenders shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest or any other tender.

7. The receipt of an accountant or clerk for any money paid by the contractor will not be considered as any acknowledgement or payment to the officer inviting tender and the contractors shall be responsible for seeing that he procures a receipt signed by the officer inviting tender or a duly authorised Cashier.

8. The memorandum of work tendered for and the schedule of materials to be supplied by the department and their issue-rates, shall be filled and completed in the office of the officer inviting tender before the tender form is issued. If a form is issued to an intending tenderer without having been so filled in and incomplete, he shall request the officer to have this done before he completes and delivers his tender.

9. The tenderer shall sign a declaration under the officials Secret Act 1923, for maintaining secrecy of the tender documents drawings or other records connected with the work given to them. The unsuccessful tenderer shall return all the drawings given to them.

9A. Use of correcting fluid, anywhere in tender document is not permitted. Such tender is liable for rejection.

Applicable for Percentage Rate Tender only (Form- 7)

10 In case of Percentage Rate Tenders only percentage quoted shall be considered. Any tender containing item rates is liable to be rejected. Percentage quoted by the contractor in percentage rate tender shall be accurately filled in figures and words, so that there is no discrepancy.

11. In the case of any tender where unit rate of any item/items appear unrealistic, such tenders will be considered as unbalanced and in case the tenderer is unable to provide satisfactory explanation such a tender is liable to be disqualified and rejected.

Applicable for Percentage Rate Tender only (Form- 7)

12 In Percentage Rate Tender, the tenderer shall quote percentage below/above (in figures as well as in words) at which he will be willing to execute the work. He shall also work out the total amount of his offer and the same should be written in figures as well as in words in such a way that no interpolation is possible. In case of figures, the words 'Rs' should be written before the figures of rupees and word P after the decimal figures, e.g. 'Rs. 2.15P and in case of words, the word 'Rupees' should precede and the world 'Paise' should be written at the end.

13.(i) The Contractor whose tender is accepted, will be required to furnish performance guarantee of 5% (Five Percent) of the tendered amount within the period specified in Schedule F. This guarantee shall be in the form of Deposit at call receipt of any scheduled bank/Banker's cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay order of any scheduled bank (in case guarantee amount is less than Rs. 1,00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form.

(ii) The contractor whose tender is accepted will also be required to furnish by way of Security Deposit for the fulfillment of his contract, an amount equal to 5% of the tendered value of the work. The Security deposit will be collected by deductions from the running bills of the contractor at the rates mentioned above and the earnest money deposited at the time of tenders, will be treated as a part of the Security Deposit. The Security amount will also be accepted in the shape of Government Securities. Fixed Deposit Receipt of a Scheduled Bank or State Bank of India will also be accepted for this purpose provided confirmatory advice is enclosed.

14. On acceptance of the tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from Engineer-in-Charge shall be communicated in writing to the Engineer-in-Charge.

15. Sales-tax / VAT (Except Service Tax), purchase tax, turnover tax or any other tax on material in respect of this contract shall be payable by the Contractor and the Institute will not entertain any claim whatsoever in respect of the same. However, in respect of service tax, same shall be paid by the contractor to the concerned deptt. on demand and it will be reimbursed to him by the Engineer-in-charge after satisfying that it has been actually and genuinely paid by the contractor.

16. The contractor shall give a list of any group A,B,C&D employees in IISER related to him.

17. The tender for the work shall not be witnessed by a contractor or contractors who himself/themselves has/have tendered or who may and has/have tendered for the same work. Failure to observe this condition would render, tenders of the contractors tendering, as well as witnessing the tender, liable to summary rejection.

18. The tender for composite work includes in addition to building work all other works such as sanitary and water supply installations drainage installation, electrical work, horticulture work, roads and path etc. The tenderer apart from being a registered contractor (B & R) of appropriate class, must associate himself with agencies of appropriate class which are eligible to tender for sanitary and water supply drainage, electrical and horticulture work in a composite tender subject to the approval of the institute.

19. The contractor shall submit list of works which are in hand (Progress) in the following form:-

Name of work	**Name and particulars of divn. Where work is being executed**	**Value of work**	**Position of works in progress**	**Remarks**
1	**2**	**3**	**4**	**5**

20. The contractor shall comply with the provisions of the Apprentices Act 1961, and the rules and orders issued there under from time to time. If he fails to do so, his failure will be a breach of the contract and the Engineer Incharge may in his discretion without prejudice to any other right or remedy available in law cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.

21. **Procedure for submission of Tenders:**

The following procedure shall be adopted for submission and opening of tenders. The sealed envelopes shall be submitted as follows:

Envelope No. 1: This envelope must be marked as Envelope No. 1 on the right hand top corner. This envelope shall contain only the Earnest Money Deposit and will be opened first. If the Earnest Money Deposit is not found to be in accordance with the procedure prescribed then the Engineer Incharge will not open the other sealed envelope containing Part-II and as such the tender submitted by the tenderer shall not at all be considered. The Engineer Incharge shall return unopened Part-II envelope to the concerned tenderer in the presence of those tenders who are present at the time of opening of the tender but if such concerned tenderer is not present at the time of opening of Part-I of Envelope No. 1 then the Engineer Incharge shall consign to record the unopened envelope. In either case, the Engineer Incharge shall record the same and send it to the Director, IISER, Mohali for information.

Envelope No. 2 : Containing the sealed priced offer in the schedule of quantities (Section-'A'). The same will be opened either on the same day or on a subsequent date which will be duly intimated to the tenderers. Both the envelope no. 1 and 2 should be enclosed in a larger envelope on which name of work should be clearly mentioned.

22. **Tenderers to study entire tender document carefully**

a) Submission of a tender by a tenderer implies that he has read all the stipulations contained in this booklet and all other contract documents and has acquainted himself of the nature, site conditions scope and specifications of the works to be executed and of conditions and rates at which stores will be issued to him by the IISER. The contractor shall also be deemed to have acquainted himself will local conditions and other factors which have a bearing on the execution of the works.

b) Before submitting the tender for the work of Fire Fighting System to IISER, the tenderer should thoroughly examine the existing conditions of site and proposed route of ring main for external and internal pipe work. He should also see the existing buildings, where fire fighting equipments/system shall be provided.

c) After award of the work contractor has to prepare and submit the shop drawings (only for air-conditioning / fabrication work) for approval of the Engineer-in-charge.

d) No claim will be entertained on account of ignorance of site conditions.

23. Every tender shall be written in the English language. All other information such as documents and drawings supplied by the tenderer will also be in the English language only. Drawings and designs shall be dimensioned according to the metric system of measurements. Tenders shall be forwarded under cover or a letter typewritten on the tenderer's letterhead and duly signed by the tenderer. Signature must be in long hand executed in ink by a duly authorised principal of the tendering firm. No oral, telegraphic or telephonic tenders or subsequent modifications there to shall be entertained.

24. The tenderer shall sign at the bottom right hand corner of every page of the tender documents in taken of acceptance of tender conditions and for the purpose of identification. Tenders containing erasures and alterations of the tender documents are liable to the rejected unless these are authenticated by the person signing the Tender Documents.

25. Tenders which do not full fill all or any of the conditions laid down in this notice, or contain conditions not covered and/or not contemplated by the General Conditions of contract and /or expressly prohibited therein or stipulated addition/alternative conditions shall be liable to be rejected.

26. The tenderer shall not be entitled to claim any costs, charges, expenses in connection with preparation and submission and subsequent clarification of his tender in the event of withdrawal of the invitation of tenders by the Institute.

27. The institute reserves the right to revise or amend the tender documents prior to the date notified for opening of the tenders and also the right to postpone the date of presentation and opening of tenders without assigning any reason, whatsoever.

28. The Director IISER, Mohali shall be referred as "Institute" in all the documents of Notice Inviting Tender/Contract Agreement.

29. Wherever the word 'Engineer-in –charge occurs it shall mean Executive Engineer of IISER Mohali.

Executive Engineer,
IISER, Mohali.

5.0	CONDITIONS OF CONTRACT

CONDITIONS OF CONTRACT

Definitions:

1. The Contract means the documents forming the tender and acceptance thereof and the formal agreement executed between competent authority on behalf of the Director, IISER and the contactor, together with the document referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by Engineer-in-charge and all these documents taken together shall be deemed to form one contract and shall be complementary to one another.

2. In the contract, the following expressions shall, unless the context otherwise requires, have the meanings, hereby respectively assigned to them:-

i) The expression **works** or **work** shall unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.

ii) The **site** shall mean the land/ or other places on into or through which work is to be executed under the contract or any adjacent land, path or street through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.

iii) The **contractor** shall mean the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal personal representative of such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such, individual, firm or company.

iv) The **Institute** means the Director, IISER and his successors.

v) The **Engineer-in-charge** means the Executive Engineer who shall supervise and be in-charge of the work and who shall sign the contract on behalf of the Director, IISER Mohali mentioned in schedule 'F' hereunder.

vi) **Institute** shall mean the Director IISER, Mohali.

vii) **Administration** shall mean the administration of the GMADA Mohali.

viii) **Local authority** shall mean the municipal corporation of Mohali and shall also deemed to include any other body or department of the administration.

ix) **Accepting Authority** shall mean the authority mentioned in Schedule 'F'.

x) **Excepted Risk** are risks due to riots (Other than those on account of contractor's employees) war (Whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurrection, military or usurped power, any acts of Institute damages from aircraft, act of God, such as earthquake, lightening and unprecedented floods, and other causes over which the contractor has no control and accepted as such by the Accepting Authority or causes solely due to use or occupation by the Institute of part of the works in respect of which a certificate of completion has been issued or a cause solely due to the Institute's faulty design of works.

xi) **Market Rate** shall be the rate as decided by the Engineer-in-Charge on the basis of the cost of materials and labour at the site where the work is to be executed plus the percentage mentioned in Schedule 'F' to cover, all overheads and profits.

xii) **Schedule(s)** referred to in these conditions shall mean the relevant schedule (s) annexed to the tender papers or the standard Schedule of Rates of the Institute mentioned in Schedule 'F' hereunder, with the amendments thereto issued upto the date of receipt of the tender.

xiii) **Department** means Director, IISER or any Division of IISER which invites tenders on behalf of Institute as specified in the Schedule 'F'.

xiv) **Tendered value** means the value of the entire work as stipulated in the letter of award.

xv) Date of commencement of work: The date of commencement of work shall be the date of start as specified in schedule 'F' or the first date of handing over of the site, whichever is later, in accordance with the phasing if any, as indicated in the tender documents.

Scope And Performance

3. Where the context so requires, words imparting the singular only also include the plural and vice versa. Any reference to masculine gender shall whenever required include feminine gender and vice versa.

4. Headings and Marginal notes to these General Conditions of Contract shall not be deemed to form part thereof or be taken into considerations in the interpretation or construction thereof or of the contract.

5. The contractor shall be furnished, free of cost one certified copy of the contract documents except standard specifications, schedule of Rates and such other printed and published documents, together with all drawings as may be forming part of the tender papers. None of these documents shall be used for any purpose other than that of this contract.

Works to be Carried out:

6. The work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labour, materials, tools, plants, equipment and transport which may be required in preparation of and for and in the full and entire execution and completion of the works. The descriptions given in the Schedule of Quantities (Schedule-A) shall, unless otherwise stated, be held to include wastage on materials, carriage and cartage, carrying and return of empties, hoisting setting, fitting and fixing in position and all other labours necessary in and for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognised principles.

Sufficiency of Tender

7. 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 quoted in the Schedule of Quantities, which rates and prices shall except as otherwise provided, cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the works.

Discrepancies and Adjustment of Errors

8. The several documents forming the contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale and special conditions in preference to General Condition.

8.1 In the case of discrepancy between the schedule of Quantities, the Specifications and/or the Drawings the following order of preference shall be observed:-

i) Description of Schedule of Quantities.

ii) Particular Specification and Special Conditions, if any,

iii) Drawings

iv) C.P.W.D. Specifications

v) Indian Standard Specifications of B.I.S.

8.2 If there are varying or conflicting provisions made in any one document forming part of the contract, the Accepting Authority shall be the deciding authority with regard to the intentions of the document and his decision shall be final and binding on the contractor.

8.3 Any error in description, quantity or rate in schedule of Quantities or any omission there from shall not vitiate the contract or release the Contractor from the execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract.

Signing of Contract

9. The successful tenderer/ contractor on acceptance of his tender by the Accepting authority, shall within 15 days from the stipulated date of start of the work sign the contract consisting of:-

i) The notice inviting tender, all the documents including drawings, if any forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.

ii) Standard form as mentioned in Schedule 'F' consisting of:

a) Various standard clauses with corrections upto the date stipulated in Schedule 'F' along with annexure thereto.

b) Safety Code.

c) Model Rules for the protection of health, sanitary arrangements for workers employed by the contractor.

d) Contractor's Labour Regulations.

e) List of Acts and omissions for which fines can be imposed.

iii) No payment for the work done will be made unless contract is signed by the contractor.

6.0	PROFORMA OF SCHEDULE A TO F

SCHEDULE 'A'

Schedule of quantities enclosed at page no. 88

SCHEDULE 'B'

Schedule of material to be issued to the contractor

Sr. No.	Description of item	Quantity	Rate in figure and words at which the material will be charged to the contractor.	Place of Issue.
--------Nil----------				

SCHEDULE 'C'

Tools and plants to be hired to the contractor.

Sr. No.	Description	Hire charges per day	Place of issue
--------Nil----------			

SCHEDULE 'D'

Extra schedule for specific requirements/ documents for the work if any.

1. **CLAUSES OF CONTRACT AGREEMENT OF CPWD AS AMMEDED FROM TIME TO TIME.**
2. **CPWD SPECIFICATIONS AS AMMEDED FROM TIME TO TIME.**
3. **ARCHITECTURAL & STRUCTURAL DRAWINGS**

SCHEDULE 'E'

Reference to General Conditions of contract.

Name of Work : **CONSTRUCTION OF HEALTH CENTER AT IISER, MOHALI, PUNJAB. (COMPOSITE TENDER) (S.H: CIVIL, PUBLIC HEALTH, FIRE FIGHTING & ELECTRICAL WORK)**

Estimated cost of work : **Rs. 3,08,21,217/-**
(Civil, PH & FF = Rs. 2,65,26,772/-+ Elect. Rs. 42,94,445/-)

(i) Earnest Money : **Rs. 6,16,425/-**

(ii) Performance Guarantee : **5% of tendered value**

(iii) Security Deposit : **5% of tendered value**

SCHEDULE 'F'

REFERENCE TO GENERAL CONDITION OF CONTRACT

	GENERAL RULES & DIRECRTIONS	Officer inviting tender EE/EO IISER, Mohali
	Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with Clauses 12.2 & 12.3:	**Ref Clause 12**
	Defination:	
2 (v)	**Engineer- in- charge**	Executive Engineer, IISER, Mohali.
2 (viii)	**Accepting Authority**	Building & Works Committee (BWC).
2 (x)	**Percentage on cost of material and labour to cover all overheads and profits**	15%
2 (xi)	**Standard Schedule of Rates**	DSR 2007 & Prevailing market rates.
2 (xii)	**Department**	I.W.D, IISER Mohali
9 (ii)	**Standard contract Form**	General Conditions of Contract of CPWD
Clause 1		
(i)	Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance	15 days
(ii)	Maximum allowable extension beyond the period provided in (i) above	7 days
Clause 2		
	Authority for fixing compensation under clause-2	Director IISER, Mohali.
Clause 5		
	Number of days from the date of issue of letter of acceptance for reckoning date of start	7 days

Mile stone(S) as per table given below:-

S.No.	Description of Milestone (Physical)	Time allowed in days (from date of start)	Amount to be withheld in case of non achievement of milestone
1.	20% of tendered cost	1/4th of the total time	In event of not achieving the necessary progress as assured from running payment, 1% of tendered value of work will be withheld for failures of each milestone.
2.	50% of tendered cost	1/2th of the total time	
3.	80% of tendered cost	3/4th of the total time	
4.	100% of tendered cost	Total time	

Time allowed for execution of work, Twelve Months

Authority to decide:

(i) Extension of time : Executive Engineer / Director IISER, Mohali (As applicable)

(ii) Rescheduling of mile stones : Director IISER, Mohali

Clause 6, 6A Clause applicable - (6 or 6A) 6A

Clause 7 **Gross work to be done together with net payment /adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment** Rs. 25.00 lacs

Clause 10A

List of testing equipment to be provided by the contractor at site lab

1	2	3
4	5	6

Clause 10B(ii)

Whether Clause 10 B (ii) shall be applicable No

Clause 10C

Component of labour expressed as percent of value of work = 25 %

Clause 10CA

S.No.	**Material covered under this clause**	**Nearest Materials (other than cement, reinforcement bars and the structural steel) for which All India Wholesale Price Index to be followed**	***Base Price of all Materials covered under clause 10 CA issued vide no. CE(NZ-1)/ SE(P)IV/ 10CA/2247 dated 06.08.2010.**
1.	Cement	----------NIL----------	The base price of these materials shall be same as issued by the Chief Engineer, CPWD, Chandigarh Zone, valid at the time of the last stipulated date of receipt of tender including extensions, if any.
2.	Reinforcement bars (Primary producers only)		

* Base price of all the materials covered under clause 10 CA is to be mentioned at the time of approval of NIT.

Clause 10CC

Clause 10 CC to be applicable in contracts with stipulated period of completion exceeding the period shown in next column	N.A

Schedule of component of other Materials, Labour, POL etc. for price escalation

Component of civil (except materials covered under clause 10CA) /Electrical construction Materials expressed as percent of total value of work. -	Xm **Nil** %
Component of Labour - expressed as percent of total value of work.	Y **Nil** .%
Component of P.O.L. - expressed as percent of total value of work.	Z **Nil** %

Clause 11

Specifications be followed for execution of work.	i) NIT Specifications. ii) CPWD specifications with upto date amendments iii) Bureau of Indian Standards wherever no such specifications exists in S.No. i) & ii).

Clauses 12

12.2 & 12.3	**Deviation limit beyond which clause 12.2 & 12.3 shall apply for building work**	**30%**
12.5	**Deviation limit beyond which clause 12.2 & 12.3 shall apply for foundation work**	**100%**

Clause 16

Competent authority for deciding reduced rates	Director, IISER, Mohali.

Clause 18

List of mandatory machinery, tools & plants to be deployed by the contractor at site:-

1 ……...	2……	3……
4 ……...	5……...	6……...
7 ……...	8……...	9……...

Clause 36 (i)

Requirement of Technical Representative(s) and recovery Rate

S.No.	Minimum Qualification of Technical Representative	Discipline	Designation (Principal Technical/ Technical Representative)	Minimum Experience	Number	Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 36(i)	
						Figures	Words
1.	Graduate Engineer	Civil	Principal Technical Representative	5 years	1	Rs. 15,000/- P/month	Rs. Fifteen thousand only P/ month
2.	Graduate Engineer	Civil	Technical Representative	NIL	1	Rs. 10,000/- P/month	Rs. Ten thousand only P/month
	Graduate Engineer	Elect	Technical Representative	NIL	1	Rs. 10,000/- P/month	Rs. Ten thousand only P/month
	OR						
	Diploma Holder	Civil	Technical Representative	5 years	1	Rs. 10,000/- P/month	Rs. Ten thousand only P/month
	Diploma Holder	Elect	Technical Representative	5 years	1	Rs. 10,000/- P/month	Rs. Ten thousand only P/month

Assistant Engineers retired from Government services that are holding Diploma will be treated at par with Graduate Engineers

Clause 42

(i) (a) Schedule/statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates ..... printed by C.P.W.D.

(ii) Variations permissible on theoretical quantities:

(a) Cement

For works with estimated cost put to tender not more than Rs. 5 lakh. 3% plus/minus.

For works with estimated cost put to tender more than Rs.5 lakh. 2% plus/minus.

(iii)	**Bitumen for all works**	2.5 % Plus only and NIL on minus side.
(iv)	**Steel reinforcement and structural steel sections for each diameter, section and category**	2% Plus/minus
(v)	**All other materials**	NIL

Recovery rates for quantities beyond permissible variation

Sr. No.	**Description of Item**	**Rates in figures and words at which recovery shall be made from the contractor**	
		Excess beyond permissible variation	**Less use beyond the permissible variation.**
1.	**Cement**	----------NIL----------	Rs. 5,500/- per M.T.
2.	**Steel reinforcement**	----------NIL----------	Rs. 44,000/- per M.T.

7.0	SPECIAL CONDITIONS FOR CIVIL & P.H. WORKS

1.0 General

1.1 Except for the items, for which Particular Specifications are given or where it is specifically mentioned otherwise in the description of the items in the schedule of quantities, the work shall generally be carried out in accordance with the "CPWD Specifications" (Refer Para 1.7.5 of schedule F and as per instructions of Engineer-in-Charge. Wherever CPWD Specifications are silent, the latest IS Codes / Specifications shall be followed and the rates should be all inclusive.

1.2 Any reference made to any Indian Standard Specifications, shall imply to the latest version of that standard, including such revisions / amendments as issued by the Bureau of Indian Standards upto last date of receipt of tenders. **The Contractor shall keep at his own cost all such publications including relevant Indian Standard applicable to the work at site**.

1.3 The work shall be executed and measured as per metric dimensions given in the Schedule of Quantities, drawings etc. (FPS units wherever indicated are for guidelines only).

1.4 The work should be planned in a systematic manner so that chase cuttings in the walls, ceilings and floors is minimized. Wherever absolutely essential, the chase shall be cut using chase cutting machines. Chases will not be allowed to be cut using hammer / chisel. The electrical boxes should be fixed in walls simultaneously while raising the brick work. The contractor shall ensure proper co-ordination of various disciplines viz. sanitary & water supply, horticulture & electrical etc.

1.5 All the hidden items such as water supply lines, drainage pipes, conduits, sewers etc. are to be properly tested before covering.

1.6 Samples including brand / quality of materials and fittings to be used in the work shall be got approved from the Engineer-in-Charge, well in advance of actual execution and shall be preserved till the completion of the work.

1.7 Equipment like concrete pump excavators/Transit mixer etc. shall be allowed to be moved away from the site when, in written opinion of Engineer-in-Charge, the same are no longer required at site of work.

1.8 The contractor, his agents / representative, workman etc. shall strictly observe orders pertaining to fire precautions prevailing in the area.

1.9 Contractor(s) shall study the soil investigation report for the site, available in the office of the Engineer-in-Charge and satisfy himself about complete characteristics of soil and other parameters at site. However, no claim on the alleged inadequacy or incorrectness of the soil data supplied by the department shall be entertained.

1.10 The tenderer shall see the approaches to the site. In case any approach from main road is required at site or existing approach is to be improved and maintained for cartage of materials by the contractor, the same shall be provided, improved and maintained by the contractor at his own cost.

1.11 Contractor shall take all precautionary measures to avoid any damage to adjoining property. All necessary arrangement shall be made at his own cost.

1.12 The contractor shall take all precautions to avoid accidents by exhibiting necessary caution boards day and night, speed limit boards, red flags, red lights and providing barriers. He shall be responsible for all damages and accidents caused to work due to negligence on his part. No hindrances shall be caused to traffic, during the execution of the work.

1.13 The contractor shall take instructions from the Engineer-in-Charge regarding collection and stacking of materials at any place. No excavated earth or building rubbish shall be stacked on areas where other buildings, roads, compound wall, services etc are to be constructed.

1.14 The contractor shall provide at his own cost suitable weighing, surveying and leveling and measuring arrangements as may be necessary at site for checking. All such equipments shall be got calibrated in advance from laboratory, approved by the Engineer-in-Charge. Nothing extra shall be payable on this account.

1.15 Contractor shall provide permanent bench marks, flag tops and other reference points for the proper execution of work and these shall be preserved till the end of work. All such reference points shall be in relation to the levels and locations, given in the Architectural and plumbing drawings.

1.16 Water tanks, taps, sanitary, water supply and drainage pipes, fittings and accessories should conform to byelaws and municipal body / corporation where CPWD Specifications are not applicable. The contractor should get the materials (fixtures/fittings) tested by the Municipal Body / Corporation authorities wherever required at his own cost.

1.17 The work shall be carried out in accordance with the Architectural drawings and Structural drawings, to be issued from time to time, by the Engineer-in-Charge. Before commencement of any item of work, the contractor shall correlate all the relevant architectural and structural drawings issued for the work, nomenclature of items, specifications etc. and satisfy himself that the information available there from is complete and unambiguous. The figures & the written dimensions of the drawing shall supercede the measurement by scale. The discrepancy, if any, shall be brought to the notice of the Engineer-in-Charge for immediate decision before execution of the work. The contractor alone shall be responsible for any loss or damage occurring by the commencement of work on the basis of any erroneous and/ or incomplete information and no claim, whatsoever shall be entertained on this account.

1.18 The Architectural drawings other than those indicated in nomenclature of items are only indicative of the nature of the work and materials/fittings involved unless and otherwise specifically mentioned.

1.19 The contractor should submit the shop drawing of staging and shuttering for approval of Engineer-in-Charge before actually commencing the execution of work under the item. Nothing extra shall be payable on this account.

1.20 Other agencies may also simultaneously execute and install the works and the contractor shall afford necessary facilities for the same. The contractor shall leave such recesses, holes, openings, trenches etc. as may be required for such related works (for which inserts, sleeves, brackets, conduits, base plates, clamps etc. shall be available as specified elsewhere in the contract) and the contractor shall fix the same at the time of casting of concrete, stone work and brick work, if required, and nothing extra shall be payable on this account.

1.21 The contractor shall conduct his work, so as not to interfere with or hinder the progress or completion of the work being performed by other contractor(s) or by the Engineer-in-Charge and shall as far as possible arrange his work and shall place and dispose off the materials being used or removed so as not to interfere with the operations of other contractor or he shall arrange his work with that of the others in an acceptable and coordinated manner and shall perform it in proper sequence to the complete satisfaction of others.

1.22 All material shall only be brought at site as per program finalized with the Engineer-in-Charge. Any pre-delivery of the material not required for immediate consumption shall not be accepted and thus not paid for.

1.23 The contractor shall procure the required materials in advance so that there is sufficient time for testing of the materials and approval of the same before use in the work.

1.24 Existing drains, pipes, cables, over-head wires, sewer lines, water lines and similar services encountered in the course of the execution of work shall be protected against the damage by the contractor at his own expense. The contractor shall not store materials or otherwise occupy any part of the site in a manner likely to hinder the operation of such services. In case temporary supporting/ shifting of such services is required to facilitate the work, the same shall be done by the contractor at no extra cost.

In case the existing services are to be shifted permanently, then before dismantling the existing services, alternate/diversion of service lines has to be laid by the contractor so that there is no interruption in use of existing services. The contractor has to plan the alternate suitable route for diversion/shifting of service lines and get the same approved from the Engineer-in-Charge before starting shifting of services. Nothing extra shall be paid except the payment of dismantling and laying of new service lines as per conditions of contract.

1.25 The contractor shall be responsible for the watch and ward / guard of the buildings, safety of all fittings and fixtures including sanitary and water supply fittings and fixtures provided by him against pilferage and breakage during the period of installations and thereafter till the building is physically handed over to the department. No extra payment shall be made on this account.

1.26 The contractor shall be fully responsible for the safe custody of materials brought by him/ issued to him even though the materials may be under double lock key system.

1.27 For construction works which are likely to generate malba / rubbish to the tune of more than a tempo / truck load, contractor shall dispose of malba, rubbish & other unserviceable materials and wastes at his own cost to the notified specified dumping ground and under no circumstances these shall be stacked / dumped even temporarily, outside the construction premises.

1.28 The excavated surplus earth shall be disposed off by the contractor as directions of Engineer Incharge.

1.29 BATCH MIX CONCRETE

1.29.1 The contractor shall establish a laboratory at site of batch mix plant to test the coarse aggregate, fine aggregate, water, sand, cement etc. Contractor is also required to depute technical personnel specifically for running of Batch Mix Plant and for quality control of mix produced.

1.29.2 All incidental expenditure on security, construction of cement godown, access roads, arrangement of water, electricity etc. to be incurred or anticipated by the agency for arranging, installing and operation of Batch Mix Plant shall be deemed to have been included in his quoted rates and no claim whatsoever will be tenable on this account.

1.30 With each Running Bill, the details of test carried out shall be submitted by the contractor **as per proforma at Page No. 65 & 66 of DNIT.**

1.31 On completion of work, the contractor shall submit at his own cost four prints of “as built” drawings to the Engineer-in-Charge. These drawings shall have the following information.

a) Run off of all piping and their diameters including soil, waste pipes and vertical stacks.
b) Ground and invert level of all drainage pipes together with locations of all manholes and connections, upto out fall.
c) Run off of all water supply lines with diameters, location of control valves, access panels etc.

In case the contractor fails to supply “as built drawing” aforesaid within 30 days of the date of completion, then the recovery @ Rs.10, 000/- each for such set of drawings shall be made from the contractor’s final bill.

1.32 In the item of providing and fixing precast reinforced cement concrete in shelves the cost of cutting chases and making good the same shall be inclusive in the item ad nothing extra shall be paid on this account.

1.33 In the item of finishing walls with water proofing cement paint, only the plain/flat area shall be measured for payment and nothing extra shall be paid on account of pointed wall surface.

1.34 The contractor shall be free to use Ready Mix Concrete (RMC) in place of Batch Mix concrete at his own cost. The contractor shall ensure that transit mixtures shall transport the concrete to site. All the precautions shall be taken during the transportation and handling of concrete to achieve the desired strength durability etc. as envisaged in the Mix Design. Contractor has to get the approval from Engineer-In-Charge regarding source of RMC by giving details of such plants indicating name of owner/company, its location, technical establishment, past experience and text of Memorandum of Understanding (proposed to be entered between purchaser and supplier). The Engineer-in-Charge, after satisfying himself about quality/capability of the company shall give approval in writing (subject to drawing of MOU). The MOU shall be drawn with RMC plant owner/company and submitted to Engineer-in-Charge within a week of such approval. The contractor not be allowed to purchase RMC without completion of above formalities for use in the Project. Notwithstanding the approval granted by Engineer -in-Charge in aforesaid manner, the contractor shall be fully responsible for quality of concrete including input control production, transportation and placement etc. The Engineer-in-Charge will reserve the right to deploy his supervisor at plant site to inspect at any stage and reject the material/concrete etc. if he not satisfied about quality of material/product.

2.0 Unless otherwise specified in the schedule of quantities or CPWD specifications, the rates for respective items shall be all inclusive and apply to the following: -

(i) All lifts & all heights, floors including terrace, leads and depths.

(ii) All labour, material, tools and plants and other inputs involved in the execution of the item.

(iii) Any of the conditions and specifications mentioned in the tender documents.

(iv) Pumping / bailing out surface water / rain water / sub soil water, if necessary for any reason.

(v) Providing sunk flooring in bath-rooms, kitchen, etc.

(vi) Any legal or financial implications resulting out of disposal of earth, if any.

(vii) Payment of Royalty at the prevailing rates, if any, on the boulders, metal, shingle, sand and bajri etc. or any other material collected by him for the work direct to revenue authorities.

(viii) Performance test of the entire installation(s) before the work is finally accepted.

(ix) Any cement slurry added over base surface (or) for continuation of concreting for better bond is deemed to have been built in the items .

(x) All incidental charges for cartage, storage and safe custody of materials brought to site.

3.0. **TESTING OF MATERIAL: -**

3.1 Samples of materials required for testing shall be provided free of charge by the contractor. The cost of tests shall be borne by the contractor. All other expenditure required to be incurred for taking samples; conveyance, packing etc. shall be borne by the contractor himself.

3.2 However, if any ultrasonic pulse velocity / load testing or special testing is to be done for concrete whose strength is doubtful, the cost of the same shall be borne by the contractor.

3.3.1 In case there is any discrepancy in frequency of testing as given in list of mandatory tests and that in individual sub-heads of work as per CPWD Specifications higher of the two frequencies of testing shall be followed and nothing extra shall be payable on this account.

3.4 FIELD LABORATORY

The contractor has to establish field laboratory at site including all necessary equipments and skilled manpower for the Field Tests **as at page no. 65 & 66 of DNIT** at his own cost to have proper quality control.
For performing the above tests, the **Field Testing Equipments and Instruments as at page no. 65 & 66 of DNIT** are to be arranged and maintained by the contractor.

3.5. The contractor shall ensure quality construction in a planned and time bound manner. Any sub-standard material / work beyond set-out tolerance limit shall be summarily rejected by the Engineer-in-Charge & contractor shall be bound to replace / remove such sub-standard / defective work immediately.

3.6 The list of Laboratory/ Field equipment referred above are to be arranged and maintained by the contractor at the site of work. In case the equipment required for any test is not available at site, the department shall get the test conducted from the third party. However in that event, besides providing free materials of sample, the cost of taking of sample, packing, transportation, testing charges etc. shall be borne by the contractor irrespective of the results.

4.0 SECRECY

4.1 The contractor shall take all steps necessary that all persons employed on any work in connection with the contract have notice that the Indian Official Secrets Act 1923 applies to them & will continue so to apply even after the execution of such works under the contract.

4.2 The contract is confidential and must be strictly confirmed to the contractor's own use (except so far as confidential disclosure to sub-contractors or suppliers as necessary) and to the purpose of the contract.

4.3 All documents, copies thereof & extracts there from furnished to the contractor shall be returned to the Engineer-in-Charge on the completion of the work / works or the earlier determination of the contract.

5.0 LABOUR AND SECURITY

5.1 Contractor should provide his plan for labour huts as per his requirement and get it approved from the Engineer-in-Charge. The contractor will be provided space for labour huts etc. inside the campus but the space requirement and location, as assessed by Engineer-in-Charge shall be final and binding.

5.2 Contractor has to follow the security requirement of the campus and obtain necessary entry passes for the labour and vehicles and follow security checks at entry / exit gates, restriction on movement of vehicle, restricted timings of working etc. The Department however shall assist the contractor in obtaining such passes for movement of vehicles and labour. No claim whatsoever shall be entertained on account of delay in entry of vehicles and labour including restrictions in working hours, if there is any.

5.3 The contractor shall employ only Indian Nationals after verifying their antecedents and loyalty. The contractor shall, on demand submit list of his agents, employees and work people concerned & shall satisfy as to the bonafides of such people.

5.4 The contractor & his work people shall observe all relevant rules regarding security promulgated in which work is to be carried out by the Controlling Administrative Authority of the Institute (hereinafter referred to as "Engineer Incharge").

5.5 The contractor, his representative, workman shall be allowed to enter through specified gates & timing as laid down by the controlling authority. They shall be issued an identity card or an individual pass in accordance with the standing rules & regulations & they should possess the same while working. The contractor shall be responsible for the conduct & actions of his workman, agents / representatives.

5.6 Normally contractor shall be allowed to carryout work between 7 AM to 6 PM. However, he may also be allowed to carryout the work beyond 6 PM & upto 7 AM if the site conditions / circumstances so demand with prior written permission from the "Engineer Incharge". However, if the work is carried out in more than one shift or at night, no claim on this account shall be entertained.

5.7 Normally contractor's material / vehicles etc shall be allowed to move in / go-out between 7 AM to 7 PM only & no movement of material / vehicles out of site of work shall be allowed during night hours unless specific permission is obtained from the "Engineer Incharge".

5.8 In case if a separate entry has been allowed, the contractor has to make all arrangement for making a separate entry gate and barricading of the working area to segregate/separate the same from other areas. All these have to be done by the contractor at his own cost including safeguarding any untoward incident in the restricted area due to separate entry gate and barricading arranged by the contractor. No extra amount on this account shall be payable by the department.

6.0 TRANSPORTATION AND OFFICE INFRASTRUCTURE:

6.1 In order to complete the work within the scheduled time if the contractor shall be required to do the work in more than one shift and accepted by the department the contractor will provide vehicular facilities to the IISER site staff to reach the site and their residence at his own cost for their services required beyond the normal office hours. In case the contractor fails to provide the facilities Engineer-in-Charge shall be at liberty to make the arrangement themselves and deduct the respective cost from the contractor's bills.

6.2 For Quality Control Measures, Preparation of Bills and Monitoring the Quality, the contractor shall provide (min. one number) Computer having MS-Windows XP, A-3 Coloured Inkjet & A-4 Laserjet Printers, Scanners, UPS etc. with required number of data entry operator in the site office of Engineer-in-Charge.

7.0 **PROGRAM CHART: -**

7.1 The Contractor shall prepare an integrated program chart for the execution of work, showing clearly all activities from the start of work to completion, with details of manpower, equipment and machinery required for the fulfillment of the program within the stipulated period or earlier and submit the same for approval of the Engineer-in-Charge within **15 days** of the issue of letter of acceptance for the contract.

7.2 The work has to be completed in stages as indicated in the **Milestones under Schedule 'F'** and the program should be prepared in such a manner to achieve these Milestones as indicated therein or earlier.

7.3 The program chart should include the following: -

a) Descriptive note explaining sequence of various activities.
b) Network (PERT / CPM / BAR CHART) which will indicate resources in financial terms, manpower and specialized equipment for every important stage.
c) Program for procurement of materials by the contractor.
d) Program of procurement of machinery / equipments having adequate capacity, commensurate with the quantum of work to be done within the stipulated period, by the contractor.

7.4 If at any time, it appears to the Engineer-in-Charge that the actual progress of work does not conform to the approved program referred above, the contractor shall produce a revised program showing the modifications to the approved program by additional inputs to ensure completion of the work within the stipulated time.

7.5 The submission of revised program or approval by the Engineer-in-Charge of such program or the furnishing of such particulars shall not relieve the contractor of any of his duties or responsibilities under the contract. This is without prejudice to the right of Engineer-in-Charge to take action against the contractor as per terms and conditions of the agreement.

Notwithstanding the fact that the contractor will have to pay to the labourers and other staff engaged directly or indirectly on the work according to the provisions of the labour regulations and the agreement entered upon and/or extra amounts for any other reason.

8.0 **PROGRESS AND MONITORING OF WORK**:

Contractor shall give the Engineer-in-Charge on the 10th day of each month, progress report of the work done during the previous month. Such progress report will include the project progress summary, work progress (planned v/s. actual), PERT chart, milestone status, financial progress status, manpower deployment status, important materials consumed, materials at site at the beginning of the month, materials consumed during the month and the balance quantities at the end of month and progress of the work stating the reasons for shortfall, if any including the steps and measures to be taken for making good the shortfall in the succeeding period. Non submission of aforesaid progress report shall make contractor liable for action under breach of contract conditions.

9.0 **SAMPLE OF MATERIALS:-**

9.1 All materials and fittings brought by the contractor to the site for use shall conform to the samples approved by the Engineer-in-Charge which shall be preserved till the completion of the work. If a particular brand of material is specified in the item of work in Schedule of Quantity, the same shall be used after getting the same approved from Engineer-in-Charge. Wherever brand / quality of material is not specified in the item of work, the contractor shall submit the samples as per **List of approved makes at page no. 68 to 71 of DNIT** for approval of Engineer-in-Charge. For all other items, ISI Marked materials and fittings shall be used with the approval of Engineer-in-Charge. Wherever ISI Marked material / fittings are not available, the contractor shall submit samples of materials / fittings manufactured by firms of repute conforming to relevant Specifications or IS codes for the approval of Engineer-in-Charge.

9.2 To avoid delay, contractor should submit samples as stated above well in advance so as to give timely orders for procurement. If any material, even though approved by Engineer-in-Charge is found defective or not conforming to specifications shall be replaced / removed by the contractor at his own risk & cost.

9.3. BIS marked materials except otherwise specified shall also be subjected to quality test besides testing of other materials as per the specifications described for the item/material. Wherever BIS marked materials are brought to the site of work, the contractor shall, furnish manufacturer's test certificate or test certificate from approved testing laboratory to establish that the material procured by the contractor for incorporation in the work satisfies the provisions of specifications relevant to the material and / or the work done.

BIS marked items (except cement & steel for which separate provisions have been made in para 10.0 of these special conditions) required on the work shall be got tested, for only important tests, which govern the quality of the product, as decided by the Engineer-in-Charge. The frequency of such tests (except the mandatory test) shall be 5% of the frequency as specified in BIS. For mandatory test, frequency shall be as specified in the CPWD Specifications

9.4 For certain items, if frequency of tests is neither mentioned in the CPWD Specifications & BIS, then tests shall be carried out as per decision of Engineer-in-Charge.

10.0 **ENGAGING SPECIALISED AGENCIES FOR WORKS**: -

10.1 The Contractor shall engage specialized agency unless otherwise approved by any Government Department having adequate technical capability and experience of having executed at least one work of similar items of 90% or more magnitude or two works of similar items of aggregate value minimum 90 or three works of similar items of minimum 30% magnitude individually for executing the following items of the work and / or any other items of work where specialized firm is required to be engaged as per contract conditions. For determining the required magnitude, the value of the work executed may be suitably enhanced with the prevailing approved cost index.

i) Anti Termite treatment work.
ii) Factory made Wooden Shutters of all types except Flush Doors.
iii) Water proofing treatment work of all types.
iv) Aluminium Work
v) Internal electrical Installations.

10.2 The Specialized agency for the work shall be got approved from the Engineer-in-Charge well before actual commencement of the item of work. The contractor shall submit the list of Specialized agencies except for Internal Electrical Installation, proposed to be engaged by him along with necessary performance certificates, within 30 days from the date of issue of acceptance letter to substantiate technical capability and experience of the agency for prior approval of the Engineer-in-Charge.

10.3.1 For Internal Electrical Installation work as contained in the Electrical component work under Section VIII, the Electrical Agency to be associated shall be of appropriate class of CPWD, MES, Railways , State Electricity Boards, and State PWD's of J&K, Himachal Pradesh, Punjab, Haryana, PWD & U.T. Administration (Chandigarh). The Electrical Agency other than that registered in the appropriate class of CPWD can be associated provided they have sufficient proof of having satisfactorily completed three similar works each costing not less than **Rs 17.00 lacs** lacs OR two similar works each costing not less than **Rs. 21 lacs** OR one similar work costing not less than **Rs. 34.00 lacs** (**Similar works means Electrical works)** during the last seven years ending last day of the month previous to the one in which the tenders are invited. Provisions mentioned under Sr. No. 11.1 above are not applicable for engagement of Electrical Agency. However contractor shall submit MOU to Engineer in-charge, signed with eligible Electrical Contractor/Agency along with consent letter of Electrical Agency **at least 7 days before the last date of submission of Performance Guarantee.** It will be obligatory on the part of main contractor to sign the tender documents for all the components.

10.3.2 In case the contractor intends changing the above agency for the work during the operation of the contract, he shall obtain prior approval of the Engineer Incharge. The new agency also shall have to satisfy the conditions prescribed in para 11.3.1 above. In case the Engineer Incharge is not satisfied with the performance of the agency during the currency of the contract, he shall have the option to direct the contractor to change the agency executing these works, which shall be binding upon him.

10.3.2 The conditions of approval of specialized agency shall be final and binding on the contractor and he shall comply with such conditions of approval.

11.0 **SAMPLE QUARTER/ ROOM: -**

The contractor shall construct a sample quarter/ room complete in all respects including all Civil and Electrical details/ fixtures, as contained in "Table of Mile Stone(s)" in **Schedule-F at page no. 23 to 28 of DNIT**, but not later than 120 days. The sample quarter/ room shall be inspected and approved by the Engineer-in-Charge. Slight changes with regard to the fixtures/ fittings/ details/ dimensions etc. may occur as per the actual requirement or in order to enhance the functionality of the product or the unit. Thus, the procurement for all the internal fittings/fixtures/ fabricated material and other material etc. shall be done by the contractor only after the approval of the sample quarter/room.

12.0 Defect liability:

12.1 The contractor's liability during the defect liability period from the final date of completion as per clause 17 shall be limited to rectification of defects including replacement as follows which in the opinion of Engineer-in-Charge are not man made.

Sl. No.	Description	Defect Liability
(i)	Anti termite treatment.	(a) Termites found if any till guarantee period to be rectified through post ATT.
(ii)	Concrete	(a) Rectification of structural / superficial / non-structural cracks. (b) Rectification of dampness / seepage in roof slab / junctions & sunken portion. (c) Rectification of cracks in beam, shade, column.
(iii)	Brick work	(a) Rectification of cracks in panel wall / portion. (b) Cracks / settlement of dwarf walls. (c) Rectification of efflorescence.
(iv)	Joinery	(a) Replacement of warped joinery. (b) Cracks in panels, rails / styles etc.
(v)	Builders Hardware	(a) Repairs / Replacement of loosened / pre-mature failure of fittings. (b) Tightening / Replacement of sag in mosquito proofing.
(vi)	Steel & Iron work	(a) Rectification / Replacement of defective part of rolling shutter. (b) Redoing of defective portion in fabrication / welding including painting. (c) Steel windows, grills, gates etc. – defects to be rectified.
(vii)	Roof treatment	(a) Rectification of leakage / seepage of roof slab including covering at junction till guarantee period.
(viii)	Plastering	(a) Rectification of structural / superficial cracks if any. (b) Rectification of protruding / peeling off plaster if any. (c) Rectification of efflorescence
(ix)	Flooring	(a) Rectification of sinking portion of plinth protection including saucer drain. (b) Settlement of foundation & floors.

(x)	Plumbing / Sanitary fittings	(a) Making good of leakage through soil / waste pipe joints. (b) Replacement of looking mirror if found wavy. (c) Rectification of leakage of over head tanks. (d) Leakage / seepage of sunken floor, blockage of taps / pipes, non-functioning of cistern.
(xi)	Finishes	(a) Making good of defective / dissimilar patches of painting to match with remaining surfaces.
(xii)	Internal Water Supply	(a) Repairs / Replacement of defective taps / fittings. (b) Repair to leakage of GI water pipe lines including joints. (c) Removal of blockage of GI pipe lines.
(xiii)	Roads	Repair of sinking portion of road & potholes, if any
(xiv)	Sewage	(a) Rectification of slope / system if found defective during use. (b) Rectification of major blockage in Sewer lines. (c) Cracks & settlement of sewage lines.
(xv)	Drains	(a) Repair to Drains. (b) Settlement of Drains
(xvi)	External Water Supply	(a) Repairs to installations & fittings.
(xvii)	General	(a) All manufacturing defects of structures / fixtures / fittings / equipments other than listed above.

8.0	GENERAL SPECIFICATIONS FOR CIVIL & P.H. WORKS

1.0 **EARTH WORK:-**

1.1 **Anti Termite Treatment: -**

1.2.1 The work shall be executed by specialized agency to be approved by the Engineer in Charge.

1.2.2 The Chemical shall strictly conform to Specifications & shall be as per BIS covered by ISI marking. Chemical has to be of approved quality out of preferred make. 100% material has to be procured of approved make before start of work. The chemical shall be used only after due testing & if found conforming to the Specifications. Proper account has to be kept for day to day use of Chemical.

1.2.3 Ten years Guarantee bond in prescribed Performa attached **at page no. 64 of DNIT** shall be submitted by the contractor which shall also be signed by both the specialized agency and the contractor to meet their liability / liabilities under the guarantee bond. However, the sole responsibility about efficiency of anti termite treatment shall rest with the building contractor. **Ten per cent of the cost of anti termite work shall be retained as Security Deposit and the amount so deducted would be released after ten years from the date of completion of the entire work under the agreement, if the performance of the treatment/work done is found satisfactory**. If any defect/shortcoming is noticed during the guarantee period, the contractor shall rectify it within 15 days of receipt of intimation of such defects/shortcomings. In the event of failure to attend to the complaint within the specified period, the same will be got done from another agency at the risk and cost of contractor.

2.0 R.C.C. WORK:-

2.1 Design Mix Concrete

2.1.1 The RCC work shall be done with Design Mix Concrete. Wherever letter M has been indicated, the same shall imply for the Design Mix Concrete. The Design Mix Concrete will be designated based on the principles given in IS: 456, 10262 & SP 23. The Conditions & Specifications stated herein shall have precedence over all conditions & specifications stated in relevant I.S. Codes / C.P.W.D. Specifications. The concrete mix shall be designed for the specified target mean compressive strength in order to ensure that work test result do not fall below the acceptance criteria specified for the concrete mix. The Contractor shall design mixes for each class of concrete indicating that the concrete ingredients and proportions will result in concrete mix meeting the requirements specified.

(a) The contractor has to submit design mix without use of admixtures.

(b) Admixture may be added (by maintaining the minimum cement content as given under para-2.1.3) in case of specific technical requirement so as to meet the workability / slump requirement or for any other reason but nothing extra is to be paid to contractor on account of adding admixtures.

2.1.2 The sources of coarse aggregate, fine aggregate, water, admixture & cement to be used in concrete work shall be identified by the contractor & he will satisfy himself regarding their conforming to the relevant specifications & their availability before getting the same approved from the Engineer-In-Charge.

(a) **Coarse Aggregate:-** As per CPWD Specifications
(b) **Fine Aggregate:-** As per CPWD Specifications
(c) **Water:-** It shall conform to requirements laid down in IS:456-2000 / Para 3.1.1 of CPWD Specifications
(d) **Cement:-** PPC of grade 43 shall be used for design mix concrete and shall conform to IS-1489 (Part I). However, if the contractor uses higher grade of cement nothing extra shall be paid.

(e) **Admixture/Plasticizer:-** The admixture shall conform to IS: 9103. Whenever required, the admixture of approved quality & approved make only shall be used to attain the required workability. Nothing extra on account of use of Admixture / Plasticizer shall be payable.

2.1.3 **Grade of Concrete: -** The compressive strength of various grades of concrete with various parameters shall be as follows: -

GRADE DESIGNATION	COMPRESSIVE STRENGTH ON 15 Cm. CUBES min. 7 DAYS (N/ mm^2)	SPECIFIED CHARACTERISTIC COMPRESSIVE STRENGTH AT 28 DAYS (N/mm^2)	MINIMUM CEMENT CONTENT (Kg. Per Cub. Mtr.)	MAXIMUM WATER CEMENT RATIO	SLUMP
(i) M-20	As per Design	20	360	0.50	25-75
(ii) M-25	As per Design	25	380	0.50	25-75
(iii) M-30	As per Design	30	400	0.45	25-75
(iv) M-35	As per Design	35	420	0.45	25-75

NOTE:-

i) In the designation of a Concrete mix letter M refers to the mix and the number of the specified characteristic compressive strength of 15 cm - Cube at 28 days expressed in N/mm^2.

ii) It is specifically highlighted that in addition to the above requirements, the maximum cement content for any grade shall be limited to 530 kg. / cubic metre.

iii) The minimum / maximum cement content for design mix concrete shall be maintained as per the quantity mentioned above. In cases where the quantity of cement required is higher than the minimum specified above to achieve desired strength based on an approved mix design, nothing extra shall become payable to the contractor.

2.1.4 The Contractor shall engage one of the following approved laboratories / test house for designing the concrete mix in accordance with relevant IS Code and to conduct laboratory tests to ensure the target strength & workability criteria for a given grade of concrete: -

i) Technical Teacher Training Institute, Sector 26, Chandigarh.
ii) Punjab Engineering College, Chandigarh.
iii) NIT, Jalandhar. (Formerly known as REC, Jalandhar.)
iv) IIT, New Delhi.
v) Chandigarh Engineering College, Sector 26, Chandigarh.

The various ingredients for mix design / laboratory tests shall be sent to the lab / test houses through the Engineer-in-charge and the samples of such aggregates sent shall be preserved at site by the department.

In the event if all the **above** laboratories are unable to carry out the requisite design / testing, the contractor may have it done from any other laboratory with prior approval of the **Engineer Incharge**.

2.1.5 The contractor shall submit the report on design mix from any of above approved laboratories for approval of Engineer in Charge within 30 days from the date of issue of letter of acceptance of the tender. No concreting shall be done until the design mix is approved. In case of White Portland Cement and the likely use of admixtures in concrete with ordinary Portland/White Portland Cement, the contractor shall design and test the concrete mix by using trial mixes with white cement and / or admixtures also, for which nothing extra shall be payable.

2.1.6 In case of change of source or characteristic properties of the ingredients used in the concrete mix during the work, the contractor as per the directions of the Engineer-in-charge shall submit a revised laboratory mix design report conducted at laboratory established at site.

2.1.7 All cost of mix designing and testing, connected therewith, including charges payable to the laboratory shall be borne by the Contractor including redesigning of the concrete mix whenever required & as directed by Engineer-In-Charge.

2.1.8 The mix design for a specified grade of concrete shall be done for a target mean compressive strength Tck = Fck + 1.65s

Where Fck = Characteristic compressive strength at 28 days.
s = Standard deviation which depends on degree of quality control.

The standard deviation for different grades of concrete shall be as follows: -

GRADE OF CONCRETE	STANDARD DEVIATION
M-20	4.0
M-25	4.0
M-30	5.0
M-35	5.0

2.1.9 **TRIAL BATCHES**

(a) The designed mix proportions shall be checked for target mean compressive strength by means of trial batches.

(b) Minimum three sets of separate preliminary tests shall be carried out for each trial batch of concrete mix. Each test shall comprise of six specimens and only one test-set of six specimens shall be made on any particular day.

(c) The quantities of materials for each trial mix shall be sufficient for at least six specimens (cubes) and the concrete required for carrying out workability tests.

(d) The workability of trial mix No.1 shall be measured and mix shall be carefully observed for freedom from segregation, bleeding and its finishing characteristics. The water content, if required, shall be adjusted corresponding to the required changes in the workability.

(e) With the modified Water Content, the mix proportions shall be recalculated by keeping with water cement ratio unchanged. The mix proportion, as modified, shall form the Trial Mix No.2 and tested for the specified strength and workability.

(f) In addition, trial mix No.3 and 4 shall be designed by keeping water contents same as that determined for trial mix 2 but varying the water cement ratio by ± 10 percent of the specified value and tested for their design characteristics.

(g) Out of the six specimen of each set, three shall be tested at seven days and remaining three at 28 days. The preliminary tests at seven days are intended only to indicate the strength to be attained at 28 days, while the design mix shall be approved only on the basis of test strength at 28 days.

2.1.10 APPROVAL OF DESIGN MIX

The design mix shall be considered satisfactory and approved if at least three preliminary test-sets individually satisfy the following strength and workability criteria:

(a) The average strength of each test-set is not less than the specified target mean compressive strength (Tck).

(b) The strength of any specimen cube is not less than 0.85 Tck.

(c) The concrete mix is of required degree of workability and acceptable concrete finish.

2.2 BATCHING & MIXING:-

(a) All design mix concrete shall be done using fully automatic batching plant conforming to IS: 4925 of minimum 10 cum per hour capacity. The automatic batching plant shall be charged by devices when actuated by a single starter switch, will automatically start the weighing operation of each material (i.e. stone aggregate, sand, cement, water, admixture etc.) and stop automatically when designated weight of each material has been reached and also it should have rated capacity (in terms of concrete in a single batch). It shall have control panel for operation of the batching plant complete with printing facility.

(b) In case of non-availability of batched concrete, Ready Mix Concrete (RMC) may be used. Transit mixtures shall transport the concrete to site. All the precautions shall be taken during the transportation and handling of concrete to achieve the desired strength, durability, etc. as envisaged in the Mix Design. Contractor has to get the approval from Engineer-In-Charge regarding source of RMC by giving the details of such plants indicating name of owner / company, its location, technical establishment, past experience and text of Memorandum of Understanding (proposed to be entered between purchaser and supplier). The Engineer-in-Charge, after satisfying himself about quality / capability of the company shall give approval in writing (subject to drawing of MOU). The MOU shall be drawn with RMC plant owner / company and submitted to Engineer-in-Charge within a week of such approval. The contractor will not be allowed to purchase RMC without completion of above formalities for use in the project. Notwithstanding the approval granted by Engineer-in-Charge in aforesaid manner, the contractor shall be fully responsible for quality of concrete including input control, production, transportation and placement etc. The Engineer-in-Charge will reserve the right to deploy his supervisor at plant site to inspect at any such stage and reject the material / concrete etc if he is not satisfied about quality of material / product.

(c) All measuring equipment shall be maintained in a clean and serviceable condition and their accuracy shall be checked at least once a month.

(d) Only single sized good quality stone aggregate shall be brought to site of work from the approved source. The grading of the stone aggregate shall be controlled by blending the aggregate of different sizes in the required proportions at site of work

The aggregate of different sizes shall be stock-piled separately, preferably a day before use.

The grading of coarse and fine aggregates shall be checked as frequently as possible and as directed by the Engineer-In-Charge to ensure that the specified grading and quality of aggregate is maintained.

(e) It is important to maintain the Water Cement Ratio constant at its specified or approved value by making adjustment for the moisture contents of both fine and coarse aggregates.

The moisture contents in the aggregate shall be determined as frequently as possible in keeping with the weather conditions and as per the provisions of IS: 2386 (Part-III).

2.3 **OTHER OPERATIONS: -**

All other operations in concreting work like mixing, slump, laying, placing of concrete, compaction, curing etc. not mentioned in this particular specifications for Design Mix of Concrete shall be as per CPWD Specifications.

2.4 **SAMPLING:-**

(a) Samples from fresh concrete shall be taken as per IS 1199-1959 and the test cubes shall be made, cured and tested in accordance with IS: 516-1959.

(b) Each test sample shall comprise of six test cubes (specimen), three of which shall be tested at 7 days and remaining for tests at 28 days.

(c) FREQUENCY OF SAMPLING: -

(i) A random sampling procedure shall be adopted to ensure that the sampling is spread over the entire period of concreting and cover all mixing units. The concrete work shall be notionally divided into lots as under for the purpose of sampling conditions.

-- Footings, rafts etc.
-- Columns and walls at all levels.
-- Beams at all levels.
-- Slabs at all levels.

(ii) At least one test sample shall be taken for each lot of concrete work.

(iii) Each grade of concrete shall form different lot for testing.

(iv) The minimum frequency of sampling of concrete of each grade shall be in accordance with CPWD specification 2009, Vol I with upto date correction slips.

(v) The concrete work shall be assessed on day to day basis & samples shall be taken as specified.

(vi) Work strength test shall be conducted in accordance with IS: 516 on random sampling.

2.4.1 TEST RESULTS OF SAMPLES: -

The test results of the sample shall be the average of the strength of three specimens. The individual variation shall not be more than $\pm$ 15% percent of the average. If variation is more, the test results shall be treated as invalid. 90% of the total tests shall be done at the laboratory established at site by the contractor and remaining 10% in any other laboratory as directed by the Engineer-in-Charge.

2.4.2 STANDARD OF ACCEPTANCE: -

i) In case the test results of all the samples are above the characteristic compressive strength, the concrete shall be accepted.

ii) In case the test result of one or more samples fails to meet the requirement (i) above, it shall be accepted if it meets the requirement as laid down in CPWD Specification.

vi) Concrete of each grade shall be assessed separately.

vii) Concrete is liable to be rejected, if it is porous or honeycombed or its placing has been interrupted without providing a proper construction joint or the reinforcement has been displaced beyond the tolerances specified, or construction tolerances have not been met.

2.5 MEASUREMENT –

(i) As per CPWD Specifications.

(ii) In respect of all projected slabs at all levels including cantilever, canopy, the payment for the RCC work shall be made under the item RCC slabs. The payment for shuttering at the edges shall be made under item of centering and shuttering for RCC slabs. Nothing extra shall be

paid for the side shuttering at the edge of these projected balconies / projected verandah slabs.

2.6 TOLERANCES - As per CPWD Specifications.

2.7 RATES: -

(i) The quoted rate includes the cost of materials, labour and T&P, including mixing, placing, transportation involved in all the operations described above except for the cost of centering, shuttering & reinforcement which will be paid for separately.

(ii) In case of rejection of concrete on account of unacceptable compressive strength, governed by para "Standard of Acceptance" as above, the work for which samples have failed shall be redone at the cost of contractor. However, the Engineer-in-charge may order for additional tests (like cutting cores, ultrasonic pulse velocity test, load test on structure or part of structure, etc) to be carried out at the cost of contractor to ascertain if the portion of structure wherein concrete represented by the sample has been used, can be retained on the basis of results of individual or combination of these tests. The Contractor shall take remedial measures necessary to retain the structure as approved by the Engineer-in-charge without any extra cost. However, for payment, the basis of rate payable to contractor shall be governed by the 28 days cube test results and reduced rates shall be regulated in accordance with CPWD Specifications.

2.8 R C C WORK (ORDINARY)

2.8.1 The work shall be done in accordance with CPWD Specifications.

2.8.2 Water Cement ratio for Ordinary RCC work shall not be more than 0.5. Contractor shall use concrete mixture of proper design having arrangement for measuring water for mixing of concrete.

2.9 FORM WORK

2.9.1 The work shall be done in general as per CPWD Specifications.

2.9.2 Only M.S. centring / shuttering and scaffolding material unless & otherwise specified shall be used for all R.C.C. work to give an even finish of concrete surface. However, marine-ply shuttering in exceptional cases as per site requirement may be used on specific request from contractor to be approved by the **Engineer-in-Charge**.

2.9.3 Nothing extra shall be paid for the centring and shuttering, circular in shape whenever the formwork is having a mean radius exceeding 6m in plan.

2.9.4 Nothing extra shall be paid for grid beams and the corresponding slabs having clear span more than 1.20 metres.

2.9.5 In order to keep the floor finish as per architectural drawings and to provide required thickness of the flooring as per specifications, the level of top surface of R.C.C. shall be accordingly adjusted at the time of its centring, shuttering and casting for which nothing extra shall be paid to the Contractor.
As per general engineering practice, level of floors in toilet / bath, balconies, shall be kept 12 to 20mm or as required, lower than general floors shuttering should be adjusted accordingly. Nothing extra is payable on this account.

2.9.6 Steel shuttering as approved by the Engineer-in-Charge shall be used by the contractor. Minimum size of shuttering plates shall be 600mm x 900mm except for the case when closing pieces are required to complete the shuttering panels.
Dented, broken, cracked, twisted or rusted shuttering plates shall not be allowed to be used on the work.
The shuttering plates shall be cleaned properly with electrically driven sanders to remove any cement slurry or cement mortar or rust. Proper shuttering oil or de-bonding compound shall be

applied on the surface of the shuttering plates in the requisite quantity before assembly of steel reinforcement.

2.10 **REINFORCEMENT:-**

2.10.1 The reinforcement shall be done as per CPWD Specifications.

2.10.2 The quoted rate of item of reinforcement of RCC work includes all operations including straightening, cutting, bending, welding, binding with annealed steel or welding and placing in position at all the floors with all leads and lift complete as per CPWD Specifications.

2.10.3 The contractor shall provide approved type of support for maintaining the bars in position and ensuring required spacing and correct cover of concrete to reinforcement as called for in the drawings, spacer blocks of required shape and size. Chairs and spacer bars shall be used in order to ensure accurate positioning of reinforcement. **Spacer blocks shall be cast well in advance with approved proprietary pre-packed free flowing mortars (Conbextra as manufactured by M/S Fosroc Chemicals India Ltd. or approved equivalent)** of high early strength and same colour as surrounding concrete, Pre-cast cement mortar/concrete blocks/blocks of polymer shall not be used as spacer blocks unless specially approved by the Engineer-in-charge, quoted rate of RCC items is inclusive of cost of such cover blocks.

2.11 PRE-CAST RCC WORK

2.11.1 The work shall be done in accordance with CPWD Specifications.

2.11.2 Pre-cast reinforced concrete units shall be of grade or mix as specified. Provision shall be made in the mould to accommodate fixing devices such as hooks etc. and forming of notches and holes. Each unit shall be cast in one operation. A sample of the unit shall be got approved from Engineer-in-charge before taking up the work.

2.11.3 Pre-cast units shall be clearly marked to indicate the top of member and its location.

2.11.4 Pre-cast units shall be stored, transported and placed in position in such a manner that these are not damaged.

2.11.5 The compaction of the concrete shall be done by vibrating, table or external vibrator, as approved by Engineer-in-charge. The rate quoted for the item shall include the element for framework and mechanical vibration.

2.11.6 The quoted rate for item includes cost of all materials. labour, and all operations involved. Cost of M.S. frames, lugs including their welding, lifting hooks is also included.

3.0 **BRICK WORK:-**

3.1 The brickwork shall be carried out with good quality well burnt FPS bricks of class designation 75 as per CPWD Specifications.

3.2 The quoted rate shall also include for leaving chases / notches for dowels / cramps for all kinds of cladding to come over brick work.

3.3 Brick work provided around shaft or lift walls or around slab cutouts shall be measured in the brick for corresponding floor level. Nothing extra shall be paid on this account.

3.4 M.S. Strip provided at every third course of half brick masonry shall be in single piece. If required, welding joint can be used without overlaps. Nothing extra shall be paid for welding and overlaps.

4.0 STONE / MARBLE WORK :-

4.1 General: - The execution of stones work shall be in general as per CPWD Specifications.

4.2 SAMPLES FOR STONE WORK:-

Samples of each item of stone work either individually or in combination shall be prepared for approval of Engineer-in-charge before commencement of work.

5.0 WOOD WORK:-

5.1 The wood work in general shall be carried out as per CPWD Specifications.

5.2 The sample of timber to be used shall be deposited by the contractor with Engineer-in-charge before commencement of work.

5.3 Glazing for toilets shall be of translucent type.

5.4 The shape and size of beading shall be as per drawings. The joints of beading shall be mitred.

5.5 Timber shall be of specified species, good quality and well seasoned. It shall have uniform colour, reasonably straight grains and shall be free from knots, cracks, shakes and sapwood. It shall be close grained. The contractor shall deposit the samples of species of timber to be used with the Engineer-in-Charge for testing before commencement of the work.

5.6 Wood work shall not be painted, oiled or otherwise treated before it has been approved by the Engineer-in-charge. All portion of timber including architrave abutting against masonry, concrete, stone or embedded in ground shall be painted with approved wood preservative or with boiling coaltar.

5.7 The contractor(s) shall produce cash voucher and certificates from approved Kiln Seasoning Plants about the timber used on the work having been kiln seasoned and chemically treated by them, falling which it would not be so accepted as kiln seasoned and/or chemically treated.

5.8 Transparent sheet glass conforming to IS: 2835 – 1977 shall be used. Thickness being governed as under unless otherwise specified in the item in wood work/steel work:

Area of Glazing	Thickness
(a) For glazing area up to 0.50 sqm	4.0 mm
(b) For glazing area more than 0.50 sqm	5.5 mm

5.9 Factory made panelled / wire gauge door shutters

5.10 The work shall be executed through specialized agencies to be approved by the Engineer in Charge.

5.11 The shutters should be fabricated in factories & fabrication should conform to CPWD Specifications Para 9.6.6 & IS 1003 Part-I.

5.12 The contractor shall propose well in advance to Engineer-in-Charge, the names and address of the factory where from the contractor intends to get the shutters manufactured along with the credential of the firm. The contractor shall place the order for manufacturing of shutters only after obtaining approval of the Engineer in Charge whose decision in this case shall be final & binding. In case the firm is not found suitable he shall propose another factory. The factory may also be inspected by a group of officers before granting approval; shutters shall however he accepted only if these meet the specified test.

5.13 Contractor will arrange stage wise inspection of the shutters at factory by the Engineer-in-Charge or his authorized representative. The contractor will have no claim if the shutters brought at site in part or full lot are rejected by the Engineer-in-Charge due to bad workmanship / quality. Such defective shutters will not be measured and paid. The contractor shall remove the same from the site of work with in 7 days after the written instruction in this regard are issued by the Engineer-in-Charge.

5.14 The shutters should be brought at site without primer / painting.

5.15 Inspection of shutters shall be carried out for dimensions & tolerances, size & type general constructions workmanship, finish & glazing at the following frequency:-

Lot Size	Sample size	Permissible number of defectiveness
Upto 25	2	0
26 to 50	5	0
51 to 100	8	0
101 to 150	13	1
151 to 300	20	2
301 to 500	32	3
501 to 1000	50	5
1001 & above	80	7

Criteria for conformity:-

Any sample shutter failing in any one or more of the requirements inspected for as above shall be considered as defective. A lot shall be considered as having satisfied the requirements of the standard if the number of defective shutters in the sample does not exceed the corresponding permissible number of defectiveness given above.

5.16 Testing:- The shutters shall be tested for species, seasoning & treatment, defects in the timber, panel material, construction & workmanship in the approved Govt. Laboratory at the following frequency:-

Lot Size	Sample size
Upto 50	2
51 to 100	8
101 to 150	13
301 to 500	32
501 to 1000	50
1001 & above in multiple of 1000	80

If shutters are found defective in any one of the criterion, double the shutter shall be tested & if found permissible, can be accepted. If shutter is found defective in more than one criterion, the whole lot shall be rejected.

6.0 STEEL WORK:-

6.1 The work shall be carried out as per CPWD Specifications.

6.2 **Pressed Steel Frame / T Iron Frames**: - The work shall be done as per CPWD Specifications. The frames shall be fabricated in approved workshops. The angle and flat iron frames for cupboard shall also be fabricated from the above approved workshops.

6.3 **Steel windows / ventilators**: The work shall be done strictly as per CPWD Specifications. Flash butt-welded steel windows / ventilators only shall be provided and shall be procured from the approved manufacturers. The corners should be welded to form a solid fused welded joint conforming to the requirement given below.

a) Weld shall be made all along the place of meeting the member.
b) Weld should be properly grounded.
c) Complete cross section of the corner shall form a solid joint with no cavities, free from cracks, under cutting, overlaps, gross porosity and entrapped slag.

All sub dividing and glazing bars shall be tennoned & riveted into the frames i.e. all centre mullion section F4B and glazing section T2, T6 shall not be directly welded to the frames. For this a slot has to be cut in the frames, the F4B / T2 / T6 section inserted into it & head be hydraulically tennoned & riveted by Tennon Rivetting Machine.

The thickness of projecting type hinges shall not be less than 3.15 mm. For fixing of hinges to outer frame, slot shall be cut, hinges inserted & welded at the back. For non projected type hinges if allowed, the wall thickness shall not be less than 3 mm & total width not less than 40 mm. For fixing, the slot shall be cut in the fixed frames, hinge flap inserted & welded from the back.

The fixing lug shall be as per IS 1038 with adjustable slot & fixed to window frames by screws & nuts.
The fixing of unit shall be done as per IS 1081.

6.4 **M.S. Sheet Door** – M.S Sheet shall be in one piece i.e. no joint in M.S. Sheet shall be permitted.

7.0 FLOORING:-

7.1 All work in general shall be carried out as per CPWD Specifications.

7.2 Whenever flooring is to be done in patterns of tiles and stones, the contractor shall get samples of each pattern laid and approved by the Engineer-in-charge before final laying of such flooring. Nothing extra shall be payable on this account.

7.3 Different stones / tiles used in pattern flooring shall be measured separately as defined in the nomenclature of the item and nothing extra for laying pattern flooring shall be paid over and above the quoted rate. No additional wastage, if any, shall be accounted for any extra payment.

7.4 Samples of flooring stones (Kota/ Marble/ Granite etc.) shall be deposited well in advance with the Engineer-in-Charge for approval. Approved samples should be kept at site with the Engineer-in-Charge and the same shall not be removed except with the written permission of Engineer-in-Charge. No payment whatsoever shall be made for these samples.

7.5 The Marble/ Kota/ Granite or any other stone shall be fully supported by the details establishing the quarry and its location.

7.6 Full width Marble/ Kota/ Granite stone over kitchen platform shall be provided which shall not be less than 900mm long except to adjust for closing pieces. The marble / stone flooring in treads and risers of staircase shall not be less than 1500mm long except to adjust the closing pieces. Nothing extra shall be paid on these accounts

7.7 **Precast Terrazo Tile Flooring**

The tiles shall be procured from the manufacturer as per List of approved makes **at page no. 68 to 71 of DNIT**.

The tiles of 250 x 250 x 22 mm size shall be used & sample of tiles shall be got approved from the Engineer-in-Charge.

7.8 **Ceramic Tiles Flooring**

The tiles shall be procured from the approved manufacture of the approved shade & colour.

The tile shall be conforming to IS-13755 & IS-13753 for floor and wall tiles respectively.

Tiles for dado shall be 200mm x 300mm (minimum size) GROUP-III as approved.

Tiles for flooring shall be 300mm x 300mm (minimum size) GROUP-V Tiles as approved.

Test shall be conducted to satisfy the quality of material as per CPWD Specifications

7.9 The quoted rate of items of flooring is inclusive of providing sunken flooring in bathrooms, kitchen etc. and nothing extra on this account is admissible. The proper gradient shall be given to flooring for toilets, verandah, kitchen, courtyard, etc. as per the directions of Engineer-in-charge.

8.0 WATER PROOFING FOR SUNKEN FLOORS:-

8.1 The work shall be got executed from the specialized agency as approved by the Engineer in Charge.

8.2 Total quantity of the water proofing compound required shall be arranged only after obtaining the prior approval of the make by Engineer-in-charge in writing. Materials shall be kept under double lock and key and proper account of the water proofing compound used in the work shall be maintained. It shall be ensured that the consumption of the compound is as per specified requirements.

8.3 The finished surface after water proofing treatment shall have adequate smooth slope as per the direction of the Engineer-in-charge.

8.4 Before commencement of treatment on any surface, it shall be ensured that the outlet drain pipes / spouts have been fixed and the spout openings have been chased and rounded off properly for easy flow of water.

8.5 GUARANTEE BOND:-

Ten years Guarantee bond in prescribed proforma at **page no. 61 of DNIT** shall be submitted by the contractor which shall also be signed by both the specialized agency and the contractor to meet their liability / liabilities under the guarantee bond. However, the sole responsibility about efficiency of water proofing treatment shall rest with the building contractor. **(Ten per cent) of the cost of water-proofing work shall be retained as Security Deposit and the amount so deducted would be released after ten years from the date of completion of the entire work under the agreement, if the performance of the treatment is found satisfactory**. If any defect is noticed during the guarantee period, the contractor shall rectify it within 15 days of receipt of intimation of defects in the work. If the defects pointed out are not attended to within the specified period, the same will be got done from another agency at the risk and cost of contractor.

9.0. FINISHING:-

9.1 The work shall be done in accordance with CPWD Specifications.

9.2 All painting material of approved brand and manufacturer shall be brought to the site of work in the original sealed containers. The material brought to the site of work shall be sufficient for at least 30 days of work. The material shall be kept under the joint custody of contractor and representative of the Engineer-in-charge. The empty containers shall not be removed from the site till the completion of the work without permission of the Engineer-in-charge.

10.0 SANITARY INSTALLATIONS /WATER SUPPLY / DRAINAGE:-

10.1 The contractor shall submit schematic drawing of water supply and sanitary installation showing details of layout, including internal water supply and drainage details, showing the detail of water supply lines including fittings diameter wise and fixtures connecting to soil waste through traps and connection of W.C. to main shaft pipe for drainage including its ventilation system for approval of Engineer-in-Charge.

10.2 For the work of water supply and sanitary installations, the contractor shall engage the approved licensed plumbers and submit the name of proposed plumbing agencies with their credentials for approval of the Engineer-in-Charge.

10.3 The work in general shall be carried out as per CPWD Specifications.

10.4 The tendered rates shall include the cost of cutting holes in walls, floors, RCC slabs etc. wherever required and making good the same for which nothing extra shall be paid.

10.5 The Centrifugally spun cast iron pipe IS: 3989-1984 wherever necessary shall be fixed to RCC columns, beams etc. with rawl plugs of approved quality and nothing extra shall be paid for on this account.

10.6 The Centrifugally spun cast iron pipe IS: 3989-1984 wherever necessary shall be fixed to RCC columns, beams etc. with rawl plugs of approved quality and nothing extra shall be paid for on this account.

10.7 The pig lead to be used in the jointing should be as per CPWD specifications.

10.8 Nothing extra for providing & fixing CP Brass caps /extension pieces wherever required for CP Brass fittings shall be paid beyond the rates payable for corresponding CP Brass fittings

10.9.1 The entire responsibility for the quality of work will however rest with the building contractor only and he shall submit a Guarantee Bond as per Proforma at **page no. 62 of DNIT .** 10% (ten percent) of the cost of these items would be retained as security deposit and the amount so deducted would be released after two years from the date of completion of the entire work under the agreement, if the performance of the items is found satisfactory. If any defect is noticed during the guarantee period, the contractor should rectify it within seven days and if not attended to the same will be got done from another agency at the risk and cost of contractor. However, this security deposit can be released in full if bank guarantee of equivalent amount is produced and deposited with the department.

11.0 <u>SPECIFICATIONS FOR SOLID POLY VINYL CHLORIDE (PVC0 DOOR SHUTTERS:-</u>

11.1.0 SCOPE

11.1.1 This specification lays down requirement regarding types, sizes, material, construction, workmanship, finish, performance evaluation, sampling and testing of solid Poly Vinyl Chloride (PVC) Panelled door shutters for use in residential buildings, non-residential buildings such as offices, schools, hospital, etc.

11.1.2 The specification does not cover large size door shutters for industrial and special buildings such as workshops, garages, godowns etc.

11.1.3 PVC door shutters shall be used in internal locations only.

11.2.0 REFERENCES:

11.2.1 The Indian Standards and other Standards listed in Annexure-I are necessary adjunets to this standard. The products bearing BIS certification i.e. ISI Mark with code number shall have precedence over those not bearing ISI Mark.

11.3.0 TERMINOLOGY

11.3.1 For the purpose of this specification, the definitions given below in addition to those given in IS 707-1976 shall apply:

11.3.1.1

(i) Blistering: Air or solvent entrapped during moulding.
(ii) Colour Blots: Colour Blots occurring on account of uneven distribution of pigment.
(iii) Crazing: Fine hair cracks on the surface.
(iv) Defective Impregnation: Imperfect impregnation of PVC resin with other additives.
(v) Colour Fading: Fading of colour on exposure to sunlight.
(vi) Impurities: Presence of matter other than those specified.
(vi) Pin holes: Pores of size less than 1mm appearing on the surface.
(vii) Small Pores: Pores of size more than 1mm appearing on the surface.
(viii) Wrinkling: A slight ridge or furrow on surface.
(ix) Aggregate Defects: Presence of defects such as pin holes, impurities and traces of mending 5 or more in aggregate for defects at localized place.

11.4.0 **HANDLING:**

11.4.1 Handling and direction of closing of shutters shall be designated in accordance with IS: 4043:1969.

11.5.0 **MATERIAL:**

11.5.1 Poly Vinyl Chloride Resin (suspension grade) in the basis raw material of PVC compound PVC resin in mixed with chemicals like calcium searate, hydrocarbon Wax, Titanium dioxide, calcium carbonate Acrylic base etc. Further additives like UV stabilizers, impact modifiers, pigments, epoxy plasticizer, lubricants, acrylic processing aid etc. are also added. The purpose of adding the chemicals and additives is to impart strength, surface finish, colour and resistance to fading by light rays. These chemicals are mixed in the desired proportion and shall be used in the formulation of PVC material and for free and smooth extrusion of PVC cellular sheets.

11.6.0 **PROCESS:**

11.6.1 **MIXIING**: The PVC material so formulated with the addition of chemicals, filters & additives shall be mixed dry powder from in a high speed hot mixer at a temperature of 110^{o} C to 125^{o} C. The heated dry blend is then to be cooled at room temperature. However, the temperature has to be determined keeping in view the climatic conditions and the process requirements.

11.6.2 **EXTRUSION**: The cooled dry blend is off loaded into the hopper of the extruder, and then is fed to the screw & barrel of the extruder, where it is melted and kneaded at varying temperatures upto 205^{o} C by rotating screws. The thick pate of PVC material is then passed through a hot die to make the sheet of required thickness.

11.6.3 **POLISHING**: The basic shape of the sheet so acquired is then polished with the help of a three-roll calendar. At the same time the sheet is cooled by circulating water in the rolls of the calendar and thereafter on a roller table by atmospheric air.

11.6.4 **CUTTING**: The final finished product coming out of the haul-off is cut as per the required size.

11.7.0 **RANGE OF PVC PANELLED DOOR SHUTTERS:**

11.7.1 For the purpose of this specification, solid panelled door shutter of thickness 30/32mm has been considered to meet the requirements of various users. The different components required for the door shutters are given in table No. 1 in annexure.

11.8.0 **CONSTRRUCTION / FABRICATION:**

11.8.1 **GENERAL**:

11.8.1.1 The door shutters shall be manufactured under controlled conditions in factroires having adequate facilities for working with PVC cellular sheet including moulding, cutting and joining, fabrication etc.

11.8.1.2 While manufacturing door shutyters, only components indicated in Table No. 1 shall be used for the shutter.

11.8.1.3 PVC door shutter shall be made out of the extruded PVC cellular sheets for styles, top rail, middle and bottom rail and paneling as given Table No. 1.

11.8.1.4 All the members of the door shutter shall be straight, smooth and well planned at right angles to each other. Any warp of bow shall not be more than 1.50mm.

11.8.2 **FABRICATION OF SHUTTER**:

11.8.2.1 Steel frame: Mild steel square tube of specified size shall be cut to required size and welded at the comers to from steel door frame. It should be painted with red oxide anticorrosive paint.

11.8.2.2 PVC Styles: Styles made of PVC Cellular sheet shall be cut to required length and width, which shall be then "V" grooved in parallel to the required thickness of the doors. The "V" grooves are heated by hot air under controlled temperature and moulded to from "C" sections.

11.8.2.3 PVC Rails: Top Rail, Bottom Rail ad Lock Rail are made of PVC Cellular sheets by cutting the sheets to the required size.

11.8.2.4 PVC Panel: Panel made of PVC cellular sheet of 5mm thickness shall be out to required size in length and width.

11.8.2.5 The PVC panel shall be inserted in between the MS Frame, then the PVC Styles and Rails shall be bonded on the length and width sides of frames. The gap between the Panel and the "C" section of styles and rails shall be filled up with PVC beading and bonded. Lock rail at the centre shall be bonded on the either sides of PVC. The gap between the top and bottom surface is filled by PVC sheet strips called gap inserts to completely seal the door.

11.8.3. **FIXING OF THE SHUTTER**:

11.8.3.1 The PVC door shutter as fabricated above should be fixed to the door frame of M.S. T-iron with necessary butt hinges of required size as per para 11.8.3.2 of this specification by using No. 10-12mm long counter sunk fully threaded parallel shank steel screws. In case the PVC shutter is to be fixed to wooden frame/PVC frame, the screws to be used in the butt hinge shall be No. 10-40mm counter sunk fully threaded parallel shank steel screws. For fixing butt hinges to PVC shutter, use No. 10-40mm long counter sunk fully threaded parallel shank steel screws. All the screws should be screwed in by screwdriver and in no case these shall be hammered.

11.8.3.2 Each door shutter shall be fixed to the frame with 4 hinges of required size unless otherwise specified by the purchaser. The top and bottom hinges shall be fixed at location 200mm below top and 200mm above bottom of shutter. The remaining two hinges shall be places at one-third distance between top and bottom hinges.

11.8.3.3 For cup board shutters, side hung of height upto 1.20netrem each leaf shall be hung on plano hinges and for shutter of height more than 1.2 metre, each leaf shall be hung on three M.S. butt hinges of required size at quarter points. On shutter side the screws to be used in butt hinges shall be No. 10x25mm long counter sunk fully threaded parallel shank steel screws. On door frame side screws to be used in the butt hinges shall be No. 0-12mm counter sunk fully threaded parallel shank steel screws in case T-iron frame is used. And in case of wooden door frames, screws shall be No. 10-25mm long counter sunk fully threaded parallel shank steel screws.

11.8.3.3.1 All screws shall be counter sunk fully threaded parallel shank steel screws only, unless otherwise specified. All the screws shall be screwed in with screw driver only and in no circumstances screws shall be hammered in.

11.8.4 FITTINGS AND ACCESSORIES:

11.8.4.1 Door stoppers aluminium/brass: These shall be fixed to the door shutter as required by the purchaser as pr size and shape approved by him. Cleats ad blocks of wood should not be used in any circumstances.

Fittings other than hinges like pull bolt lock, mortice lock, latch floor door stoppers etc. confirming to clause 9.21 of CPWD Specifications 2009 shall be provided as per the schedule of fitting decided by the purchaser.

11.8.4.2 Mortice lock or latches: Shutter shall be shop prepared for taking mortice locks or latches a may be ordered. Shop preparing the door with morticed holes for lock fixing shall be done when desired by the purchaser.

DIMENSIONS, SIZES AND TOLERANCES:

Table 1:- Dimension of door Shutters.

S. No	Type of Shutter	Sizes (mm)	Thick-ness	PVC Sheet Section Used							
				Styles		Beading Rails		Rails		Panel Thick-ness	M.S. Sq. Tube.
				T	W	T	W	T	W		
1.	Panel door shutter DS1 (A)	730W – 2060 H	30mm	5	50	5	25	5	t=75 l=75 B=75	5	19 x 19
2.	Panel door shutter DS2 (A)	730W – 2060 H	30mm	5	75	5	50	5	t=100 l=100 B=100	5	19 x 19
3.	Panel door shutter DS3 (A)	730W – 2060 H	30mm	5	75	5	50	5	t=100 l=100 B=100	5	19 x 19
4.	Panel door shutter DS1 (B)	730W – 2060 H	30mm	5	50	5	25	5	t=100 l=100 B=100	5	19 x 19
5.	Panel door shutter DS2 (B)	730W – 2060 H	30mm	5	75	5	50	5	t=100 l=100 B=100	5	20 x 20
6.	Panel door shutter DS3 (B)	730W – 2060 H	30mm	5	75	5	50	5	t=100 l=100 B=100	5	19 x 19

Note:

T = Thickness
W = Width
t = top rail
l = lock rail
b = bottom rail

11.9.1 PVC foam sheet shall not exceed the tolerances give below:

Sheet thickness (mm)	Tolerance (mm)
1	+0.15
2	+0.20
3	+0.25
4	+0.30
5	+0.35
6	+0.40
8	+0.50
10	+0.60
13	+0.75
19	+1.05

Note: Generally the PVC sheet used for the panel door shutter is of 5 mm thickness

Tolerance

(i) On weight of PVC section + 10 percent.

(ii) On weight of galvanized M.S. square tubes, M.S. rods + 5 per cent (M.S. square / rectangular tubes to conform IS:4923-1986).

(iii) On width and height of shutter + 3mm.

(iv) The tolerance in the thickness of door shutter shall be + 1mm. The thickness of door shutter shall be uniform through out with a permissible variation of not more than 0.8mm when measured between any two points.

Sizes and Types of Door Shutters

Sizes and types of door shutters shall generally conform to the modular sizes specified in Table-2

TABLE-2 DIMENSION OF DOOR SHUTTERS

S.No.	Designation	Size: A		Size: B	Height (mm)
		Width (mm)	Height (mm)	Width (mm)	
1	DS 1	730	2060	700	2045
2	DS 2	830	2060	800	2045
3	DS 3	930	2060	900	2045

Note 1 D = Door, S = Single Shutter

Note 2 The designation indicates the size of door opening, the first number referring to width in modules of 10cm and the last number the height in modules of 10cm above finished floor level.

Note 3 Standard sizes of pressed steel and T-iron door frames are covered in CPWD Specification 96 Vol. III.

Note 4 Manufactures may supply non-modular size by mutual agreement, if so specifically ordered by the purchaser.

Note 5(i) Shutters used with frames of T-iron or pressed steel conforming to CPWD Specifications Vol. III, 1996 shall be of size A.

(ii) Shutters used with frames of timber or precast reinforced concrete conforming to IS: 4021-1983 and IS: 6523-1983 respectively shall be of size B.

Sizes of the Cup-Board shutters shall be as required by the purchaser.

11.10.1 The surface of the shutters shall be free from any visible defects such as small pores, crazing, blistering, wrinkling, impurities, defective impregnation and colour blots.

11.10.2 Panels of the door shutters shall be flat and shall have smooth and level surface.

11.10.3 All the four edge of the door shutter shall be square. The shutter shall be free from Twist or Wrap in its plane.

11.10.4 The colour of the door shall be as mutually agreed between the purchaser and the manufacturer, which would be selected by the purchaser from the available range of colours being manufactured before placing order.

11.10.5 Scattered pin holes duly repaired and finished by apply resin and not noticeable shall be accepted

11.10.6 No painting, primer is to be applied on the PVC door shutter.

11.11.0 TEST

11.11.1 TEST ON SHUTTERS

11.11.1.1 The tests as per Table – 3 shall be carried out by the manufacturer on door shutters. The method of carrying out the tests shall be as per IS: 4020-1994. Acceptability criteria shall be as mentioned against each test.

TABLE NO. 3 TEST ON DOOR SHUTTER

S.No.	Test	Acceptable criteria
1.	Dimensions and defects of squareness Rest	As per IS : 4020 – 1994
2.	General Flatness Test	-do-
3.	Local Planeness Test*	-do-
4.	Impact Indentation Test	-do-
5.	Edge loading Test	-do-
6.	Buckling Test	-do-
7.	Misuse Test	-do-
8.	Slamming Test	-do-
9.	Shock Resistance Test	-do-
10.	Screw Holding Power Test	-do-

* Local planeness test shall be carried out on the rails, styles and panels separately.

11.11.2 Test on Material

11.1.2.1 Test as per Table – 4 shall be conducted on PVC sheet cut from the door shutter. The method of carrying out the test shall be as per reference code mentioned against each test. Acceptance Criteria shall be given against each test.

TABLE – 4 TEST ON PVC MATERIALS

S.No.	Test	Test Method as per	Acceptable Value
1.	Density (at 27^{o} C)	DIN 53479	Not less than 0.50 gm/cc
2.	Tensile strength at yield	DIN 53455	10 Mps
3.	Elongation at Break	DIN 53455	Not less than 30%

S.No.	Test	Test Method as per	Acceptable Value
4.	Impact Strength (IZOD) (Charphy unotched)	DIN 53453	Not less than 15 kg/m^3
5.	Hardness	DIN 53456	Not less than 25 n/mm^2
6.	Compressive strength at 10% strain	ASTMD – 695	Not less than 8.83 kg/ cm^2
7.	Flexural stress	DIN 53452	Not less than 20 Mpa
8.	Thermal Conductivity	DIN 52612	0.059 W/mk
9.	Water absorption after 96 hrs.	DIN 53495	Below 1%
10.	Fire Rating	BS 476	BI'

111.12.0 LIST OF REFERRED INDIAN & OTHER STANDARDS

IS No.	TITLE
IS: 707 – 1976	Glossary of terms applicable to timber technology and utilization.
IS: 4020 – 1994	Door shutters – Methods of tests
IS: 4043 – 1969	Recommendations for symbolic designation of direction closing and faces of doors, windows and shutters.
IS: 10428 – 1983	Glossary of terms applicable to doors.
ISI	Specifications for testing of PVC materials 3360 (Pt-3/Sec.1) Density 3360 (Pt-5/Sec.3) Tensile Strength 3360 (Pt-5/Sec.3) Elongation at break 3360 (Pt-5/Sec.4) Impact Strength 3360 (Pt-5/Sec.12) Harness 3360 (Pt-5/Sec.8) Compressive Strength 3360 (Pt-5/Sec.7) Flexural Strength 3360 (Pt-8/Sec.1) Water Absorption Fire Retardancy

11.12.0 SAMPLING AND CRITERIA FOR CONFORMITY

11.13.1 Lot in any consignment, all shutters of the same grade and type and manufactured under similar conditions of production shall be grouped together to form a lot.

11.13.2 The number of shutters to be selected at random from a lot shall depend upon its size and shall be in accordance with table (given below).

11.13.3 Column 2 & 3 pertain to tests for Dimensions and defects of squareness test, general flatness test and local planeness test.
Column 4 & 5 pertain to all other tests as per para 11.11.1 & 11.11.2

TABLE – SAMPLE SIZE AND CRITERIA FOR CONFORMITY				
Lot Size	**Sample Size**	**Permissible No. of Defects**	**Sample Size**	**Permissible No. of Defects**
1	2	3	4	5
26 to 50	5	0	1	0
50 to 100	8	0	1	0
101 to 150	12	1	2	0
151 to 300	20	2	3	0
301 to 500	32	3	5	0
501 to 1000	50	5	10	1
1001 and above	80	7	15	2

Note: For lot size 25 or less, number of samples to be taken for testing shall be as agreed to between the purchaser and the seller / manufacturer.

11.13.0 PVC REGID PANEL DOOR SHUTTER

11.14.1 **SPECIFICATIONS**:- Providing and fixing of factory made 30mm thick PVC rigid foam PANEL DOOR SHUTTER made from M S tubular frame of 19 gauge of size 19 x 19mm for styles and 15 15mm for top and bottom tails and covered with 5mm thick heat moulded PVC 'C' channel having width of 50mm to form styles and PVC sheet of width 75mm to form lock rail, bottom rail and top rail on either side. The inner panel should be inserted with 5mm thick PVC sheet sealed with 5mm thick PVC sheet sealed with solvent cement adhesive to the styles and rails with 5mm x 25mm VC sheet beading on either side.

11.14.2 **WIREMESH**:- To make wiremesh door instead of panel insert of 5mm PVC sheet, wiremesh of suitable gauge can be inserted & and sealed to the styles and rails using PVC beading.

11.14.3 **LOUVERS**:- the door shutters can be provided with louvers for the clear opening of 450x300mm at the bottom including one additional horizontal rail of size 50mm x 30mm and two vertical styles of size 50x30mm to accommodate the 5mm thick, 40mm wide PVC sheet louvers (eight No.) alongwith side 25mmx5mm size PVC sheet lapping with slant slots of 5mm width for fixing the louvers in position with PVC cement solvent adhesive and then providing 10mmx5mm size PVC sheet beading on two vertical sides with self tapping sheet metal screws etc. complete.

Note: Width of styles and rails will vary with the size of door, Recommended size of styles and rails is given in the table.

TABLE OF STYLES AND RAILS

Door width	**Styles Size**	**Rails Size**
600mm to 7501mm	50mm	75mm
750mm to 900mm	75mm	100mm
900mm and above	100mm	125mm

12.0 **Aluminium doors, windows, ventilators etc. glazing specifications**

12.1 **Extent and Intent:** - The work shall be carried out through an approved Special Agency, who shall furnish all material, labour, accessories, equipment, tool and plants and incidentals required for providing and installing anodized aluminium doors, windows, claddings, louvers and other items as called for on the drawings. The drawings and specifications cover the major requirements only. The supplying of additional fastenings, accessories, fixtures and other items not mentioned specifically herein, but which are necessary to make a complete installation shall be a part of this contract.

12.2 **General:** - Aluminium doors, windows etc. shall be of sizes, section details as shown on the Architectural drawings. The details shown on the drawings indicate generally the sizes of the component parts and general standards. These may be varied slightly to suit the standard adopted by the manufacturers. Before proceeding with any manufacturing, the contractor shall prepare and submit complete manufacturing and installation drawings for approval of the Engineer-in-Charge and no work shall be performed until the approval of these drawings is obtained.

12.3 **Shop Drawings:** - The contractor shall submit the shop drawings of doors, windows, louvers, cladding and other aluminium work, based on the architectural drawings to the Engineer-in-Charge for his approval. The shop drawing shall show full size sections of doors, windows etc. thickness of metal (i.e. wall thickness) details of construction, sub frame/rough ground profile, anchoring details hardware as well as connection of windows, doors and other metal work to adjacent work. Samples of all joints and methods of fastening and joining shall be submitted to the Engineer-in-Charge for approval well in advance of commencing the work.

12.4. **Samples:** - Samples of doors, windows louvers etc. shall be fabricated, assembled and submitted to Engineer-in-Charge for his approval. They shall be of sizes, types etc. as decided by Engineer-in-Charge. All samples shall be provided at the cost of the contractor.

12.5. **Sections:** - Aluminium doors and windows shall be fabricated from extruded sections of profiles as detailed on drawings. The sections shall be extruded by the manufacturers approved by the Engineer-in-Charge. The aluminium extruded sections shall conform to BIS designation IIE/IIV 9 WP alloy, with chemical composition technical properties, as per IS: 733 and IS: 1285. The permissible tolerance of the extruded sections shall be such as not to impair the proper and smooth function/ operations and appearance of doors and windows.

12.6 **Fabrication:** - Doors, windows etc. shall be fabricated to sizes at factory and shall be of section, sizes, combinations and details as shown on the drawings. All doors, windows etc. shall have mechanical joints. The joints shall be designed to withstand a wind load of 150 Kg. Per Sqm. The design shall also incur that the maximum deflection of any member shall not exceed 1/175 of the span of the member. All members shall be accurately machined and fitted to form hairline joints prior to assembly. The joints accessories such as cleats, brackets etc. shall be of such material as not to cause any bimetallic action. The design of the joints and accessories shall be such that the accessories are fully concealed. The fabrication of doors, windows, etc. shall be done in suitable sections to facilitate easy transportation, handling and installation. Adequate provision shall be made in the door and window members for anchoring to support and fixing of hardware and other fixture as approved by the Architect.

12.7 **Anodizing:** - All aluminium sections shall be anodized as per IS: 7088 and to required colour as specified in the item as per IS: 1868 grading as specified in item schedule after cutting the member to requisite sizes before the final assembly. Anodizing confirming to specified grade with minimum average thickness of 15 microns when measured as per IS: 612. The anodic coating shall be properly sealed by steams or in boiling water are cold sealing process as per IS:1868/IS: 6057. Polythene tape protection shall be applied on the anodised section before they are brought to site. All care shall be taken to ensure surface protection during transportation, storage at site and installation. The tape protection shall be removed on installation. The sample will be tested in the approved laboratory and cost of samples; cost of testing etc. shall be borne by the contractor.

12.8 **Protection of finish:** - All aluminium members shall be wrapped with approved self-adhesive non-staining. PVC tapes.

12.9 **Handling and Stacking:** -

12.9.1 Fabricated materials shall be carried in an approved manner to protect the material against any damage during transportation. The loading and unloading shall be carried out with utmost care. On receipt of material at site, it shall be carefully examined to detect any damaged pieces. Arrangements shall be made for expeditious replacement of damaged pieces/ parts. Materials found to be acceptable on inspections shall be repacked in crates and stored safely.

12.9.2 In the case of composite windows and doors, the different units are to be assembled first. The assembled composite units should be checked for line, level and plumb before final fixing is done. Units may be serial numbered and identified as out how to be assembled in their final locations if situation so warrants.

12.9.3 The contractor shall be responsible for assembling composite, bedding and filling the grove with polysulphide sealant inside and outside, at transoms and mullions placing the doors, windows etc. in their respective openings. After the doors/ windows have been fixed in their correct assigned position, the open hollow sections abutting masonry concrete shall be fitted with approved polysulphide sealant densely packed and finished neat.

12.9.4 The contractor shall be responsible for doors, windows, etc. being set straight, plumb, level and for their satisfactory operation after fixing is complete.

12.10**Installation**: -

12.10.1 Just prior to installation the doors, windows, etc. shall be uncreated and stacked on edge on level bearers and supported evenly. The frame shall be fixed into position true to line and level using adequate number of expansion machine bolts, anchor fasteners, of approved size and manufacture and in an approved manner. The holes in concrete/masonry members for housing anchor bolts shall be drilled with an electric drill.

12.10.2 The door/ windows assembled as shown on drawings shall be placed in correct final position on the opening and marks made on concrete members at jambs, sills and heads against the holes provided in frames for anchoring. The frame shall then be removed from the opening and laid aside. Neat holes with parallel sides of appropriate size shall then be drilled in the concrete members with an electric drill at the marking to house the expansion blots. The expansion bolts shall then be inserted in the holes, struck with a light hammer till the nut is forced into the anchor shell. The frame shall then be placed in final position in the opening and anchored to the support thought cadmium plated machine screws of required size and anchored to the support through cadmium plated machine screws of required size threaded to expansion bolts. The frame shall be set in the opening by using wooden wedges at supports and be plumbed in position. The wedges shall invariably be placed at the meeting at points of glazing bars and frame.

12.11**PVC/ Neoprene gaskets:** - The contractor shall provide and install PVC/ Neoprene gaskets of approved size and profile at all locations as shown and as called for to render the doors, windows etc. absolutely air tight and weather tight. The contractor shall produce samples of the gaskets for approval and shall procure the same after approval only.

12.12**Fittings:** - Hinges, stays, handles, tower bolts, locks and other fittings shall be of quality and manufacturer as approved by the Engineer-in-Charge.

12.13**Manufacturer's Attendance:** - The manufacturer immediately prior to the commencement of glazing shall adjust and set all windows and doors and accept responsibility for the satisfactory working of the opening frames.

12.14**Mastic Cement:** - The gaps between frames and supports and also any gaps in the door and windows sections shall be raked out as directed and filled with mastic cement of approved colour and make to ensure complete water tightness. The mastic cement shall be of such colour and composition that it would not stain the masonry/concrete work, shall receive paint without bleeding, will not sag or run and shall not set hard or dry out under any conditions of weather. The sample of mastic cement to be used for this purpose shall be got approved from the architect before its actual use.

12.15**Details of Test:** -

12.15.1 The various tests on aluminium sections shall be conduced in accordance with the relevant IS codes.

12.15.2 The minimum number of tests for anodizing and corrosion resistance shall be as given below: -

S.No.	Details	No. of Tests
1.	Doors, windows and ventilators	One test for every 1000 kg or part thereof.

12.15.3 The samples of major member of each unit of doors/ windows shall be selected at random by Engineer-in-Charge as such that all the aluminium section shall be got tested.

12.16 **Acceptance Criteria:** - The aluminium work shall carry two years guarantee after completion of work against unsound material, workmanship and defective anodizing/ powder coating as per guarantee bond. Two years guarantee in prescribed Performa attached under sheet VI-15 must be given by the specified firm, which shall be counter signed by the contractor, in token of his overall responsibility. 10% (ten percent) of the cost of these items would be retained as security deposit and the amount so deducted would be released after two years from the date of completion of the entire work under the agreement, if the performance of the items is found satisfactory. If any defect is noticed during the guarantee period, the contractor should rectify it within seven days and if not attended to the same will be got done from another agency at the risk and cost of contractor. However, this security deposit can be released in full if bank guarantee of equivalent amount is produced and deposited with the department.

12.17 **Rates:** -

12.17.1 The quoted rates of the item shall include the cost of materials, labour required in all the above operations.

12.17.2 The rates include the cost of hinges/ pivots and rest of the fittings shall be paid separately.

9.0	GUARANTEE BOND FOR WATER PROOFING WORKS / OVER HEAD TANK

GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF WATER PROOFING WORKS / OVER HEAD TANK

This agreement made this ……day of …… (Two Thousand _____only) …….. between …….. S/o ……(hereinafter called the GUARANTOR of the one part) and the Director, IISER, Mohali (hereafter called the Institute of the other part).

WHEREAS THIS agreement is supplementary to a contract (Hereinafter called the Contract) dated …….. and made between the GUARANTOR OF THE ONE PART AND the Institute on the other part whereby the contractor inter alia, undertook to render the building and structures in the said contract recited completely water and leak-proof.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the affect that the said work will remain water and leak proof, for ten years from the date of completion of work.

NOW THE GUARANTOR hereby guarantees that work executed by him will render the structures completely leak proof and the minimum life of such water proofing treatment shall be ten years to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

The decision of the Engineer-in-Charge with regard to nature and cause of defect shall be final and binding on Guarantor.

During this period of guarantee, the guarantor shall make good all defects and in case of any defect being found render the building water proof to the satisfaction of the Engineer-in-Charge calling upon him to rectify the defects failing which the work shall be got done by the Department by some other contractor at the Guarantor's cost and risk. The decision of the Engineer-in-Charge as to the cost payable by the Guarantor shall be final and binding.

That if the guarantor fails to execute the water proofing of commits breach there under, then the guarantor will identify the principal and his successor against all loss, damage, cost expense or otherwise which may be incurred by him by reason of any default on the part of the GURANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and / or cost incurred by the Institute, the decision of the Engineer-in-Charge will be final and binding on both the parties.

IN WITNESS WHEREOF these presents have been executed by the obligator …….and ……by ……. for and on behalf of the Director, IISER, Mohali on the day, month and year first above written.

SIGNED, sealed and delivery by OBLIGATOR in the presence of:-

1. …… 2. ……

SIGNED FOR AND BEHALF OF THE DIRECTOR, IISER, Mohali BY ……..in the presence of:-

1. …… 2. ……

10.0	GUARANTEE BOND FOR SANITARY INSTALLATIONS / WATER SUPPLY / DRAINAGE WORK.

GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF SANITARY INSTALLATIONS / WATER SUPPLY / DRAINAGE WORK.

This agreement made this ……day of …… (Two Thousand _____only) …….. between …….. S/o ……(hereinafter called the GUARANTOR of the one part) and the Director, IISER, Mohali (hereafter called the Institute of the other part).

WHEREAS THIS agreement is supplementary to a contract (Hereinafter called the Contract) dated …….. and made between the GUARANTOR OF THE ONE PART AND the Institute on the other part whereby the contractor inter alia, undertook to render the work in the said contract recited structurally stable, leak proof and sound material, workmanship, anodizing, colouring, sealing.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the affect that the said work will remain structurally stable, leak proof and guaranteed against faulty material and workmanship, and finishing for two years from the date of completion of work.

NOW THE GUARANTOR hereby guarantees that work executed by him will be free from leakage, seepage, cracks in pipes and guaranteed against faulty material and workmanship, defective galvanizing for two years to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

The decision of the Engineer-in-Charge with regard to nature and cause of defect shall be final.

During this period of guarantee, the guarantor shall make good all defects and in case of any defect to the satisfaction of the Engineer-in-Charge at his cost and shall commence the work for such rectification within seven days from the date of issue of the notice from the Engineer-in-Charge calling upon him to rectify the defects failing which the work shall be got done by the Department by some other contractor at the guarantor's cost and risk. The decision of the Engineer-in-Charge as to the cost payable by the Guarantor shall be final and binding.

That if the guarantor fails to make good all defects or commits breach there under, then the guarantor will identify the principal and his successor against all loss, damage, cost expense or otherwise which may be incurred by him by reason of any default on the part of the GURANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and / or cost incurred by the Institute, the decision of the Engineer-in-Charge will be final and binding on both the parties.

IN WITNESS WHEREOF these presents have been executed by the obligator …….and ……by ……. for and on behalf of the Director, IISER, Mohali on the day, month and year first above written.

SIGNED, sealed and delivery by OBLIGATOR in the presence of:-

1. …… 2. ……

SIGNED FOR AND BEHALF OF THE DIRECTOR, IISER, Mohali BY ……..in the presence of:-

1. …… 2. ……

11.0	GUARANTEE BOND FOR STONE WORK / TILE WORK

GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF STONE WORK / TILE WORK

This agreement made this ……day of …… (Two Thousand _____only) …….. between …….. S/o ……(hereinafter called the GUARANTOR of the one part) and the Director, IISER, Mohali (hereafter called the Institute of the other part).

WHEREAS THIS agreement is supplementary to a contract (Hereinafter called the Contract) dated …….. and made between the GUARANTOR OF THE ONE PART AND the Institute on the other part whereby the contractor inter alia, undertook to render the work in the said contract recited structurally stable, workmanship, finishing and use of sound materials.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the affect that the said work will remain structurally stable and guaranteed against faulty workmanship, finishing and materials.

NOW THE GUARANTOR hereby guarantees that work executed by him will remain structurally stable after the expiry of maintenance period prescribed in the contractor for the minimum life of five years to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

The decision of the Engineer-in-Charge with regard to nature and cause of defect shall be final.

During this period of guarantee, the guarantor shall make good all defects to the satisfaction of the Engineer-in-Charge calling upon him to rectify the defects failing which the work shall be got done by the Department by some other contractor at the guarantor's cost and risk. The decision of the Engineer-in-Charge as to the cost payable by the Guarantor shall be final and binding.

That if the guarantor fails to make good all defects, commits breach there under, then the guarantor will identify the principal and his successor against all loss, damage, cost expense or otherwise which may be incurred by him by reason of any default on the part of the GURANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and / or cost incurred by the Institute, the decision of the Engineer-in-Charge will be final and binding on both the parties.

IN WITNESS WHEREOF these presents have been executed by the obligator …….and ……by ……. for and on behalf of the Director, IISER, Mohali on the day, month and year first above written.

SIGNED, sealed and delivery by OBLIGATOR in the presence of:-

1. …… 2. ……

SIGNED FOR AND BEHALF OF THE DIRECTOR, IISER, Mohali BY ……..in the presence of:-

1. …… 2. ……

12.0	GUARANTEE BOND FOR ANTI-TERMITE WORKS

GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF ANTI-TERMITE WORKS

This agreement made this ……day of …… (Two Thousand _____only) …….. between …….. S/o ……(hereinafter called the GUARANTOR of the one part) and the Director, IISER, Mohali (hereafter called the Institute of the other part).

WHEREAS THIS agreement is supplementary to a contract (Hereinafter called the Contract) dated …….. and made between the GUARANTOR OF THE ONE PART AND the Institute on the other part whereby the contractor inter alia, undertook to render the building and structures in the said contract recited completely termite proof.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the affect that the said structure will remain termite proof, for ten years from the date after the maintenance period prescribed in the contract expires.

NOW THE GUARANTOR hereby guarantees that work executed by him will render the structures completely termite proof and the minimum life of such termite proofing treatment shall be ten years to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

The decision of the Engineer-in-Charge with regard to nature and cause of defect shall be final.

During this period of guarantee, the guarantor shall make good all defects and for the matter shall replace at his risk and cost such wooden members as may be damged by terites and in case of any other defect being found, he shall render the building termite rpoof at his cost to the satisfaction of the Engineer-in-Charge and shall commence the work for such rectification within seven days from the date of issue of the notice from the Engineer-in-Charge calling upon him to rectify the defects failing which the work shall be got done by the Department by some other contractor at the guarantor's cost and risk. The decision of the Engineer-in-Charge as to the cost recoverable from the by the Guarantor shall be final and binding.

That if the guarantor fails to execute the anti termite treatment commits breach there under, then the guarantor will identify the principal and his successor against all loss, damage, cost expense or otherwise which may be incurred by him by reason of any default on the part of the GURANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and / or cost incurred by the Institute, the decision of the Engineer-in-Charge will be final and binding on both the parties.

IN WITNESS WHEREOF these presents have been executed by the obligator ……and ……by ……. for and on behalf of the Director, IISER, Mohali on the day, month and year first above written.

SIGNED, sealed and delivery by OBLIGATOR in the presence of:-

1. …… 2. ……

SIGNED FOR AND BEHALF OF THE DIRECTOR, IISER, Mohali BY ……..in the presence of:-

1. …… 2. ……

13.0	LIST OF FIELD TESTS

LIST OF FIELD TESTS

i) Particle size and shape

ii) Slumps test

iii) Flakiness & Elongation index tests

iv) Compressive strength (concrete or bricks) test

v) Rebound Hammer test

vi) Bulking of sand

vii) Silt content of sand

viii) Temperature measuring with thermometer with brass protected end 0 -200^{o} C

FIELD TESTING EQUIPMENT AND INSTRUMENTS

A. Testing Equipment at Field Laboratories

i) Balances

a) 7 kg. to 10 kg. Capacity, Semi-self indication type-Accuracy 10gm
b) 500 gm. Capacity, Semi-self indication type Accuracy 1 gm.
c) Pan Balance – 5 kg. Capacity, accuracy 10 gm.

ii) Sieves: as per IS 460 – 1962.

a) I.S. Sieves – 450mm internal dia of sizes 100mm, 80mm, 63mm, 50mm, 40mm, 25mm, 20mmm, 12.5mm, 10mm, 6.3mm, 4.75mm complete with lid and pan.
b) IS Sieves – 200mm internal dia (brass frame) consisting of 2.36mm, 1.8mm, 600 microns, 425 microns, 300 microns, 212 microns, 150 microns, 90 microns, 75 microns with lid and pan.

i) Sieve shaker capable of 200 mm and 300 mm dia sieves, manually operated with timing switch assembly.

ii) Equipment for slump test – Slump Cone, Steel Plate, tamping rod, steel scale, scoop.

iii) 100 tonnes compression testing machine, electrical-cum manually operated.

iv) Graduated measuring cylinders 200 ml capacity

v) Enamel trays (for efflorescence test for bricks and other tests)

a) 300mm x 250mm x 40mm
b) Circular plates of 250mm dia
c) 600mm x 450mm x 500mm
d) 450mm x 300mm x 40mm

vi) ISI marked 150 x 150 x 150mm concrete cube moulds as per site requirement.

vii) Graduated cylinder 1000 ml. Capacity.

B. Field Testing Instruments

(i) Steel tapes – 3m
(ii) Vernier Calipers
(iii) Micrometer Screw 25mm gauge.
(iv) A good quality plumb bob.
(v) Spirit level minimum 30 cms long with 3 bubbles for horizontal vertical
(vi) Wire gauge (circular type) disc.
(vii) Foot rule
(viii) Long nylon tread.
(ix) Rebound hammer for testing concrete.
(x) Ultrasonic pulse velocity meter
(xi) Magnifying glass
(xii) Screw driver 20 cms long
(xiii) Ball pin hammer, 100 gms
(xiv) Plastic bags for taking samples
(xv) Digital Distance meter
(xvi) Levelling machine
(xvii) Theodolite

PROFORMA FOR TESTS CARRIED OUT

NAME OF THE WORK: DIVISION/
AGREEMENT NO. & DATE SUB-DIVISION

Sl. No.	Item	Quantities as per agreement	Frequency as per specification	No. of test required	R.A. bill No.	Up-to-date quantity	No. of tests required	No. of test actually done	Remarks
1	2	3	4	5	6	7	8	9	10

Signature of Contractor

14.0	BITUMEN/CEMENT/PAINT REGISTER

BITUMEN/CEMENT/PAINT REGISTER

NAME OF THE WORK: DIVISION/
AGREEMENT NO. SUB-DIVISION

Particulars of Receipt

Date of Receipt	Source of receipt with details if any	Batch No.	Date of manufacture	Date of expiry	Qty. received	Progressive Total	Date of Issue	Qty Issued	Items of work	Qty. Returned at the end of day's work
1	2	3	4	5	6	7	8	9	10	11

Particulars of Issue

Net Qty. Issued	Progressive Total	Daily Balance in Hand	Contractor's Initial	J.E. Initial		Periodical Check	
						By AE	By HE
12	13	14	15	16		17	18

15.0	TECHNICAL SPECIFICATIONS FOR ELECTRICAL WORKS

1. All hardware items such as screws, thimbles, G.I. Wires, etc. which are essentially required for completing an item as per specifications will be deemed to be included in the item even when the same have not been specifically mentioned.

2. All hardware materials such as nuts/bolts/screws/washers etc. to be used in the work shall be zinc/cadmium plated iron.

3. Any conduit which is not be wired by the contractor shall be provided with GI fish wire for wiring by some other agency subsequently. Nothing extra shall be paid for the same. Color coding shall be done for conducts laid for different services as per direction of Engineer-in-charge.

4. While laying conduit, suitable junction boxes shall be left for pulling the wires.

5. PVC insulated copper conductor wire sued on the work shall be F.R. grade for which nothing extra shall be paid.

6. Copper wire shall be multi-stranded conductor. Termination of multi-stranded conductors shall be done using crimping type thimbles at both the ends. Nothing extra shall be paid for the same.

7. While deciding the size of switch boxes for light point/fan points/exhaust fan point items, wherever fan regulators are to be provided, extra two modules will be provided for fan regulators (fan regulator is to be provided in separate item).

8. The earthing shall be carried out in the presence of the Engineer-in-charge or his authorized representative.

9. After completion of the installation, testing shall be carried out as provided in CPWD specifications. The contractor will have to furnish completion plans and completion certificate as per specifications.

16.0	ADDITIONAL SPECIFICATION AND CONDITIONS FOR ELECTRICAL WORKS

1. The work shall be carried out strictly in accordance with CPWD Specifications for Electrical Works 2007 (Internal) and 1995(External) as amended upto date and in accordance with Indian Electricity Rules, 1956, Indian Electricity Act, 1910 as amended upto date as per instructions of the Engineer-in-Charge including as below and nothing will be paid extra.

2. Executive Engineer, IISER shall be the Engineer-in-charge, as far as electrical works are concerned. Separate tender from the electrical component is appended with this tender. It will be obligatory on part of the contractor/tenderer to tender and sign the tender documents for all the component parts and enter into agreement with Executive Engineer, IISER for electrical portion.

3. All material to be used on this work by the contractor shall be got approved from the Engineer-in-Charge before installation at site.

4. The contractor has to get the conduit layout approved from the Engineer-in-Charge prior to execution of the work. However the Engineer-in-Charge has the right to change the layout as per the site requirements and the contractor shall not have any claim due to change in layout.

5. All damages done to the building during execution of Electrical work shall be the responsibility of the contractor and the same will be made good immediately at his own cost to the satisfaction of the Engineer-in-Charge. Any expenditure incurred by the department in this condition shall be recovered from the contractor and decision of the Engineer-in-Charge about recovery shall be final.

6. The bad workmanship will not be accepted and defects shall be rectified at contractor's cost of the satisfaction of the Engineer-in-Charge. The programme of electrical works are to be co-ordinated in accordance with the building work.

7. All the debris of the electrical works should be removed and the site should be cleared by the contractor immediately after the accruing of debris. Similarly any rejected material should be immediately cleared off from the site by the contractor.

8. Cement for this bonafide work is to be arranged and used by the contractor himself and nothing extra will be paid on this account.

9. The contractor or his representative is bound to sign the site order book as and when required by the Engineer-in-Charge and to comply with the remarks therein.

10. The contractor shall make his own arrangement at his own cost for electrical/general tools and plants required for the work.

11. Main Board and Main Distribution board : The work shall be carried out according to the drawings / details as approved by the Engineer-in-Charge. The contractor shall have to get the samples approved before the whole lot is brought to site and it shall include all inter connections etc.

12. The quoted rate must be inclusive of all the Central/Sales tax such as work contract tax/excise duty/VAT/Service tax etc. The deduction at source of such taxes as per rule shall

be made while releasing payment of the running/final bills at the rate as applicable. The department shall issue a certificate of the rate and amount of deductions but such taxes shall not be paid/reimbursed to the contractor by the department separately. No form D, 31/32 (road permit) shall be issued by the department. The road permit shall be arranged by the tenderer on his own without any extra cost.

13. The entire installation shall be at the risk and responsibility of the contractor until these are tested and handed over to the department. However if there is any delay in construction from the department side, the installation may be taken over in parts, but the decision on the same shall rest with Engineer-in-charge which shall be a binding on the contractor.

14. Not withstanding the schedule of quantities, all items of interrelated works considered necessary to make the installation complete and operative are deemed to be included shall be provided by the contractor at no extra cost.

15. The connection & inter-connection shall be done by the contractor wherever required and nothing extra shall be paid on this account.

16. Nothing extra shall be paid for:-

    (a) Inter connections with thimbles/wires/tapes strips etc.

17. The contractor shall submit the completion plan separately in triplicate on blue print with one set on tracing cloth as per clause-8 of the contract within 30 days of the completion of work. In case, the contractor fails to submit the completion plan for electrical works, he shall be liable to pay a sum equivalent to 2.5% of the value of the work subject to ceiling of Rs. 15000/-.

18. The position of points (light, fan, Exhaust fan), light plugs, power plugs etc., can be changed by the Engineer -in-charge according to the requirement at site. The contractor has to accept and execute the work accordingly without any extra cost.

19. The contractor shall provide junction boxes/ looping boxes of required sizes and such boxes shall be measured as part of conduit / batten wiring without any extra payment except M.S. adopter boxes.

20. For items of power plugs, 15 Amp socket shall be of universal 6 pin type.

21. The work shall be treated as complete when all the installations are handed over to the department and all the defects are removed to the entire satisfaction of the Engineer-in-charge.

22. All the hidden work shall be carried out in the presence of Engineer-in-charge or his representatives.

23. All repairs and patch works shall be neatly carried out to match with the original finish and all damages done to the building during the execution of electrical Work shall be the responsibility of the Electrical Contractor and the same will have to be made good immediately by him to the entire satisfaction of the Engineer-in- Charge and nothing extra shall be paid on this account.

24. Electrical contractor shall make his own arrangement at his own cost for Elect./General tools and Plant required for the work.

25. Before quoting their rates, the tenderers should visit the site so as to acquaint themselves of the site conditions.

26. The electrical connection & inter-connection shall be done by the contractor wherever required for energisation of the installation and nothing extra shall be paid on this account.

27. Adopter boxes wherever used shall be of not less than 16 SWG MS Sheet.

28. The contractor shall ensure that all the persons executing the electrical work have the valid electrical license, consequences arising due to the fault of contraction to comply with the above conditions would be contractor responsibility.

29 This office reserve its right to conduct pre-dispatch inspection at manufacturer's works and accept the test certificate furnished by them. For this purpose at least 7 days notice shall be given before dispatch of any item from its work.

30.(I) In the event of any discrepancy between the specifications as mentioned under Technical Specifications and as given in CPWD Specifications, the Specification under technical specifications shall prevail.

(II) The relevant latest LS Specifications, codes of practice shall be followed if the specifications for the item is not available in the CPWD Specifications.

(III) In case ISI Specifications are also not available, the decision of the Engineer-in-charge given in writing based on acceptable sound Engineering practice and local usage shall be final and binding on the contractor.

31. (a) The telephone conduits shall be laid with GI fish wires kept, pulled in for pulling of wires, at least 1000mm extra at outlets.

(b) Main junction box of telephone conduit system shall be mounted at a height so that the top of box does not exceed 1.65 meters from the floor level and in a suitable location for working by the staff, with approval of Engineer-in-charge.

32. Test for wiring:- Insulation test and polarity to each circuit/sub main wiring shall be carried out by the contractor before handing over the installation and copy of the results shall be submitted to the department.

17.0	SPECIAL CONDITIONS FOR ELECTRICAL WORK

1. The applicant should submit the willingness from an eligible electrical contractors to get associated with the applicant for execution of the electrical component of works in wholesome manner and as per the conditions set out in the MOU to be entered into, between the one who is awarded the work and the associated eligible electrical contractor as per para 16.1.10 at page no. 8-9 of DNIT.

2. In support of the eligibility conditions of the proposed associated electrical contractor, copy of their registration documents, Electrical Contractor's License, Sales Tax Documents duly attested by the applicants (Main Contractor) shall be submitted to the Executive Engineer, IISER for deciding the eligibility within three days of receipt of the same. Each such an electrical contractor will certify that they are not debarred as on the day of application for sale of tender.

3. The main contractor will submit MOU / agreement signed with eligible associated electrical contractor. The MOU in the enclosed form shall be signed by both the parties i.e. main contractor as 1st party and associated electrical contractor as 2nd party. Copy of such agreement shall be submitted to Executive Engineer, IISER as per para 16.1.10 at page no. 8-9 of DNIT..

4. The main contractor shall be responsible and liable for proper and complete execution of the Electrical work and ensure coordination and completion of both civil and electrical work.

5. The associate or sub contractor shall attend the inspection of the work by the Engineer-in-Charge as and when required.

18.0	TERMS AND CONDITIONS FOR INTERNAL AND EXTERNAL ELECTRICAL WORKS

General Commercial & Technical Conditions:

1.0 All the works shall be carried out as per CPWD General specification for Electrical Works, Part-I (Internal); Part-II (External)-1995; Part-IV (Sub-Station)-2007, amended up to date and should also comply with relevant provisions of the Indian Electricity Rules and Acts as applicable, amended up to date.

2.0 The contractor is advised to visit the site of work to have an idea of the execution of the work; failure to do so shall not absolve their responsibility to do the work as specified in agreement.

3.0 **Rates:**

3.1. The work shall be treated as on works contract basis and the rates tendered shall be for complete items of work (except the materials, if any, stipulated for supply by the department) inclusive of all taxes (including works contract tax, if any), duties, and levies etc. and all charges for items contingent to the work, such as packing, forwarding, insurance, freight and delivery at site for the materials to be supplied by the contractor, watch and ward of all materials (including those supplied by the department, if any) for the work at site etc.

3.2. Prices quoted shall be firm.

4.0 **Taxes and Duties:**

4.1. Being an indivisible works contract, Sales Tax, Excise Duty etc. are not payable separately.

4.2. The works contract tax shall be deducted from the bills of the contractor as applicable in the State in which the work is carried out, at the time of payments.

5.0 **Mobilization Advance:**

No mobilization advance shall be paid for the work, unless otherwise stipulated in tender papers for any individual works/ composite work.

6.0 **Completeness of Tender:**

All sundry fittings, assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections as required, and all other sundry items which are useful and necessary for proper assembly and efficient working of the various components of the work shall be deemed to have been included in the tender, whether such items are specifically mentioned in the tender documents or not.

7.0 **Works to be arranged by the department:**

Unless and otherwise specified in the tender documents, the following works shall be arranged by the Department:

(i) Supply of materials to the contractor as stipulated in the tender documents.

8.0 **Works to be done by the contractor:**

Unless and otherwise mentioned in the tender documents, the following works shall be done by the contractor, and therefore their cost shall be deemed to be included in their tendered cost:-

(i) Foundations for equipments and components where required, including foundations bolts.
(ii) Cutting and making good all damages caused during installation and restoring the same to their original finish.
(iii) Sealing of all floor openings provided by him for pipes and cables, from fire safety point of view, after laying of the same.
(iv) Painting at site of all exposed metal surfaces of the installation other than pre-painted items like fittings, fans, switchgear/distribution gear items, cubicle switchboard etc. Damages to finished surfaces of these items while handling and erection, shall however be rectified to the satisfaction of the Engineer-in-Charge.
(v) Testing and commissioning of completed installation.
(vi) Storage space for all equipments, components and materials for the work

9.0 **Storage and Custody of Materials:**

The contractor has to make his own arrangement for the storage of the material at site & necessary watch and ward of the electrical installation during the execution of work till the same is handed over to the department. No extra payment will be made on this account. The storage space shall however be arranged by the department at site, if available.

The main contractor shall arrange for proper storage of the electrical fans and fittings at site and that double lock system shall be arranged for the fans and fittings after receipt at site until the time they are taken for installation. The contractor shall however be responsible for proper storage and safe custody of the same till their installation and handing over to the department.

10.0 **Electric Power Supply and Water Supply:**

Power and water supply will be arranged by the contractor at the site for installation purpose.

However, for testing purpose after complete installation of the electrical items, electricity supply will be made available free of cost to the contractor. Contractor will take due care to ensure safety of electrical installation during execution of work.

11.0 **Tools for handling and Erecting:**

All tools and tackles required for handling of equipments and materials at site of work as well as for their assembly and erection and also necessary test instruments shall be the responsibility of the contractor.

12.0 **Payment Terms:**

Payment shall be made as per the relevant clauses of form PWD 7/8 forming part of the tender documents.

13.0 **Co-ordination with other agencies:**

The contractor shall co-ordinate with all other agencies involved in the building work so that the building work is not hampered due to delay in his work. Recessed conduit and other works, which directly affect the progress of building work, should be given priority.

13.1. **Care of buildings:**

Care shall be taken by the contractor to avoid damage to the building during execution of his part of the work. He shall be responsible for repairing all damages and restoring the same to their original finish at his cost. He shall also remove, at his costs, all unwanted and waste materials arising out of his work, from the site.

14.0 **Structural Alterations to Buildings:**

(i) No structural member in the building shall be damaged/altered, without prior approval from the competent authority through the Engineer-n-charge.

(ii) Structural provisions like openings, cutouts, if any, provided by the department for the work, shall be used. Where these required modifications, or fresh provisions are required to be made, such contingent works shall be carried out by the contract at his cost.

(iii) All such openings in floors provided by the department shall be closed by the contractor after installing the cables/conduits/rising mains etc. as the case may be, by any suitable means as approved by the Engineer-in-charge without any extra payment.

(iv) All chases required in connection with the electrical works shall be provided and filled by the contractor at his own cost to the original architectural finish of the buildings.

15.0 **Addition to an installation:**

Any addition, temporary or permanent, to the existing electrical installation shall not be made without a properly worked out scheme/design by a qualified Electrical Engineer to ensure that such addition does not lead to overloading, safety violation of the existing system.

16.0 **Work in occupied buildings:**

(i) When work is executed in occupied buildings, there would be minimum of inconvenience to the occupants. The work shall be programmed in consultation with the Engineer-in-charge and the occupying department. If so required, the work may have to be done even before and after the office hours.

(ii) The contractor shall be responsible to abide by the regulations or restrictions set in regard to entry into, and movement within the premises.

(ii) The contractor shall not tamper with any of the existing installations including their switching operations or connections there to without specific approval from the Engineer-in-charge.

17.0 **Drawings:**

(i) The work shall be carried out in accordance with the drawings and the tender documents and also in accordance with modification thereto from time to time as approved by the Engineer-in-charge.

(ii) All wiring diagrams shall be deemed to be 'Drawings' within the meaning of the term as used in Clause 11 of the conditions of contract (CPWD 7 or CPWD 8). They shall indicate the main switch board, the distribution boards (with circuit numbers controlled by them), the runs of various mains and sub mains and the position of all points with their controls.

(iii) All circuits shall be indicated and numbered in the wiring diagram and the points shall be given the same number as the circuit to which they are electrically connected.

(iv) After award of the work, the firm will be required to submit the drawings for the proposed work including layout plan, conduit routes etc. Work will be carried out as per the approved drawings.

18.0 **Conformity to IE act, IE Rules, and standards:**

18.1. All electrical works shall be carried out in accordance with the provisions of Indian Electricity Act, 1910 and Indian Electricity Rules, 1956 amended up to date (Date of call of tender unless specified otherwise). List of rules of particular importance to electrical installations under these General Specifications is given for reference.

19.0 **General requirements of components:**

19.1. **Quality of material:** All materials and equipments supplied by the contractor shall be new. They shall be of such design, size and materials as to satisfactorily function under the rated conditions of operation and to withstand the environmental conditions at site.

20.0 **Inspection of materials and equipments:**

20.1. Materials and equipments to be used in the work shall be inspected by the departmental officers. Such inspection will be of following categories:

(i) Inspection of materials / equipments to be witnessed at the Manufacturer's premises in accordance with relevant BIS /Agreement Inspection Procedure.

(ii) To receive materials at site with Manufacturer's Test Certificate(s)

(iii) To inspect materials at the authorized dealer's go downs to ensure delivery of genuine materials at site.

(iv) To receive materials after physical inspection at site.

20.2. Adequate care to ensure that only tested and genuine materials of proper quality are used in work shall be ensured by firm. The firm shall ensure that:

(i) Material will be ordered & delivered at site only with the prior approval of the department to ensure timely delivery.

(ii) As and when the order is placed for the fittings/ fixtures, cables, switchgears, poles, rising main, other main items etc, its copy shall be endorsed to the Engineer-in-charge.

(iii) The firm will be required to procure material like electrical fittings & fans, exhaust fans, MCB's & DB's, switches & sockets, wires & cables, conduits and switchgears, rising mains, poles , outdoor fittings etc. directly from the manufacturer/ authorized dealers to ensure genuineness & quality and as per the approved makes only. Proof in this regard shall be submitted by the contractor if required by the department.

(iv) Inspection at factory or at godown, as required, shall be arranged by the firm for a mutually agreed date. The expenditure incurred on the inspection team shall be borne by the Institute.

(v) Delivery of material shall be taken up only with the consent of department, after clearance of the material.

(vi) Department shall reserve the right to waive inspection in lieu of suitable test certificate, at its discretion.

20.3. Similarly, for fabricated equipments, the contractor will first submit dimensional detailed drawings for approval before fabrication is taken up in the factory. Suitable stage inspection at factory also will be made to ensure proper use of materials, workmanship and quality control.

21.0 **Ratings of components:**

21.1. All components in a wiring installation shall be of appropriate ratings of voltage, current and frequency, as required at the respective sections of the electrical installations in which they are used.

21.2. All conductors, switches and accessories shall be of such size as to be capable of carrying the maximum current, which will normally flow through them, without their respective ratings being exceeded.

22.0 **Conformity to standards:**

22.1. All components shall conform to relevant Indian Standard Specifications wherever existing. Materials with ISI certification mark shall be preferred.

22.2. Relevant Indian Standards including amendments or revisions thereof up to the date of tender acceptance shall be applicable in the respective contracts for respective items, firm to ensure its compliance.

23.0 **Interchangeability:**

Similar parts of all switches, lamp holders, distribution fuse boards, Switch gears, ceiling roses, brackets, pendants, fans and all other fittings of the same type shall be interchangeable in each installation.

24.0 **Workmanship:**

24.1. Good workmanship is an essential requirement to be complied with. The entire work of manufacture/fabrication, assembly and installation shall conform to sound engineering practice.

24.2. Proper supervision/skilled workmen: The contractor shall be a licensed electrical contractor of appropriate class suitable for execution of the electrical work. He shall engage suitably skilled/licensed workmen of various categories for execution of work supervised by supervisors / Engineer of appropriate qualification and experience to ensure proper execution of work. They will carry out instruction of Engineer-in-charge and other senior officers of the Department during the progress of work.

24.3. Use of quality materials: Only quality materials of reputed make as specified in the tender will be used in work.

24.4. Fabrication in reputed workshop: Switch boards and LT panels shall be fabricated in a factory/workshop having modern facilities like quality fabrication, seven tank process, powder/epoxy paint plant, proper testing facilities, manned by qualified technical personnel. These shall be as per make / item approved.

25.0 **Testing:**

All testes prescribed in this General Specification, to be done before, during and after installation, shall be carried out, and the test results shall be submitted to the Engineer-in-charge in prescribed Performa, forming part of the Completion Certificate.

26.0 **Commissioning on completion:**

After the work is completed, it shall be ensured that the installation is tested and commissioned.

27.0 **Completion plan and completion certificate:**

27.1. For all works completion certificate after completion of work as given in Appendix –E of CPWD Specification shall be submitted to the Engineer-in-charge.

27.2. Completion plan drawn to a suitable scale in tracing cloth with ink indicating the following, along with three blue print copies of the same shall also be submitted.

(i) General layout of the building.
(ii) Locations of main switchboard and distribution boards, indicating the circuit numbers controlled by them.
(i) Position of all points and their controls.
(iv) Types of fittings, viz. fluorescent, pendants, brackets, bulk head, fans, exhaust fans etc.
(i) Name of work, job number, tender reference, actual date of completion, names of Division/ Sub-division and name of the firm who executed the work with their signature.

28.0 **Guarantee**

The installation will be handed over to the department after necessary testing and commissioning. The installation will be guaranteed against any defective design/workmanship. Similarly, the materials supplied by the contractor will be guaranteed against any manufacturing defect, inferior quality. The guarantee period will be for a period of 12 months from the date of handing over to the department. Installation/ equipments or components thereof shall be rectified/ repaired to the satisfaction of the Engineer-in-charge.

19.0	ADDITIONAL CONDITIONS FOR INTERNAL AND EXTERNAL EI WORKS

1. All repairs & patch work shall be neatly carried out to match with the original finish & all damages caused to the building installation during the execution of work shall have to be made good by the contractor immediately at his own cost to the entire satisfaction of Engineer-in-charge. In case contractor fails to comply with the instructions of the Engineer-in-charge, Engineer-in-charge shall be at liberty to get the work done by any other agency and recover such amount as paid to the other agency from the bill(s) of the contractor. Contractor shall have no claim, whatsoever, on the extent of such amount.

2. Wherever ceiling roses are not required to be provided in the light/fan/exhaust fan points, due to site conditions, the contractor shall use suitable three pin connectors for which nothing extra shall be paid. Wiring shall be carried out with FR wires.

3. Contractor shall provide polythene/PVC plastic cover for all MDB's/SDB's/DB's to protect them from rust/damages, during execution of work till the work is actually completed and handed over to the department.

4. The loose wire boxes/cable end boxes (adaptor boxes) shall be provided on the various electrical boards to facilitate the termination of the wiring in the various mountings. The boxes shall be of the same make as the DB's as far as possible. Wherever the company made cable end boxes are not available they shall be neatly fabricated with 16 SWG CRCA sheet steel, duly powder coated, dust & vermin proof and the front cover of MS sheet shall be with rubber gasket suitably screwed or with 3mm thick phenolic laminated sheet of Hylam/Formica instead of MS sheet, as desired by the Engineer-in-charge. The length of such boxes shall be same/or more as the width of the electrical switchboard. Such loose wire boxes are deemed included in the scope of the work and no extra payment shall be made for them.

5. All debris/malba resulting due to electrical work shall be removed on daily basis and completion of the work shall only be accepted after the site has been cleaned of all melba. In case, contractor fails to comply, the same shall be got removed by the other agency and the payment so made shall be recovered from the bill(s) of the contractor.

6. The contractor shall have to make arrangements, at his own risk and cost, for transportation of materials from the point of issue of stores to site of work, if any.

7. Makes of all items that are not covered in the schedule of work/additional specifications shall be got approved from the Engineer-in-charge and shall conform to relevant Indian Standard as applicable.

8. The contractor shall ensure that the staff employed by him for execution of the electrical work, possess the valid electrical license issued by competent authority. Consequences arising due to the default of the contractor in not complying with the above condition shall be the responsibility of the contractor.
9. Copper lugs shall be provided for terminating copper/aluminium/GI earth wire to all switchboards for which nothing extra shall be paid. All multistranded/ stranded wires shall be terminated through copper lugs.
10. All concealed work and earthing shall be done in the presence of the Engineer-in-charge or his authorized representative.

11. The schematic diagram/dimensional drawings of the various electrical cubical panels shall be got approved from the Engineer-in-charge before fabrication and shall comply with CPWD specifications and Indian Electricity Rules. The panels shall conform to IS: 8623/1993. All panels shall be powder coated inside out, in shade approved by the Engineer-in-charge.

12. All floor-mounted panels shall be mounted on 75mmX75mmX6mm thick M.S. channel on all the sides. It shall have a continuous earth bus of the same size and material as the main phase running continuously along the length of the panel extending on either side for earth connection.

13. The doors of all cubicle panels shall be hinged type including those of bus bar chambers and cable alleys. The locking shall be with chrome plated metal key locks. All doors shall be earthed with copper conductor wire as approved by the Engineer-in-charge.

14. The work shall be carried out according to drawing approved by the Engineer-in-charge. The layout once approved can only be changed by the Engineer-in-charge as per requirement at site. It shall be the responsibility of the contractor to plan the layout and get the approval from the Engineer-in-charge before laying the conduits etc.

15. The MCB should be of the same make as that of MCB DB's and having a minimum breaking capacity of 10 KA. Contractor shall obtain approval of the Engineer-in-charge before procurement of MCB DB's.

16. All model of modular accessories required for the work shall be got approved from the Engineer-in-charge from among the approved makes. The base plate shall be preferably in sheet steel or otherwise in unbreakable polycarbonate. The cover plates shall be screw less type in shade approved by the Engineer-in-charge.

17. Contractor shall have to check the Site Order Book for any instructions of the Engineer-in-charge or his authorized representative and sign the site order book. He shall be bound to ensure compliance with the instructions recorded therein.

18. The MCCB's shall be compatible for reliable protection and accurate measurement. The rated Service breaking capacity (kArms) shall be 100% of Ultimate breaking capacity (kArms). All MCCB's shall be current limiting type with features as per relevant IS codes and CPWD specification.

19. MCCB's shall be used with terminal spreaders and all terminals shall be shrouded to avoid direct contact.

20. Mechanical Castle key interlock shall be provided among the incomer MCCB's, wherever, as applicable, two different incomer sources are provided in the panel as per the directions of the Engineer in charge. The same is deemed included in the scope of work.

21. All measuring and indicating instruments shall be protected through fuses/ MCB's and isolating switches.

22. General arrangement drawing of the switchboard shall be got approved from the Engineer-in-Charge before commencement of manufacturing.

23. For the items like LT panels, feeder pillars and accessories, etc, the firm shall arrange for inspection in the factory and provide for all facilities for testing. The cost of the visit of Engineer-in-Charge or his representative shall be borne by department. However, firm will be responsible for arranging the inspections as required.

24. Conduit layout as per switching arrangement shall be prepared by contractor and got approved from the Engineer-in-Charge before slab casting.

25. To facilitate drawing of wires 16/18 SWG G.I fish wire shall be provided alongwith laying of recessed conduit for which no extra payment shall be made to contractor.

26. Conduit and termination to SDB and main board adapter box i/c connection wires to MCB,s inter connection between SDB and main board etc shall be included in the tendered rates and nothing extra shall be paid for the same.

27. The contractor shall provide junction boxes / looping boxes of required sizes and such boxes shall be measured as part of conduit / batten wiring without any extra payment.

28. Only brass screws along with brass washers will be used for fixing Phenolic laminated sheet covers and at other places aluminum alloy/ brass / cadmium plated screws will be used.

29. M.S. dash fastener shall be used for installation of fittings and fixtures in ceiling and for providing suspenders for the angle support, conduiting, cable tray etc. for which nothing extra shall be paid

30. All CI/metal boxes & junction boxes should be cleaned properly and painted from inside before wiring & fixing the accessories.

31. In wiring items like point wiring / wiring for light/fan/call bell, the item includes the cost of conduit also.

20.0	LIST OF APPROVED MAKES / BRANDS

(CIVIL WORK) **PART-I**

S.No.	Description	Makes/Brands
1.	Ready Mix Concrete	L&T CONCRETE / J.K. LAKSHMI / ULTRATECH / KWIK MIX
2.	Grey Cement 43 Grade (OPC / PPC)	ACC / L & T / GUJRAT AMBUJA / VIKRAM / BIRLA / JK CEMENT / SHREE
3.	White Cement	BIRLA WHITE / JK WHITE OR ANY OTHER BIS APPROVED PRODUCT
4.	Reinforcement Steel	SAIL / TISCO / RINL / IISCO
5.	Flush Door Shutters	CENTURY / KITPLY / KUTTY
6.	PVC Door Shutter	RAJSHREE / SINTEX PLAST / DURO PLAST
7.	Ply / Commercial Board	CENTURY / KITPLY / NATIONAL / ANCHOR
8.	Prelaminated Board	ANCHOR / NOVAPAN / CPL GLUNZ / KITLAM
9.	Sunmica	FORMICA / KITMICA/ DECOLAM
10.	Pressed Steel Frame / Steel windows	SAN HARVIC, STEELMAN INDUSTRIES, PD INDUSTRIES, METAL WINDOWS, CHANDNI INDUSTRIES, GANPATI UDYOG (RAJPURA)
11.	Aluminium, Door Fittings	ARGENT / CLASSIC / UNIVERSAL & MAKES MENTIONED IN DRAWING NO. 1404/AL/1012/R1
12.	Mortise Lock	GODREJ / HARRISON / PLAZA
13.	Door Closure (Hydraulic)	UNIVERSAL / RITZ / EVEREST
14.	Helical and Double Action Spring	RITZ / HERYKA / AVON
15.	Adjustable Friction Window stay	EARL BIHARI PVT. LTD. (EBCO) OR ANY OTHER BIS APPROVED PRODUCT
16.	Wall Tiles	JOHNSON / ASIAN / ORIENT / KAJARIA
17.	Ceramic Floor Tiles	KAJARIA / JOHNSON / SOMANY /NITCO/ASIAN
18.	Precast Concrete Tiles (Terrazo / Plain / Chequered)	NTC (PKL) / PAVING STONE / NITCO
19.	Vinyl Flooring	TUSKAR / WONDER FLOOR / LG / ARMSTRONG
20.	Float Glass	MODIGUARD / TRIVENI / SAINT GOBAIN / ATUL /TRIVENI
21.	Paint (Synthetic Enamel / Emulsion / Anti Fungal)	1ST QUALITY ONLY OF NEROLAC / ASIAN / BERGER/ ICI
22.	Oil Bound Distemper	NEROLAC / ASIAN / BERGER/ ICI
23.	Wood & Steel Primer	NEROLAC / ASIAN / BERGER/ ICI

S.No.	Description	Makes/Brands
24.	Water Proofing Compound	CICO / PIDILITE / ROFEE / SIKA / FOSROC
25.	Aluminium Sections	INDALCO / HINDALCO / JINDAL OR ANY OTHER BIS APPROVED PRODUCT
26.	Vitrified Tiles	NITCO /ORIENT/ASIAN / JOHNSON
27.	Tile Adhesive	PIDLITE / SIKA / FOSROC / BAL ENDURA
28.	Glass Mosaic Tiles	PIXEL GLASS / CORAL / ITALIA / BISAZZA / PALLADIO
29.	False Ceiling :	
	a) Mineral Wool	USG / ARMSTRONG / DAIKEN
	b) Gypsum	GYPBOARD / SAINT GOBAIN / LAFARGE / ARMGYP
	c) Wooden	KITPLY / ANCHOR / ARMSTRONG WOODWORKS
	d) Metallic	LLOYD / ARMSTRONG / LUXLON
	e) Glass wool	ECOPHOM/DEXUNE/DECOPHON
30.	Silicon paint	PIDILITE / CICO / ROFF / CHOKSI
31.	Wall putty	JK / BIRLA / ASIAN
32.	Paver Block and Kerb Stones	NITCO / UNITILE / NTC
33.	Dash / Anchor Fastners	HILTI / FISCHER
34.	Nuts / Bolts & Screws	GKW / ATUL
35.	Backer rod	SUPREME OR ANY OTHER BIS APPROVED PRODUCT
36.	Sealant	BASF INDIA /SIKA /FOSROC

(PLUMBING WORK) **PART-II**

S.No.	Description	Makes/Brands
1.	Vitreous China Ware (Ist Class quality)	PARRYWARE / HINDUSTAN VITREOUS / CERA
2.	Plastic Seat Cover	PARRYWARE / COMMANDER / HINDWARE
3.	C.P. Fittings / Accessories	ESSCO / EBONY / JAL / JAQUAR
4.	PTMT fittings	PRAYAG / POLYTUF OR ANY OTHER BIS APPROVED PRODUCT
5.	Flush Valve	JAQUAR / JAL / ESS ESS
6.	Stainless Steel Sink	COBRA / NEEL KANTH / AMC / NIRALI
7.	Soil Waste Pipes & Fittings	
	a) Centrifugal Cast Spun Pipe	NECO OR ANY OTHER BIS APPROVED PRODUCT
	b) Sand Cast Iron Pipes	NIF / RIF OR ANY OTHER BIS APPROVED PRODUCT
	c) Centrifugal Cast Spun LA Pipe	ELECTRO STEEL / KESORAM OR ANY OTHER BIS APPROVED PRODUCT
8.	GI & MS Pipes	TATA / JINDAL (HISAR) / BST
9.	PVC Water Supply Pipes & Fittings	NOCIL / CHEMPLAST / WAVIN / SUPREME / DIZAYN / DIPLAST
10.	GI Fittings (Malleable Cast Iron)	UF / SVW / UNIK
11.	Gun Metal Valve (Full Way, Check & Globe Valve)	LEADER / SANT / KILBURN
12.	Butter Fly Valve	CASTLE / C & R /ADVANCE / IVC / AUDCO
13.	C.I. Double Flanged Sluice Valve & Check Valve	IVC / KIRLOSKAR / LEADER
14.	C.I. Double Flanged Non Return Valve	GEETA / KIRLOSKAR / C & R / AUDCO / CASTLE / ADVANCE
15.	Foot Valve	LEADER / IVC / KIRLOSKAR
16.	C.I. Manhole Cover & CI Grating	RIF / ADHUNIK / BC
17.	Bib & Stop Cocks (Brass)	KPR / SANT / VIF
18.	Mirror Glass	MODI GUARD / ATUL /GOLDEN FISH
19.	Insulation Hot Water Pipes (Mineral Wool)	LAPINUS OR ANY OTHER BIS APPROVED PRODUCT
20.	Bed Pan Sink	PAMINI OR ANY OTHER BIS APPROVED PRODUCT
21.	Elbow Action Surgical Mixer, Taps & Bed Pan Sink Accessories	VIJAY OR ANY OTHER BIS APPROVED PRODUCT

S.No.	Description	Makes/Brands
22.	PVC tanks	DIPLAST / SINTEX / AQUA PLUS
23.	Stone Ware Pipe & G.T.	PERFECT / CHANDIGARH CERAMICS / HIND
24.	PVC Plumbing Pipes / Fittings	NOCIL / CHEMPLAST / WAVIN / SUPREME / DIAZYN / DIPLAST
25.	Ferrules	DHAWAN SANITARY UDYOG (PRIMA) OR ANY OTHER BIS APPROVED PRODUCT

(ELECTRICAL WORK) **PART-III**

S.No.	Description	Makes/Brands
1.	PVC copper wire	HAVELL'S / FINOLEX / POLYCAB
2.	Switch socket accessories(piano type)	ANCHOR / SSK
3.	Conduit pipe and accessories	
a)	PVC conduit pipe and accessories	DIPLAST / BEC / AKG
b)	M.S conduit pipe	BEC / AKG / NIC / MK
c)	M.S conduit accessories	RAMA (HG)/ FITWELL (HG) / SHAMA (HG)
d)	GI Pipe	TATA / JINDAL (HISSAR)
4.	PVC / XLPE cables	HAVELLS / POLYCAB / CCI / FINOLEX
5.	Thimbles, cable lugs	DOWELL'S / 3D / HEX / JOHNSON
6.	L.T switch board / panels / feeder pillars	TRICOLITE / EMCO / DSPL / INTERNATIONAL SWITCHGEARS / MILESTONE
7.	Sheet steel box for energy meter	DSPL / STANDARD / INDO ASIAN / BCH / POWER ASSOCIATES
8.	Distribution board	L&T / ABB / SIEMENS / LEGRAND
9.	MCCB	L&T (D-SINE) ABB (ISOMEX) / LEGRAND (DPX) / SCHNEIDER (NS)
10.	MCB's / RCCB / ELCB	L&T (HAGER) / SIEMENS (BETA GARD) / LEGRAND (LEXIC) / SCHNEIDER (MULTI-9) / ABB (S-270 RANGE)
11.	Meters	AE / RISHAB
12.	FLUORESCENT TUBES / CFL FITTINGS	PHILIPS / WIPRO / HAVELLS
13.	CEILING FANS	CROMPTON (HIGH BREEZE) / BAJAJ (REGAL) / ORIENT (DELUXE) / USHA (WINDSOR)
14.	EXHAUST FAN	GEC / CROMPTON / ALSTHOM
15.	WALL FAN	ORIENT – TORNADO / BAJAJ – SUPREME / CROMPTON – HIGH BREEZE
16.	Thermoplastic meter box	HENSEL / SPELSBERG

Note: The above mentioned makes are for the general items of the contract. However, where the make is specified in the schedule of quantities, the same will be taken for execution of that particular item.

21.0	SCHEDULE OF QUANTITIES (Civil & P.H. work)

S. No	Description of Items	Unit	Qty	Rate	Amount
PART A	**CIVIL WORK**				
	E A R T H W O R K				
1	Earth work in rough excavation, banking excavated earth in layers not exceeding 20 cm in depth, breaking clods watering, rolling each layer with ½ tonne roller or wooden or steel rammers, and rolling every 3rd and top-most layer with power roller of minimum 8 tonnes and dressing up in embankments for roads, flood banks, marginal banks and guide banks or filling up ground depressions, lead upto 50 m and lift upto 1.5 m :				
	All kinds of soil	cum	1519	157.55	239318.45
2	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	cum	1028	45.70	46979.60
3	Supplying and filling in plinth with 100 mm thick sand under floors including, watering, ramming consolidating and dressing complete.	cum	159	301.50	47938.50
4	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) : Treatment of soil under floors using chemical emulsion @ one liter per hole, 300 mm apart including drilling 12 mm diameter holes and plugging with cement mortar 1 :2 (1 cement : 2 Coarse sand) to match the existing floor :				
	With Chlorpyriphos/Lindane E.C. 20% with 1% concentration.	sqm	1314	48.70	63991.80
	C O N C R E T E W O R K				
5	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :				
	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size).	cum	220	2449.00	538780.00
6	Providing and laying damp-proof course 40mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12.5mm nominal size).	sqm	117	144.15	16865.55
7	Extra for providing and mixing water proofing material in cement concrete work @ 1 kg per 50kg of cement.	per 50 kg cement	30	27.45	823.50

S. No	Description of Items	Unit	Qty	Rate	Amount
8	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) over 75mm bed by dry brick ballast 40mm nominal size well rammed and consolidated and grouted with fine sand including finishing the top smooth.	sqm	147	222.65	32729.55
	REINFORCED CEMENT CONCRETE				
9	Centering and shuttering including strutting, propping etc. and removal of form for :				
i)	Foundations, footings, bases of columns, etc. for mass concrete.	sqm	1057	119.25	126047.25
ii)	Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	sqm	758	180.40	136743.20
iii)	Suspended floors, roofs, landings, balconies and access platform.	sqm	2551	187.35	477929.85
iv)	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	sqm	3100	162.65	504215.00
v)	Columns, Pillars, Piers, Abutments, Posts and Struts.	sqm	905	238.40	215752.00
10	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. Upto plinth level.				
i)	Thermo-Mechanically Treated bars upto plinth level.	Kg.	15206	42.70	649296.20
ii)	Thermo-Mechanically Treated bars above plinth level.	Kg.	893.18	42.70	38138.79
11	Add or deduct for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections.	metre	300	11.95	3585.00
12	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete work including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement. including Admixtures in recommended proportions as per IS 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. M-25 grade reinforced cement concrete by using 380kg. of cement per cum of concrete. All work up to floor V level.				
i)	All work upto plinth level.	cum	300	3983.75	1195125.00
ii)	All work above plinth level	cum	726	3983.75	2892202.50

S. No	Description of Items	Unit	Qty	Rate	Amount
	B R I C K W O R K				
13 i)	Brick work with F.P.S. bricks of class designation 75 in foundation & plinth :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	20	2121.75	42435.00
13 ii)	Brick work with F.P.S. bricks of class designation 75 in superstructure above plinth level upto floor V level in all shapes and sizes in :				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	10	2430.25	24302.50
14	Brick work 7 cm thick with F.P.S. brick of class designation 75 in cement mortar 1:6 (1 cement : 6 coarse sand) in superstructure.	sqm	34	190.00	6460.00
15	Half brick masonry with F.P.S. bricks of class designation 75 in superstructure above plinth level upto floor V level.				
	Cement mortar 1:4 (1 cement :4 coarse sand)	sqm	1637	302.80	495683.60
16	Extra for providing and placing in position 2 Nos. 6mm dia. M.S.bars at every third course of half brick masonry (with F.P.S. bricks).	Sqm	1544	47.80	73803.20
17	Brick work with machine moulded modular bricks of class designation 125 in exposed brick work including making horizontal and vertical grooves 10mm wide 12mm deep complete in super structure in cement mortar 1:6 (1 cement : 6 coarse sand).				
i)	From ground level upto plinth level	cum	61	2432.75	148397.75
ii)	Above plinth level	cum	353	2812.80	992918.40
	S T E E L W O R K				
18	Providing and fixing circular/ Hexagonal cast iron or M.S. sheet box for ceiling fan clamp of internal dia 140mm, 73mm height, top lid of 1.5mm thick M.S. sheet with its top surface hacked for proper bonding, top lid shall be screwed into the cast iron/ M.S. sheet box by means of 3.3mm dia. round headed screws, one lock at the corners. Clamp shall be made of 12mm dia M.S. bar bent to shape as per standard drawing.	each	53	81.20	4303.60
	F L O O R I N G				
19	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps etc. complete.				
	40mm thick with 20mm nominal size stone aggregate.	sqm	8	192.95	1543.60
20	Providing and fixing glass strips in joints of terrazo/ cement concrete floors.				
	40 mm wide and 4 mm thick.	meter	26.4	17.60	464.64

S. No	Description of Items	Unit	Qty	Rate	Amount
21	Marble stone flooring with 18mm thick marble stone (sample of marble shall be approved by Engineer-in-charge) over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with grey cement slurry including rubbing and polishing complete with :				
	Makrana white.	sqm	125	2,637.95	329743.75
22	Providing and fixing at all height false ceiling including providing and fixing of frame work made of special sections power pressed from M.S. sheet and galvanised in accordance with zinc coating of grade 350 as per IS : 277 and consisting of angle cleats of size 25mm wide x 1.6mm thick with flanges of 22mm and 37mm at 1200mm centre to centre one flange fixed to the ceiling with dash fastener 12.5mm diax40mm long with 6mm dia bolts to the angle hangers of 25x25x0.55mm of required length, and other end of angle hanger being fixed with nut and bolts to G.I. channels 45x15x0.9mm running at the rate of 1200mm centre to centre to which the ceiling section 0.5mm thick button wedge of 80mm with tapered flanges of 26mm each having clips of 10.5mm at 450mm centre to centre shall be fixed in a direction perpendicular to G.I. channel with connecting clips made out of 2.64mm diax230mm long G.I. wire at every junction including fixing the gypsum board with ceiling section and perimeter channels 0.5mm thick 27mm high having flanges of 20mm and 30mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450mm centre to centre with 25mm long drive-all screws @ 230mm interval including jointing and fixing to a flush finish of tapered and square edges of the board with recommended filler, jointing tapes, finisher and two coats of primer suitable for board as per manufactures specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed all complete as per drawing and specification and direction of the Engineer in Charge but excluding the cost of painting with : 12.5 mm thick tapered edge gypsum board conforming to IS: 2095- Part I.	sqm	236	502.10	118495.60
	F I N I S H I N G				
23	12 mm cement plaster of mix : 1:6 (1 cement : 6 fine sand)	sqm	5885	67.65	398120.25
24	15 mm cement plaster on rough side of single or half brick wall of mix : 1:6 (1 cement: 6 coarse sand)	sqm	250	84.55	21137.50

S. No	Description of Items	Unit	Qty	Rate	Amount
25	6 mm cement plaster of mix :				
	1:3 (1 cement : 3 fine sand)	sqm	2290	62.15	142323.50
26	Pointing on brick work or brick flooring with cement mortar 1:3 (1 cement: 3 fine sand) :				
	Struck pointing.	sqm	1853	45.40	84126.20
27	Distempering with dry distemper of approved brand and manufacture (two or more coats) and of required shade on new work, over and including priming coat of whiting to give an even shade.	sqm	164	26.30	4313.20
28	Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade				
	New work (two or more coats) over and including priming coat with cement primer.	sqm	7350	41.55	305392.50
29	Applying one coat of cement primer of approved brand and manufacture on wall surface :				
	Cement primer.	sqm	416	17.20	7155.20
30	Finishing walls with water proofing cement paint of required shade :				
	New work (Two or more coats applied @ 3.84 kg/10 sqm).	sqm	416	30.80	12812.80
31	Wall painting with plastic emulsion paint of approved brand and manufacture to give an even shade:				
	Two or more coats on new work	Sqm	235	40.05	9411.75
	ROAD WORK				
32	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm. depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth lead upto 50 metres.	sqm	747	33.90	25323.30
33	Supplying and stacking at site.				
i)	90 mm to 45 mm size stone aggregate.	Cum	77	742.30	57157.10
ii)	63 mm to 45 mm size stone aggregate.	Cum	51	768.45	39190.95
iii)	Stone screening 13.2 mm nominal size (Type A).	Cum	16	892.25	14276.00
iv)	Red bajri	Cum	8	654.15	5233.20

S. No	Description of Items	Unit	Qty	Rate	Amount
34	Laying spreading and compacting stone aggregate of specified sizes to WBM specifications including spreading in uniform thickness, hand picking , rolling with 3 wheeled road / vibratory roller 8-10 tonne in stages to proper grade and camber, applying and brooming requisite type of screening / binding material to fill up interstices of coarse aggregate watering and compacting to the required density .	Cum	110	192.55	21180.50
35	Providing and applying tack coat using hot straight run bitumen of grade 80/ 100 including heating the bitumen, spraying the bitumen with mechanically operated spray unit fitted on bitumen boiler, cleaning and preparing the existing road surface as per specifications :				
	On W.B.M. @ 0.75 Kg / sqm.	Sqm	474	23.90	11328.60
36	2.5 cm thick bitumastic sheet with hot bitumen of approved quality using stone chippings (60% 12.5 mm nominal size and 40% 10 mm nominal size) @ 1.65 cum per 100 sqm and coarse sand at 1.65 cum per 100 sqm of road surface and with bitumen @ 56 kg/cum of stone chippings and @ 128 kg/cum. of sand over a tack coat with hot straight run bitumen including consolidation with road roller of 8 to 10 tonne etc. complete. (tack coat to be paid separately) :				
	With paving Asphalt 80/100 heated and then mixed with solvent at the rate of 70 grams per kg of asphalt.	Sqm	474	23.90	11328.60
37	Cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 40 mm nominal size) in pavements, laid to required slope and camber in panels as required including consolidation finishing and tamping complete.	Cum	21	3262.05	68503.05
	ALUMINIUM WORK				
38	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS : 1285, fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions, at top, bottom and sides with required EPDM rubber/neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / panelling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing and panelling to be paid for separately) :				
i)	For fixed portion.				
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	kg	878	306.30	268931.40

S. No	Description of Items	Unit	Qty	Rate	Amount
ii)	For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of PVC / neoprene gasket required (Fittings shall be paid for separately).				
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	kg	2128	326.6	695004.80
39	Providing and fixing 12mm thick prelaminated three layer medium density (exterior grade) particle board Grade I, Type II conforming to IS: 12823 bonded with phenol formaldehyde synthetic resin, of approved brand and manufacture in panelling fixed in aluminium doors, windows shutters and partition frames with C.P. brass / stainless steel screws etc. complete as per architectural drawings and directions of engineer-in-charge.				
	Pre - laminated particle board with decorative lamination on both side.	sqm	25	812.60	20315.00
40	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with PVC/ neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item) :				
	With float / tinted glass panes of 5 mm thickness	sqm	54	673.55	36371.70
	WATER PROOFING				
41	Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying : a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/sqm. This layer will be allowed to air cure for 4 hours. b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours. The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.	sqm	38	143.85	5466.30

S. No	Description of Items	Unit	Qty	Rate	Amount
42	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations: a) Applying a slurry coat of neat cement using 2.75 kg/sqm. of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300mm height including cleaning the surface before treatment. b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs c) After two days of proper curing applying a second coat of cement slurry using 2.75kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge. d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3mm deep. e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. All above operations to be done in order and as directed and specified by the Engineer-in-Charge : With thickness of 120mm to 150 mm	sqm	1421	541.05	768832.05
43	Providing and fixing 30 mm thick commercial board flush door with 1 mm thick laminate on both sides & hard wood polished lipping on all sides with all fixtures and fastenings etc. complete in all respect as per the directions of Engineer Incharge.	Sqm	224	2407.00	539168.00

S. No	Description of Items	Unit	Qty	Rate	Amount
44	Stainless Steel work for railing in stairs as per design & architectural drawings including cutting, hoisting, bending & fixing in position complete in all respect as per directions of Engineer Incharge.	kg	740	350.00	259000.00
45	Providing and fixing pressed steel door frames made from 18 gauge GPSP (galvanised poly coat single skin passed) sheets, duly powder coated finish (60 miu - 80 miu) including hinges jambs, lock jamb, bead and required angle threshhold of mild steel angle , or base tie of 1.25 mm sheet steel welded or rigidly fixed together by mechainac means , adjustable lugs, with split end tail to each jamb including steel butt hinges 2.5 mm thick with mortar guard , lock strike, plate and shock absorbers as specified and as desired by the engineer in charge				
i)	Size 50 x 100 Single rebate	meter	44	780.00	34320.00
46	Providing and fixing GPSP door leaf thickness 44 mm and skin 18 gauge galvanized iron polycoat single skin passed (GPSP) sheet powder coated finish in off white color.	Sqm	21	3000.00	63000.00
47	Providing and fixing shutters made up of 18 gauge G.I. Sheet (galvanized polycoat single skin passed) with reinforcements & powder coated (tft 60µ - 80µ)with necessary hardware of dorma or equivalent.	Sqm	18	3000.00	54000.00
48	Extra over item no. 25 of 12 mm thick cement plaster 1:3 for providing treatment of joints of brick work and RCC by providing diamond shaped HDPE net of weight 900-1000 gm/sqm of aperture size 18 mm x 18 mm before plastering to avoid cracks due to different coefficient of expansion	sqm	5885	100.00	588500.00
49	Form finished exposed RCC work-Shuttering out of water proof shuttering ply 2400 x1200 x12 with backing of wooden batten 50 x65, at 600 c/c bothways the item of shuttering includes the following: 1.wooden wedge shaped beading 10 x15 to obtain grooves of 10 x15 and bolt with hemispherical head 15Ø to obtain bolt marks only (according to the patteren as rer the Drg. No.1006/ AL/ 1045/ Ro, Dated 10-05-11 & 1006/AL/1046 / RO, dated-10-05-11 2. 3mm thick rubber beading between shuttering ply for preventing leakage of slurry in between two panels.	sqm	1194	165.00	197010.00

S. No	Description of Items	Unit	Qty	Rate	Amount
50	Supplying and fixing SS Tower bolts in satin SS finish half round design with screws complete tower bolt of 200 x 10 mm alternative companies = Dorset/AKS/Kich design dorset cataloguge no- TBR 8 SS refer drg. No. 1404/AL/1012/R0 dated 30.05.11	Each	65	447.00	29055.00
51	Providing and fixing Mortice handle with double door attachment for mortice lock 200 mm made of SS 304 in natural matt SS finish with one side key, one side knob cylinder 60 mm lockable from outside, with knob on inside alternative companies- dorset/crust/kich design, dorset Catalogue no- ATINA HL AI SS refer drg. No. 1404/AL/1012/R0 dated 30.05.11	Pair	37	1220.00	45140.00
52	Providing and fixing Mortice lock 200 mm made of SS 304 in natural matt SS finish with one side key, one side knob on inside alternative companies- dorset/crust/kich design, dorset Catalogue no- ATINA HL AI SS refer drg. No. 1404/AL/1012/R0 dated 30.05.11	Each	41	1035.00	42435.00
53	Providing and fixing easy and accurate two valve door operating speed adjustment (Closing & Latching speed)in pressure die cast body of aluminium alloy angle of opening up to 180 degrees alternative companies = Dorset/Dorma/Ozone weight capacity, for Al. Door= 40KG,& for wooden door = 60 KG, design dorset cataloguge no- DC 40 (for AL. Doors) &DC 60 (for Wooden Doors) refer drg. No. 1404/ AL/1012/R0 dated 30.05.11	Each	71	970.00	68870.00
54	Providing and fixing of monkey ladder in water tank	Each	24	300.00	7200.00
55	Providing and fixing duracrete tiles icon series (304x304x 22)	sqm	195	500.00	97500.00
56	Providing and fixing 3 mm thick u-shaped aluminium caping to the pipes to be used after bending as per arch. Drgs.	sqm	392	500.00	196000.00

S. No	Description of Items	Unit	Qty	Rate	Amount
57	Toilet door frames & doors as per schedule of finishes drawing no. 1404/AL/1004/R1 dt. 30.05.11 Anodised aluminium d-post channels of 31.1 mm ∅ fixed to wall with SS-304 grade screws except for main entry door in toilet black powder coated aluminium & shutters 12 mm thick solid compact laminate panels resistant to heat, bacteria, water, chemical, scratch & impact as per IS-2046 . including all necessary hardware except for main entry door in toilet which shall be 32mm thick phenolformaldehyde bonded flush doors with commercial plywood on both sides as per IS::2202 part-1 enamel spray painted using masking technique.	sqm	13	4000.00	52000.00
58	Providing and fixing hinges with 4 ball bearing size=125 mm high sheet thickness-2.5 mm made of SS 304 in Ss finish alternative companies-ZIPCO/AKS/DORMA design, ZIPCO Catalogue no- 41/DH4 refer drg. No. 1404/AL/1012/R0 dated 30.05.11	Each	528	409.00	215952.00
59	Providing and fixing door stopper door mounted type size 22 mm dia alternative companies -Dorset/AKS refer drg. No. 1404/AL/1012/R0 dated 30.05.11	Each	26	225.00	5850.00
60	Supplying and fixing mortice handles 200 mm made of SS 304 in natural matt SS finish without any cylinder with screws complete-alternative companies = Dorset/Crust/Kich ,design dorset cataloguge no- ATINA HL AI SS refer drg. No. 1404/AL/1012/R0 dated 30.05.11	Each	27	1283.00	34641.00
61	Friction hinge- made of AISI 304 Ss natural ss matt finish with pressure adjustable brakes for stopping code no-FRS 16,in Electro-polished finish of EBCO or equivalent shall be used in windows refer drg. No. 1404/AL/1012/R0 dated 30.05.11	Each	458	411.00	188238.00
62	Window handle made of aluminium power coated to match the color of AL. window(Copper shaded) alternative companies-EBCO/ROTTO/ ALUPLAST design,EBCO catalogue no-AL.Window handle-deluxe-AWH D1 refer drg. No. 1404/AL/1012/R0 dated 30.05.11	Each	458	185.00	84730.00
63	Providing and fixing Floor spring finish SS 304 max door weight 250 kg openable angle 90 degrees adjustable speed valve, both side opening product approved under national QB/T 3884-99 standard alternative companies-EBCO/OZONE/DORMA design EBCO catalouge no- DFS 250 refer drg. No. 1404/AL/1012/R0 dated 30.05.11	Each	4	5101.00	20404.00

S. No	Description of Items	Unit	Qty	Rate	Amount
64	Providing and fixing pull handles 200 mm. (size & design to match with mortice handle) made of ss in natural matt SS finish fixed on both inside and outside of shutter alternative companies - dorset / crust / kich design - dorset catalogue no.- nero ne 10 p ss refer drg. No. 1404/al/1012/r0 dated 30.05.11	Each	74	610.00	45140.00
65	Providing and fixing SS ball bearing Hinges in steel door	Each	51	200.00	10200.00
66	Providing and fixing aluminium work for covering the drain pipes of indoor units of split air conditioning with (hindalco hr-3514)conforming to IS :733 and IS: 1285 fixed with rawl plug and screw with or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Powder coated in black colour (minimum thickness of powder coating 50 micron).	Kg	204	400.00	81600.00
67	Removing excavated material exceeding 50 m and but not exceeding 250 m depositing where directed at a level not exceeding 1.5m above the starting point	Cum	150	125.00	18750.00
68	Providing precast 1:2:4 cement concrete (1cement :2 coarse sand : 4 graded Stone aggregate 20 mm nominal size) in kerb with plain fair faces, including chamber weatherings, throating etc setting in CM 1:4.	Cum	18	4400.00	79200.00
69	Providing and laying 75mm thick factory made cement concrete interlocking paver block of M -30 grade made by block making machine with strong vibratory compaction and of approved size and design/ shape laid in required colour and pattern over and including 50mm thick compacted bed of course sand, filling the joints with coarse sand etc. all complete as per the direction of Engineer-in-charge.	Sqm	273	600.00	163800.00
70	Kota stone slab flooring of size 550 x 550 x 19 mm thick over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and machine polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) :	sqm	1540	913.00	1406020.00

S. No	Description of Items	Unit	Qty	Rate	Amount
71	Kota stone slab flooring of size 550 x 550 x 19 mm thick over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and semi machine polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) :	sqm	118	850.00	100300.00
72	Kota stone slab flooring of size 1100 x 550 x 19 mm thick over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and semi machine polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) :	sqm	39	1070.00	41730.00
73	Kota stone slab flooring of size 1100 x 550 x 19 mm thick over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab excluding rubbing and machine polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) :	sqm	62	1000.00	62000.00
74	Kota stone slabs 12 mm thick in skirting laid on 12 mm (average) thick cement mortar 1:3 (1 cement 3 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including rubbing and polishing complete.	sqm	23.00	600.00	13800.00
75	Kota stone slabs 19 mm thick in full length of treads of steps laid on 12 mm (average) thick cement mortar 1:3 (1 cement 3 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including rubbing and polishing complete.	sqm	84.00	1125.00	94500.00
76	Kota stone slabs 19 mm thick in full length of risers of steps laid on 12 mm (average) thick cement mortar 1:3 (1 cement 3 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including rubbing and polishing complete.	sqm	18.00	1147.00	20646.00
77	Providing and fixing Ist quality ceramic glazed wall tiles of size 300x450 mmx6mm thick conforming to IS : 15622 (thickness to be specified by the manufacturer) of approved make in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge in skirting, risers of steps and dados over 12 mm thick bed of cement Mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing in white cement mixed with pigment of matching shade complete.	sqm	656	1000.00	656000.00

S. No	Description of Items	Unit	Qty	Rate	Amount
78	Providing and laying matt finish Ceramic floor tiles grade V of size 300 x 300 mm x 6 mm thick of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except White, Ivory, Grey, Fume Red Brown laid on 20mm thick bed of Cement Mortar 1:4 (1 Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigments etc., complete.	sqm	577	896.00	516992.00
79	Providing and laying white glazed broken china tiles to be used over brick coba on terraces of sizes not less then 25 x25 mm & not more than 75 x75 mm laid on 20mm thick bed of Cement Mortar 1:4 (1 Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigments etc., complete.	sqm	1017	522.00	530874.00
80	Providing and laying polished rectified vitrified floor tiles in different sizes with water absorption's less than 0.08% and conforming to IS : 15622 of approved make in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand) including grouting the joints with white cement and matching pigments etc., complete.				
i)	Size of Tile 600 x 600 x 10 mm	sqm	1040	1453.00	1511120.00
ii)	Size of Tile 1000 x 1000 x 13 mm	sqm	184	1600.00	294400.00
81	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with PVC/ neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item) :				
	With float / tinted glass High energy performance of approved colour with U-value of 3.72 W/M2K of 5.0 mm thickness	sqm	203	2070.00	420210.00

S. No	Description of Items	Unit	Qty	Rate	Amount
82	Providing and applying two coats of cement based readymade wall putty (JK white/ Birla care or equivalent) including preparing the surface smooth by sand papering etc. as per directions of the Engineer Incharge. The consumption of wall putty shall not be less than 5 kg for 10 sqm for both the coats. The putty shall be prepared strictly as per detailed manufacturer's specifications and applying after cleaning the surface thoroughly. Required curing should be done before application of first coat and also subsequent coat. The wall surface so prepared after application of both the coats of putty shall be rubbed with Amery paper 320 nos. to make it smooth surface suitable for any type of painting. The rates includes all the operations including required scaffolding at all levels & heights complete in all respect.	sqm	7930	72.00	570960.00
	Sub Total				**21959503.83**

Percentage to be quoted by agency (In Figures)

(In words)

Amount worked out by agency as per percentage quoted (Rs. In Figures)

(Rs. In words)

(Signature of the agency with stamp)

(Carry over to abstract of cost)

S. No	Description of Items	Unit	Qty	Rate	Amount
PART B	**PUBLIC HEALTH**				
1	**E A R T H W O R K** Earth work in excavation by mechanical means (Hydraulic Excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m. All kinds of soil.	cum	210	103.40	21714.00
2	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m : All kinds of soil Pipes, cables etc. exceeding 80 mm dia. but not exceeding 300 mm dia.	metre	535	115.50	61792.50
3	Extra for excavating trenches for pipes, cables etc. in all kinds of soil for depth exceeding 1.5 m, but not exceeding 3 m. (Rate is over corresponding basic item for depth upto 1.5 metre).	metre	30	153.62	4608.60
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	cum	55	45.70	2513.50
5	Extra for every additional lift of 1.5 m or part thereof in. All kinds of soil.	cum	55	18.90	1039.50
	R O O F I N G				
6	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1mx1mx400micron, finished with 12mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement rounding the edge sand making and finishing the outlet complete.	each	25	108.00	2700.00

S. No	Description of Items	Unit	Qty	Rate	Amount
7	Providing and fixing on wall face un plasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A including jointing with seal ring conforming to IS : 5382 leaving 10 mm gap for thermal expansion.(i) Single socketed pipes.				
	110 mm diameter	Mtr	204	163.40	33333.60
8	Providing and fixing on wall face unplasticised - PVC moulded fittings/ accessories for unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A including jointing with seal ring conforming to IS : 5382 leaving 10 mm gap for thermal expansion.				
i)	Bend 87.5°				
	110 mm bend	each	15	134.20	2013.00
ii)	Shoe (Plain)				
	110 mm Shoe	each	15	263.10	3946.50
9	Providing and fixing unplasticised -PVC pipe clips of approved design to unplasticised - PVC rain water pipes by means of 50x50x50mm hard wood plugs, screwed with M.S. screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete.				
	110 mm	each	30	96.90	2907.00
	SANITARY INSTALLATIONS				
10	Providing and fixing Salem Stainless Steel A ISI 304 (18/8) kitchen sink as per I.S. 13983 with C.I. brackets and stainless steel plug 40 mm including painting of fittings and brackets, cutting and making good the walls wherever required :				
	Kitchen sink with drain board 510x1040mm bowl depth 250 mm	each	4	6154.35	24617.40
11	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber lug 40 mm C.P. brass waste and 40 mm C.P brass trap with necessary C.P brass unions complete including painting of fittings and brackets, cutting and making good the wall wherever required:				
	Size 600x450x250 mm	each	14	2300.95	32213.30
12	Providing and fixing soil, waste and vent pipes :				
i)	100 mm dia.				
	Centrifugally cast (spun) iron socketed pipe as per IS: 3989.	metre	100	730.40	73040.00
ii)	75 mm diameter :				
	Centrifugally cast (spun) iron socketed pipe as per IS: 3989.	metre	510	629.85	321223.50

S. No	Description of Items	Unit	Qty	Rate	Amount
13	Providing and fixing M.S. holder-bat clamps of approved design to Sand Cast iron/cast iron (spun) pipe embedded in and including cement concrete blocks 10x10x10cm of 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) including cost of cutting holes and making good the walls etc. :				
i)	For 100 mm dia. Pipe	each	128	65.35	8364.80
ii)	For 75 mm dia. Pipe	each	50	63.00	3150.00
14	Providing and fixing plain bend of required degree.				
i)	100 mm Sand cast iron S&S as per IS : 3989	each	21	236.40	4964.40
ii)	75 mm Sand cast iron S&S as per IS - 3989	each	10	178.65	1786.50
15	Providing and fixing heel rest sanitary bend				
i)	100 mm dia Sand cast iron S&S as per IS - 3989	each	32	286.35	9163.20
ii)	75 mm Sand cast iron S&S as per IS - 3989	each	15	249.50	3742.50
16	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete. 100x100x100 mm Sand cast iron S&S as per IS - 3989	each	38	489.60	18604.80
17	Providing and fixing single equal plain junction of required degree : 100x100x100 mm Sand cast iron S&S as per IS - 3989	each	26	442.00	11492.00
18	Providing and fixing terminal guard:				
i)	100 mm Sand cast iron S&S as per IS - 3989	each	32	194.60	6227.20
ii)	75 mm Sand cast iron S&S as per IS - 3989	each	15	177.45	2661.75
19	Providing and fixing collar:				
i)	100 mm Sand cast iron S&S as per IS - 3989	each	96	202.70	19459.20
ii)	75 mm Sand cast iron S&S as per IS- 3989	each	50	146.10	7305.00

S. No	Description of Items	Unit	Qty	Rate	Amount
20	Providing lead caulked joints to sand cast iron/ centrifugally cast (spun) iron pipes and fittings of diameter:				
i)	100 mm	each	528	126.50	66792.00
ii)	75 mm	each	250	107.80	26950.00
21	Providing and fixing trap of self cleansing design with screwed down or hinged grating with or without vent arm complete, including cost of cutting and making good the walls and floors :				
i)	100 mm inlet and 100 mm outlet Sand cast iron S&S as per IS: 3989.	each	64	544.30	34835.20
ii)	100 mm inlet and 75 mm outlet Sand cast iron S&S as per IS - 3989	each	30	573.35	17200.50
22	Painting sand cast iron/ centrifugally cast (spun) iron soil, waste vent pipes and fittings with paint of any colour such as chocolate grey, or buff etc. over a coat of primer (of approved quality) for new work :				
i)	100 mm diameter pipe	metre	256	18.60	4761.60
ii)	75 mm diameter pipe	metre	125	14.25	1781.25
	WATER SUPPLY				
23	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, including cutting and making good the walls etc. Internal work - Exposed on wall				
i)	20 mm dia. nominal bore	metre	310	133.85	41493.50
ii)	25 mm dia. nominal bore	metre	190	179.65	34133.50
iii)	32 mm dia. nominal bore	metre	50	226.10	11305.00
iv)	40 mm dia. nominal bore	metre	115	264.05	30365.75
v)	50 mm dia. nominal bore	metre	300	342.90	102870.00
24	Providing and fixing G.I. pipes complete with G.I. fittings and clamps including making good the walls etc. concealed pipe including painting with anti corrosive bitumastic paint, cutting chases and making good the wall.				
i)	15 mm dia nominal bore	metre	487	144.75	70493.25
ii)	20 mm dia nominal bore	metre	487	170.60	83082.20
25	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc. External work :				
i)	20 mm dia. nominal bore	metre	10	116.60	1166.00
ii)	40 mm dia. nominal bore	metre	60	219.60	13176.00

S. No	Description of Items	Unit	Qty	Rate	Amount
26	Providing and fixing brass stop cock of approved quality :				
i)	15 mm nominal bore	each	5	191.70	958.50
ii)	20 mm nominal bore	each	44	235.20	10348.80
27	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :				
i)	25 mm nominal bore	each	14	285.50	3997.00
ii)	32 mm nominal bore.	each	3	358.00	1074.00
iii)	40 mm nominal bore	each	5	399.00	1995.00
iv)	50 mm nominal bore	each	10	578.20	5782.00
28	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete :				
i)	20 mm nominal bore	each	2	333.25	666.50
ii)	25 mm nominal bore	each	4	385.90	1543.60
29	Providing and fixing brass ferrule with C.I. mouth cover including boring and tapping the main :				
	25 mm nominal bore	each	4	243.70	974.80
30	Constructing masonry Chamber 60x60x75 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for fire hydrants, with C.I. surface box 350x350 mm top and 165 mm deep (inside) with chained lid and RCC 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 (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) 12 mm thick finished with a floating coat of neat cement complete as per standard design :				
	With F.P.S. bricks	each	2	3388.65	6777.30
31	Painting G.I. pipes and fittings with synthetic enamel white paint over a ready mixed priming coat, both of approved quality for new work :				
i)	20 mm diameter pipe.	each	310	5.65	1751.50
ii)	25 mm diameter pipe.	each	100	7.45	745.00
iii)	32 mm diameter pipe.	each	15	8.75	131.25
iv)	40 mm diameter pipe.	each	75	10.40	780.00
v)	50 mm diameter pipe.	each	300	12.20	3660.00
32	Painting G.I. pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality :				
	40 mm diameter pipe	each	30	5.20	156.00
33	Providing and filling sand of grading zone V or coarser grade all-round the G.I. pipes in external work.				
	40 mm diameter pipe	each	60	23.70	1422.00

S. No	Description of Items	Unit	Qty	Rate	Amount
34	Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI : 12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank	per litre	20000	5.25	105000.00
	D R A I N A G E				
35	Providing, laying and jointing glazed stoneware pipes class SP1 with stiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete :				
i)	100 mm diameter	metre	65	105.90	6883.50
ii)	150 mm diameter	metre	25	151.65	3791.25
iii)	200 mm diameter	metre	200	247.15	49430.00
36	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) all-round S.W. pipes including bed concrete as per standard design:				
i)	100 mm diameter S.W. pipe	metre	65	331.20	21528.00
ii)	150 mm diameter S.W. pipe	metre	25	405.05	10126.25
iii)	200 mm diameter S.W. pipe	metre	200	472.15	94430.00
37	Providing and fixing square-mouth S.W. gully trap class SP1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design : 100x100 mm size P type With F.P.S. Bricks class designation 75	each	22	935.15	20573.30
38	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :				
i)	250 mm dia. R.C.C. pipe	metre	35	258.20	9037.00
ii)	300 mm dia. R.C.C. pipe	metre	210	338.75	71137.50

S. No	Description of Items	Unit	Qty	Rate	Amount
39	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand) R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand : 8 graded stone aggregate 40mm nominal size) inside plastering 12mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with floating coat of neat cement and making channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement complete as per standard design :				
i)	Inside size 90cm x 80cm and 45cm deep including S.F.R.C. plain/ perforated cover and frame (heavy duty HD-20 grade designation) 560mm internal dia conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) with F.P.S. bricks.	each	7	6494.00	45458.00
ii)	Inside size 120 x 90 cm and 90 cm deep including S.F.R.C. plain/ perforated cover and frame (heavy duty HD-20 grade designation) 560mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) with F.P.S. bricks.	each	17	12992.50	220872.50
40	Extra for depth for manholes				
i)	Size 90x80 cm With F.P.S. bricks class designation 75	metre	4	2654.00	10616.00
ii)	Size 120x90 cm With F.P.S. bricks class designation 75	metre	9	3179.95	28619.55
41	Constructing brick masonry circular type manhole 0.91m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement all complete as per standard design :				

S. No	Description of Items	Unit	Qty	Rate	Amount
	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) including centering shuttering all complete. (Excavation, foot rests and 12mm thick cement plaster at the external surface shall be paid for separately) With F.P.S. bricks class designation 75	each	22	6043.80	132963.60
42	Extra depth for circular type manhole 0.91m internal dia (at bottom) with beyond 0.91m to 1.67m With F.P.S. bricks class designation 75	meter	11	2289.80	25187.80
43	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263 mm and width as 165mm with minimum 112 mm space between protruded legs having 2 mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specifications and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	each	262	182.40	47788.80
44	Making connection of drain or sewer line with existing manhole including breaking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement and making necessary channels for the drain etc. complete :				
i)	For pipes 100 to 230 mm diameter	each	1	164.30	164.30
ii)	For pipes 250 to 300 mm diameter	each	1	205.40	205.40
45	Constructing brick masonry road gully chamber 50x45x60 cm with bricks of class designation 75 in cement mortar 1:4 (1 cement : 4 coarse sand) including 500x450 mm precast R.C.C. horizontal grating with frame complete as per standard design :	each	3	2248.35	6745.05

S. No	Description of Items	Unit	Qty	Rate	Amount
46	Providing and fixing first quality Star white vitreous china floor mounting European type water closet similar to Hindware Cat. No. 20024 "Closet Constellation with dual flushing cistern (Hindware Cat.No. 21029) 3/6 Litres" or equivalent with holding down bolts, C.I. chair etc. with matching colour solid plastic seat and lid, with C.P. brass hinges and rubber buffers including cutting holes in brick masonry and R.C.C. and making good the walls and floors wherever required.	23	Each	7300.00	167900.00
47	Providing and fixing white vitreous china water closet squatting pan (Indian type W.C. Pan) with 100mm sand cast Iron P or S trap similar to Hindware Cat. No. 20042 with dual flushing cistern (Hindware Cat.No. 21029) 3/6 Litres with all fittings and fixtures complete including cutting and making good the walls and floors wherever required. White Vitreous china Orissa pattern WC pan of size 580x440 mm with integral type foot rests.	9	Each	3500.00	31500.00
48	Providing and fixing first quality Star white vitreous china flat back large Urinal similar to Hindware Cat. No.60002 or equivalent with PVC 10 Liters automatic flushing cistern, Concealed brackets painted with two or three coats of enamel paint of approved shade over a coat of primer, G.I. heavy quality concealed flush pipe with clamps/hooks, C.P. brass spreader, 32 mm dia C.P. brass waste (Jaquar make Cat-709 or approved equivalent) , 32 mm dia C.P. brass bottle trap and pipe upto wall with C.P. brass flange (Jaquar make 769B or approved equivalent) and rubber adopter for waste connection complete in all respects, including cutting holes in brick masonary and R.C.C. and making good the walls and floors wherever required.	4	Each	3650	14600.00
49	Providing and fixing white vitreous china wash basin with 32 mm dia CP brass waste (Jaquar make Cat-709 or approved equivalent), 32mm C.P. cast brass bottle trap and pipe to wall with C.P. brass wall flange (Jaquar make 769B or approved equivalent) and rubber adopter for waste connection, CI/MS brackets with painting, including cutting and making good the walls where required complete as directed by Engineer in charge. White vitreous china flat back wash basin similar to Hindware Cat.No. 10010 "Delta" size 550x400 mm with 15 mm dia C.P. brass central hole basin mixer(Jaquar Cat. No.CON-167B or equivalent)..	16	Each	4250.00	68000.00
50	White vitreous china flat back wash basin similar to Hindware Cat.No. 10010 "Delta" size 550x400 mm with 15 mm dia C.P. brass pillar tap (Jaquar Cat. No.CON-011 or equivalent)..	16	Each	2850.00	45600.00

S. No	Description of Items	Unit	Qty	Rate	Amount
51	White vitreous china flat back wash basin similar to Hindware Cat.No. 10010 "Delta" size 550x400 mm with 15 mm dia C.P. brass Florentine pillar cock with 200 mm extended lever handle (Jaquar Cat. No.FLR-5031 or equivalent)..	6	Each	3250.00	19500.00
52	Providing and fixing 15 mm dia C.P. brass two way bib tap (Jaquar Cat No. CON.-041 or approved equivalent make) including cutting and making good the walls wherever required complete as directed by Engineer in charge.	9	Each	925.00	8325.00
53	Providing, fixing, Installation and testing 15mm dia C.P. brass concealed stop cock (Jaquar Cat No. CON-089 or equivalent) with C.P. brass threaded wall flange complete including cutting holes & making good the wall wherever required.	21	Each	900	18900.00
54	Providing and fixing 15 mm dia C.P. brass bib tap with wall flange (Jaquar Cat No. CON.-047 or approved equivalent make) including cutting and making good the walls wherever required complete as directed by Engineer in charge.	14	Each	625	8750.00
55	Providing and fixing 40 mm dia C.P. brass waste (Parko Cat No. 1545 or approved equivalent make) and bottle trap with pipe upto wall with C.P. brass flange (Parko Cat No. 1535A or approved equivalent make)including cutting and making good the walls wherever required complete as directed by Engineer in charge.	3	Each	1200	3600.00
56	Providing, fixing, Installation and testing CP brass towel ring (Jaquar Cat No. CAN-1121N or equivalent) with wooden cleats and C.P. brass screws including cutting and making good the wall wherever required.	6	Each	850.00	5100.00
57	Providing and fixing C.P. brass towel rail 600x200 mm size (Jaquar Cat No. CAN-1111N or equivalent) with S.S. screws wooden cleats including necessary fittings cutting holes in wall and making good the wall wherever required.	24	Each	1100.00	26400.00
58	Providing and fixing C. P. brass soap dish holder (Jaquar Cat No. CAN-1131N or equivalent) including providing & fixing screws, washers etc. cutting and making good the walls.	12	Each	525.00	6300.00
59	Providing and fixing 15mm dia C.P. brass wall mixer (Jaquar Cat No. CON-273UPR or equivalent) with Overhead Shower (Jaquar Cat No. OHS-1709 or equivalent) and Shower arm with wall flange (Jaquar Cat No. 487 or equivalent) including necessary fittings cutting and making good the walls complete wherever required.	12	Each	5750.00	69000.00

S. No	Description of Items	Unit	Qty	Rate	Amount
60	Providing and fixing 15mm C.P. brass angle valve(Jaquar Cat No. CON-059 or approved equivalent make) with C.P. brass connection pipe (Jaquar Cat No. 803 or approved equivalent make) union nuts complete with C.P. brass flange including cutting and making good the walls wherever required complete to the satisfaction of Engineer in charge.	122	Each	850.00	103700.00
61	Providing, fixing, Installation and testing C.P. brass wall mounted toilet paper holder (Jaquar Cat No. ACN-1151N or equivalent), fixed to wall with wooden cleats and S.S screws etc. including cutting holes in wall and making good the wall wherever required.	21	Each	650.00	13650.00
62	Providing, fixing, Installation and testing C.P. brass Jet spray (Hindware Cat No. BLACP70601 or equivalent), fixed to Water closet with S.S screws including cutting holes in wall and making good the wall wherever required.	21	Each	425.00	8925.00
63	Providing and fixing C.P. brass Hand shower (Health Faucet) with 1m flexible tube with wall hook (Jaquar make model No. 573 or approved equivalent make) with PVC cleats and S.S. screws including cutting and making good the walls wherever required complete as directed by Engineer in charge.	9	Each	1450.00	13050.00
64	Providing and fixing, testing and commissioning of storage type water heater (Geyser) etc. with automatic thermostatic control electric element, pressure release valve, M.S. nuts and bolts etc. conforming to IS: 2082, including cutting holes & making good the wall wherever required complete in all respects. Capacity 25 Litres	11	Each	11500.00	126500.00
65	Providing and fixing hand drier (Mayra make Model No. HP-26 or equivalent make) including providing necessary Concealed brackets painted with two or more coats of enamel paint of approved shade over a coat of primer, wiring cables from drier to plug, plug tops etc. including cutting and making good the walls wherever required complete as directed by Engineer in charge.	6	Each	13500.00	81000.00
66	Providing and fixing Waste Paper Bin (Mayra make Model No. HP-11 or equivalent make) complete as directed by Engineer in charge.	6	Each	750.00	4500.00
67	Providing and fixing Paper Napkin Dispensor (Euronics make Model No. EP-02 S or equivalent make) including cutting and making the wall wherever required complete as directed by Engineer in charge.	6	Each	3500.00	21000.00

S. No	Description of Items	Unit	Qty	Rate	Amount
68	Providing and fixing first quality Star white vitreous china Urinal Division plate size 680x300 mm Hindware Cat No.61001 including cutting and making good the wall in cement mortar wherever required.	1	each	1200.00	1200.00
69	Providing and fixing Hospital bed pan sink with P trap, size 600 x 450 mm with 10 litres C.I. High level flushing cistern flush pipe, C.I./M.S. bracket painting with 3 coats of white paint complete with accessories, C.P. brass fittings with vertical jet horizontal spray complete with control cocks.	2	each	15000.00	30000.00
70	Providing and fixing 600x750mm bevelled edge mirror of superior glass (Saint Gobain make or equivalent) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws and washers complete.	32	each	1500.00	48000.00
71	Providing and fixing C.P. brass twin robe hooks (JAQUAR Cat. No. 1161 or approved equivalent make) including cutting and making good the walls/ doors wherever required complete as directed by Engineer in charge.	57	each	500.00	28500.00
72	Providing and fixing G.I. (heavy class) waste pipes(Jindal Hissar make or approved equivalent make)conforming to IS: 1239 and fittings (Zoloto make or approved equivalent make) with M.S. clamp/hook including cutting chases and holes in RCC/Brick wall/Ceilings and making good the same in cement mortar 1:3 (1 cement : 3 coarse sand) to match with the surroundings for waste from wash basins, urinals kitchen sink and sump, pump deliveries and suction etc as shown in drawings and directed by the Engineer in Charge.				
i)	32 mm nominal bore	46	metre	275.00	12650.00
ii)	40 mm nominal bore	20	metre	325.00	6500.00
73	Providing and fixing 100 mm dia G.I. extension piece (Jindal Hissar make or approved equivalent make) forming a tee connection of 32/50 mm dia(Zoloto make or approved equivalent make) for connections of waste from wash basin/sink, including dripseal joint of extension piece with floor trap at one end including cutting and making good the floor and RCC wherever required complete as directed by Engineer in charge.	21	each	600.00	12600.00
74	Providing and laying cement concrete 1:2:4 (1 cement :2 coarse sand: 4 stone aggregate 20 mm, down gauge) 75mm in bed and alround C.I. soil and waste pipe under floor/vertical wall including centering and shuttering wherever required.				
	100 mm dia	254	metre	325.00	82550.00

S. No	Description of Items	Unit	Qty	Rate	Amount
75	Providing and fixing brass clean out plug (brass cap and G.I. pipe piece (Jindal Hissar or approved equivalent make)) with suitable insert keys in brass cap for opening including male threaded joint with G.I. piece and dripseal joint to pipe/fitting at the other end including cutting and making good the floor and RCC wherever required complete as directed by Engineer in charge.				
	100 mm dia	15	each	825.00	12375.00
76	Providing and fixing 500 mm dia cast iron (medium duty) water tank cover with frame, double Seal with lockable arrangement complete in all respects. (Total weight of cover & frame to be not less than 116 kgs.)	8	each	11500.00	92000.00
77	Providing and fixing 80 mm dia G.I. vent pipe (heavy class)(Jindal Hissar make or approved equivalent) 1 MTR. high hinged with brass mosquito proof grating elbow with fittings complete as directed by Engineer in charge.	8	each	3000.00	24000.00
78	Providing and fixing S.S. hinged grating, 125mm dia with frame (CAMRY make Cat. No. SKDH-05 or approved equivalent make) including setting in floor with cement mortar 1:3 (1 cement : 3 coarse sand) including cutting and making good the floor wherever required complete as directed by Engineer in charge.	74	each	125.00	9250.00
79	Providing and fixing 15 mm dia C.P. brass sink mixer with swinging type casted spout with wall flange. (Make-Jaquar, Model -309 or approved equivalent make) including cutting and making good the walls wherever required complete as directed by Engineer in charge.	3	each	2100.00	6300.00
80	Providing and fixing medium class G.I. Spout up to 300 mm long.				
	40 mm dia	5	each	150.00	750.00
	100 mm dia.	5	each	300.00	1500.00
81	Providing and fixing M.S. pipe (Jindal Hissar make or approved equivalent) heavy duty sleeve 600 mm long, (threaded upto 65mm dia and flanged for 80 mm dia and above) on both sides and 6 mm thick M.S. plate 100 mm wide welded alround the pipe, including making holes in the flanges complete as directed by Engineer in charge.				
i)	40 mm dia	2	each	425.00	850.00
ii)	50 mm dia	10	each	550.00	5500.00
iii)	80 mm dia	4	each	650.00	2600.00
iv)	100 mm dia	10	each	800.00	8000.00

S. No	Description of Items	Unit	Qty	Rate	Amount
82	Providing and fixing 9 mm thick VidoFlex Insulation on hot water pipe including one layer of chicken mesh complete in all respect.				
i)	15 mm dia	165	metre	100.00	16500.00
ii)	20 mm dia	165	metre	125.00	20625.00
83	Providing and fixing stainless steel liquid soap dispenser fixed to wall with wooden cleats and C.P. brass screws, including cutting & making good the walls wherever required.	6	each	1500.00	9000.00
84	Providing and laying uPVC pipe 6kg/cm^2 class III (IS:4984-1983) including injection moulded fittings where required e.g. tees, bends, couplings and adapters and jointing with adhesive approved by fittings manufactures including necessary MS clamps of 40mmx5mm thick flat, cutting chases holes in brick & R.C.C. walls and making good the same with cement concrete 1:2:4 (1cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished smooth. Earth work excavation & refilling etc.				
i)	110 mm dia pipe	100	Mtr	550.00	55000.00
ii)	160 mm dia pipe	25	Mtr	1050.00	26250.00
85	Providing and fixing 25mm thick resin bounded mineral wool section, painting (two coats keeping a gap of one-two days) coat of bitumastic paint, securely fixing of the sections of insulation to the pipes with all joints butted together tightly and stitching 24 SWG x 20mm mesh G.I. wire netting over the pipe section and wrapping with aluminium foil pasting on over lap and tying with G.I. 16 SWG wire. (insulation sections should have a density of 122-145 kg/cum).				
i)	20 mm dia	Mtr	150	279.00	41850.00
ii)	25 mm dia	Mtr	91	341.00	31031.00
iii)	32 mm dia	Mtr	35	432.00	15120.00
iv)	40 mm dia	Mtr	40	539.00	21560.00
	Total-B (Public Health)				**3666171.55**

Percentage to be quoted by agency (In Figures)

(In words)

Amount worked out by agency as per percentage quoted (Rs. In Figures)

(Rs. In words)

(Signature of the agency with stamp)

(Carry over to abstract of cost)

S. No	Description of Items	Unit	Qty	Rate	Amount
PART C	**FIRE FIGHTING**				
1	Providing, fixing, jointing and testing of heavy gauge M.S. ERW black pipes as per relevant IS: 1239 with special accessories like tees, elbows, welded joints for pipe and fitting and flanged joints rubber insertion nuts & bolts, washers for valves including earth work excavating refilling compaction etc. and treating underground pipe with two coats of anti corrosive paint and wrapping 4mm thick PYKOTE on pipe fitting etc. complete in all respects. Thrust blocks of cement concrete at bends, tees etc. 150mm thick around in 1:2:4 (1cement: 2 coarse sand: 4 stone ballast 20mm and down gauge).				
i)	150 mm dia - 5.4 mm thick	mtr	120	1434.00	172080.00
ii)	100 mm dia - 5.4 mm thick	mtr	50	991.00	49550.00
iii)	80 mm dia 4.85 mm thickness	mtr	30	689.50	20685.00
2	Providing, fixing, welded joints and testing of heavy class M.S. ERW black pipes as per relevant IS 1239/3580 with special accessories tees, elbows, flanged joints, rubber insertion, nuts, bolts, washers or welded joint with flange joints on bends, including fixing the pipe with suitable flat iron strip clamps/brackets structural members dash fastener, civil breakage, making good the same etc. painting with a primer coat and two coats of postal red enamel etc. complete as required.				
i)	100 mm dia 5.4 mm thickness	mtr	30	1001.00	30030.00
ii)	80 mm dia 4.85 mm thickness	mtr	5	695.00	3475.00
3	Providing and fixing single headed hydrants flanged inlet with 63 mm female instantaneous outlet of gunmetal with bolts, nuts, washers etc complete with male blank caps, chains conforming to IS:5290 type A with stainless steel orifice plate to keep the pressure not more than 3.5 kg/sq.cm at any point.	each	10	8113.00	81130.00
4	Providing 63mm (2½)" dia 15 m long canvas hose pipe complete with stainless steel male & female coupling stainless steel wire wound with the pipe The pipe shall confirm to IS. 4927	each	10	5000.00	50000.00
5	Providing 63mm (2 ½)" dia 15 m long reinforced rubber lined hose pipe conforming to IS: 636-1992 Part-II with gunmetal male & female coupling copper wire wound with pipe as required.	each	6	5000.00	30000.00

S. No	Description of Items	Unit	Qty	Rate	Amount
6	Providing and fixing first aid hose reel full swinging type with 30 meter long 20mm dia rubber lined Maruty pipe with shut off nozzle of 5 mm dia. Conforming to IS:884-1969 complete/ Thermoplastic reinforced flexible hose ISI marked IS:12585 type-II Kesara Syntex Pvt. Ltd. as required. Including 25 mm dia M.S. pipe connection from riser to hose reel with all sockets, nipples, elbows and 25 mm dia ball valve as required.	each	3	9605.00	28815.00
7	Providing and fixing standard short size gunmetal branch pipe with 20mm dia nozzle conforming to IS:903. Suitable for installation connections to hose coupling etc. as required.	each	8	3333.00	26664.00
8	Providing and fixing the two way fire brigade connection housed in steel cabinet fabricated from 1.5mm thick steel sheet having lockable arrangement, openable glazed door, including painting a coat of primer and two coats of postal red enamel, necessary supports for the cabinet etc. with 150 mm dia. non return and butterfly valve complete in all respects.	each	2	16847.00	33694.00
9	Providing & fixing **MS Hose cabinet** (of size 750MMx600MMx250MM) made of 14g thick MS sheet with 6mm thick glazed glass doors i/c necessary locking arrangement suitable to accommodate external hydrant with butterfly valve , 2nos 15m long hoses and one no branch pipe. The cabinet shall be painted with red colour shade No. 536 of IS: 5 complete as per direction of Engineer incharge.	Each	5	5750.00	28750.00
10	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts (frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 1500 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words " hose cabinet" to be painted on the box.	Each	3	9948.00	29844.00
11	Supplying and installing cylindrical type air vessel of 300mm dia, 1.0m high fabricated out of 8mm thick MS plate suitable for 7kg/sqcm. working pressure complete with 25mm gunmetal air release valve, safety valve, pressure gauge etc as required. The air vessel shall be continuous welded construction and painted with two coats of Postal red enamel outside over a coat of primer and Epoxy paint inside.	each	2	16954.00	33908.00

S. No	Description of Items	Unit	Qty	Rate	Amount
12	Providing and fixing cast iron body IS: 210 FG 220 and double flange simple operation type butterfly valve conforming to IS: 13095 with SS304 disc and shaft nitnile rubber replaceable seat of the following size complete with bolts, nuts, washers and rubber insertions as per specification.				
i)	80 mm dia	each	5	3102.00	15510.00
ii)	100 mm dia	each	3	4101.00	12303.00
iii)	150 mm dia	each	4	7112.00	28448.00
13	Providing and fixing draining arrangement to the vertical wet risers at ground.				
	40 mm dia M.S. Pipe heavy class conforming to IS: 1239 with fittings, clamps etc.	mtr	10	1839.00	18390.00
14	Providing and fixing gunmetal full way valve heavy quality tested to 21kg/cm^2				
	40mm dia	each	2	2054.00	4108.00
15	Providing and fixing 9 liters capacity fire extinguisher water type gas pressure conforming to IS: 940 marking, fixed to wall.(ISI marked)	each	4	3005.00	12020.00
16	Providing and fixing fire extinguisher of carbon dioxide type consisting of brand new high pressure steel cylinder bearing IS: 7285 mark and having the approval of controller of explosives Nagpur, wheel type valve bearing IS:3224 mark internal discharge tube, 1 meter long high pressure discharge hose, non conducting horn, suspension bracket, fully charged bearing IS: marking fixed to wall as desired by Engineer-in-Charge.				
	4.5 kg capacity cylinder	each	10	12020.00	120200.00
17	Providing and fixing self glowing Exit sign board size 350x200mm single side painted made of luminescent safely, rigid sheet in standard colour, phot luminescent sheet made of crystals consisting mainly sulphide in protective glass like sheet green and yellow crystal luminescent (glass in dark) by action of light.	each	6	2276.00	13656.00
18	Providing and fixing fire man axe as required with test certificate of 20000 volts.	each	3	835.00	2505.00

S. No	Description of Items	Unit	Qty	Rate	Amount
19	Constructing masonry Chamber 90x90x100 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement :4 fine sand) for sluice valve, with C.I. surface box 100 mm. top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC 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 (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) 12 mm thick finished with a floating coat of neat cement complete as per standard design.				
	With F.P.S. bricks	each	9	6147.95	55331.55
	Total-C (Fire Fighting)			**Rs.**	**901096.55**
	Percentage to be quoted by agency	(In Figures)			
		(In words)			
	Amount worked out by agency as per percentage quoted	(Rs. In Figures)			
		(Rs. In words)			
	(Signature of the agency with stamp)			(Carry over to abstract of cost)	

22.0	SCHEDULE OF QUANTITIES (Electrical work)

S. No	Description of Items	Unit	Qty	Rate	Amount
PART D	**INTERNAL ELECTRICAL WORK**				
1	**Point wiring in steel conduit with piano type switch** Wiring for light point/Fan point/Exhaust fan point/call bell point with 1.5 sq.mm FR PVC Insulated copper conductor single core cable in surface/recessed steel conduit with modular type switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mmFR PVC insulated copper conductor single core cable etc. as required.				
	Group B	point	481	436	209716.00
2	**Power plug wiring in steel conduit (2x4 sq.mm):** Wiring for light / power plug with 2 x 4 sq.mm FR PVC insulated copper conductor single core cable in surface / recessed steel conduit alongwith 1 no. 4 sq.mm FR PVC insulated copper conductor single core cable for loop earthing as required.	mtr.	2040	136	277440.00
3	**Circuit / submain wiring in steel conduit:** Wiring for circuit/sub-main wiring alongwith earth wire with the following size of FRPVC insulated copper conductor, single core cable in surface/ recessed Steel conduit as required.				
	2 X 2.5 SQ.MM + 1 X 2.5 SQ.MM EARTH WIRE	mtr.	1702	120	204240.00
	2 X 4.0SQ.MM + 1 X 4.0 SQ.MM EARTH WIRE	mtr.	2040	135	275400.00
	2 X 6.0 SQ.MM + 1 X 6.0 SQ.MM EARTH WIRE	mtr.	41	139	5699.00
	4 X 10.0 SQ.MM + 2 X 10.0 SQ.MM EARTH WIRE	mtr.	117	367	42939.00
	4 X 16.0 SQ.MM +2X 16.0 SQ.MM EARTH WIRE	mtr.	489	590	288510.00
4	**Telephone wiring in existing conduit:** Supplying and Drawing following pair,0.5 sq.mm FR PVC Insulated copper conductor unarmoured telephone cable in the existing surface /recessed steel/PVC Conduit as required. RG-6 grade,0.7 mm solid copper conductor PE insulated shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/recessed steel/PVC conduit as required.	Rmt	3216	23.00	73968.00

S. No	Description of Items	Unit	Qty	Rate	Amount
5	**S/F steel conduit:** Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit , or cutting the wall and making good the same in case of recessed conduit as required.				
	25mm	Rmt	1382	86.00	118852.00
6	**S/F modular type switch / socket:** Supplying and Fixing following modular switch/socket on the existing modular plate and switch box including connections but excluding modular plate etc. as required				
i)	5/6 amps switch	Each	481	46	22126.00
ii)	Telephone socket outlet	Each	69	61	4209.00
iii)	Internet socket	Each	45	550.95	24792.75
7	**S/F modular type electronic fan regulator:** S/F modular type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required	Each	96	247.00	23712.00
8	**S/F modular type blanking plate:** Supplying and fixing modular blanking plate on the existing modular plate and switch box excluding modular plate as required	Each	120	20.00	2400.00
9	**S/F modular boxes, base & cover plate:** Supplying and fixing following, G.I. Box along with modular base & cover plate for modular switches in recess etc. as required.				
	1 or 2 Module (75mm X 75 mm)	Each	114	88.00	10032.00
10	**S/F light plug point modular type accessories;** Supplying and Fixing suitable size G.I box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 amps modular socket outlet and 5/6 amps modular switch, connection, painting etc. as required.	nos	73	160.00	11680.00
11	**S/F power plug point modular type accessories;** Supplying and Fixing suitable size G.I box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 15/16 amps modular socket outlet and 15/16 amps modular switch, connection, painting etc. as required.	nos	39	214.00	8346.00

S. No	Description of Items	Unit	Qty	Rate	Amount
12	**S/F ceiling rose:** Supplying and fixing 3 pin ,5 amp ceiling rose on the existing junction box/wooden block including connection etc. as required.	Each	402	19.00	7638.00
13	**S/F call bell / buzzer :** Supplying and fixing call bell/buzzer suitable for DC/AC single phase,230 volts, complete as required.	each	16	26	416.00
14	S/F SPN MCB industrial socket outlet, multi pin socket & bell push				
i)	Supplying and fixing 20 amps, 240 volts, SPN industrial type, scoket outelt, with 2 pole and earth, metal enclosed plug top along with 20 amps 'C' series, SP, MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket outlet and complete with connections, testing and commissioning etc. as required.	Each	60	520.00	31200.00
ii)	SPN Industrial Socket 32 A	Each	7	1327.15	9290.05
iii)	MULTI PIN SOCKET 25 A	Each	2	886.17	1772.34
iv)	Bell Push	Each	16	128.22	2051.52
15	**S/F prewired SP MCB DB:** Supplying and fixing following way, Three pole and Neutral Prewired Sheet steel MCB Distribution Board 240 Volts on surface/recess complete with loose wire box, terminal block duly prewired with suitable size FR PVC insulated copper conductor upto terminal blocks, tinned copper busbar, neutral link, earth bar, din bar, detachable gland plate, interconnections, phosphatized and powder painted including earthing etc. as required.(But without MCB/RCCB/ Isolator)				
	2+ 4 Way,Double Door	Each	1	2139.00	2139.00
16	**S/F prewired TP MCB DB:** Supplying and fixing following way, Three pole and Neutral Prewired Sheet steel MCB Distribution Board 415 Volts on surface/recess complete duly prewired with suitable size FR PVC insulated copper conductor upto terminal blocks, tinned copper busbar, neutral link, earth bar, din bar, detachable gland plate, interconnections, phosphatized and powder painted including earthing etc. as required.(But without MCB/RCCB/ Isolator)				
i)	8 Way(4+24),Double Door	Each	5	8337	41685.00
ii)	12 way(4+36),Double Door	Each	3	9833	29499.00

S. No	Description of Items	Unit	Qty	Rate	Amount
17	**S/F 'C' series SP MCB:** Supplying and fixing 5 amps. to 32 amps. rating 240 volts 'C' series, miniature circuit breaker of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
	Triple Pole and Neutral	Each	120	502.00	60240.00
18	**S/F TPN RCCB:** Supplying and Fixing following rating, Four Pole(three Phase and Neutral),415 volts residual current circuit breaker(RCCB) having a sensitivity current of 300 mA in the existing MCB DB complete with connections, testing and commissioning etc as required				
i)	40 Amps	Each	3	1208	3624.00
ii)	63 Amps	Each	5	1426	7130.00
19	Supplying and Drawing of unarmoured copper conductor CAT-5 cable	Rmt	1564	45.71	71490.44
20	**Copper earth plate electrode:** Earthing with copper earth plate 600mm x600mm x3mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc., (but without charcoal or coke and salt) complete as required.	Set	2	3263.00	6526.00
21	**Salt / coke for plate earth electrode:** Extra for using coke and salt for G.I. or copper plate earth electrode as required.	set	2	1484.00	2968.00
22	**P/F 25 mm x 5 mm Copper earth strip pipe** Providing and Fixing 25 mm x 5 mm copper strip in 40 mm dia. G.I Pipe from Earth electrode as required.	Rmt	40	494.00	19760.00
23	**P/F copper lightning conductor finial:** Providing and fixing lightining conductor finial, made of 25mm dia 300mm copper tube ,having single prong at top,with 85 mm dia 3mm thick copper base plate including holes etc. complete as required.	Each	2	477.00	954.00

S. No	Description of Items	Unit	Qty	Rate	Amount
24	**Reverting, sweating and soldering lightning conductor tape:**				
	Reverting, sweating and soldering of copper (with another copper tape base of the finial or any other metallic object) as required.	Each	2	56.00	112.00
25	**P/F copper lightning conductor tape in horizontal run:**				
	Providing and fixing copper tape 20mm x 3mm thick on parapet or surface of wall for lightening conductor complete as required.(for horizontal Run)	Rmt	40	163.00	6520.00
26	**P/F copper lightning conductor tape in vertical run:**				
	Providing and fixing copper tape 20mm x 3mm thick on parapet or surface of wall for lightening conductor complete as required.(for vertical Run)	Rmt	20	175.00	3500.00
27	Supply, Installation, testing and commissioning of pre-wired decorative fitting suitable for housing1 5 watt CFL directly on Ceiling/wall including connections with 1.5 sq.mm FR PVC insulated copper conductor single core cable and earthing etc as required(Model No. Adreno TWG 207) Phillips or equivalent	Each	47	863.63	40590.61
28	Installation, testing and commissioning of pre-wired LED Surface Mounted Light fitting directly on Ceiling/wall including connections with 1.5 sq.mm FR PVC insulated copper conductor single core cable and earthing etc as required(LD 51-012-XXX-WH-XX) WIPRO	Each	92	8390.38	771914.96
29	Supply, Installation, testing and commissioning of pre-wired Mirror Light fitting suitable for housing 36 watt CFL directly on Ceiling/wall including connections with 1.5 sq.mm FR PVC insulated copper conductor single core cable and earthing etc as required(Model No.TMC 500/218) Havells or equivalent.	Each	33	863.63	28499.79
30	Supply, Installation, testing and commissioning of pre-wired LED Surface Mounted Light fitting directly on Ceiling/wall including connections with 1.5 sq.mm FR PVC insulated copper conductor single core cable and earthing etc as required(LD 44-012-XXX-WH-XX) WIPRO	Each	17	7315.13	124357.21

S. No	Description of Items	Unit	Qty	Rate	Amount
31	Installation, testing and commissioning of pre-wired Wall Mounting personal light fitting for housing 1 x 36 watt Compact fluorescent Light fitting including connections with 1.5 sq.mm FR PVC insulated copper conductor single core cable and earthing etc as required(WVF 95118) WIPRO	Each	29	5480.88	158945.52
32	Installation, testing and commissioning of pre-wired Surface mounted Ceiling Light suitable for housing 4 x 14 w TL-5 Fitting including connections with 1.5 sq.mm FR PVC insulated copper conductor single core cable and earthing etc as required(TPS 814/414 D8 HF)Phillips	Each	83	7884.88	654445.04
33	Installation, testing and commissioning of pre-wired Surface mounted Ceiling Light suitable for housing 2 x PL-L CFL Fitting including connections with 1.5 sq.mm FR PVC insulated copper conductor single core cable and earthing etc as required(FCS-5)Phillips	Each	22	1740.98	38301.56
34	Installation, testing and commissioning of pre-wired Bollard suitable for housing 1 x 50 watt Fitting including connections with 1.5 sq.mm FR PVC insulated copper conductor single core cable and earthing etc as required(HPS -370)Phillips	Each	2	12710.36	25420.72
35	Supply of AC 230/250 Volts, 50 Hz 300 mm exhaust fan with louveres including connection etc. complete as required .	Each	19	2432.18	46211.42
36	Supply of AC 230/250 Volts, 50 Hz ceiling fan with regulator standard down rod, blades including connection etc. complete as required .				
i)	1200 mm sweep	Each	20	2128.63	42572.60
ii)	1400 mm sweep	Each	59	2255.13	133052.67
iii)	900 mm sweep	Each	17	2128.63	36186.71
37	Supply and fixing of 100 pair Telephone Junction Box (Krone Make).	nos	1	3861.61	3861.61

S. No	Description of Items	Unit	Qty	Rate	Amount
38	Supplying, installation, testing, commissioning of cubicle Compartmentalised type L.T Panel Board made out of 2.0mm CRCA Sheet powder coated suitable for 415V,3 phase,4 wire 50 HZ AC supply system including incomers, outgoings, Busbars, etc as required as per the following specifications Suitable For 2 Runs of 3.5 cr x 300 mm2 armoured Aluminium Cable(on D.G Incomer) and 2 Runs of 3.5 x 300 mm2 Al. Armoured on General Supply. Incomer 400 Amps M.C.C.B F.P with Breaking Capacity 35KA(For General Supply) = 1 set Incomer 400 Amps M.C.C.B F.P with Breaking Capacity 35KA(For D.G Supply) = 1 set Busbar Aluminium 600 Amps TPN 50 KA = 1 set Indicating Lamps(RYB) = 1 No. Selector switch = 2 set Digital Multifunction Meter = 1 No OUT GOINGS 63 Amps F.P MCB 15 KA = 6 Nos. 40 Amps F.P MCB 15 KA = 3 Nos.	set	1	277507.79	277507.79
	Total-D (Electrical Installation)			**Rs.**	**4294445.31**
	Percentage to be quoted by agency	(In Figures)			
		(In words)			
	Amount worked out by agency as per percentage quoted	(Rs. In Figures)			
		(Rs. In words)			
	(Signature of the agency with stamp)			(Carry over to abstract of cost)	