

**SHREEMATI NATHIBAI DAMODAR THACKERSEY  
WOMEN'S UNIVERSITY**  
(Repair work in campus area at SNTD Women's University in Churchgate campus)



**VOLUME 1: Conditions of Contract**

**TENDER DOCUMENT**

OWNER:  
The Registrar,  
**1, Nathibai Thackersey Road,**  
Churchgate, Mumbai 400 020.

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## TENDER NOTICE

Ref No. Est. UGC / (RM/C)-2/2017-18/01

Date: 21/08/2017

Dear Sirs,

On behalf of, The Registrar **SNDT WOMEN'S UNIVERSITY** invites fresh percentage Rate E-tenders for **Repair work in campus area at SNDT Women's University in Churchgate campus, Mumbai.**

Tender forms can be obtained from <http://maharashtraetenders.gov.in> on 24<sup>th</sup> August 2017.

Pre-bid meeting will be held at 11.00 a.m. on 28<sup>th</sup> August 2017, Monday at Annex Building SNDT Women's university, Churchgate Campus.

The tenders will be submitted online on or before 1<sup>st</sup> September 2017 up to 3.00 p.m. at Administration Building SNDT Women's university, Churchgate Campus and tender opening details are as per E-tender schedule. Contractors should remain present at the time of opening. **Any change in the opening time and date will be communicated on website of the University and on E-Tender Portal. The employer reserves the right to reject any or all tenders without assigning any reasons thereof.**

E-Tender Schedule is as below:

Seq No	ALLGOM Stage	Vendor Stage	Start Date & Time	Expiry Date & Time
1	Release of tender	-	24-08-2017 11:00	24-08-2017 15:00
2	-	Tender Download	24-08-2017 15:01	31-08-2017 17:00
3	-	Bid Preparation	24-08-2017 17:01	31-08-2017 17:00
4	Superhash Generation & Bid Lock	-	31-08-2017 17:01	01-09-2017 15:00
5	-	Control Transfer of Bid	01-09-2017 15:01	04-09-2017 17:00
6	Envelope 1 Opening	-	05-09-2017 14:00	05-09-2017 17:00
7	Envelope 2 Opening	-	05-09-2017 14:00	05-09-2017 17:00

### OWNER:

The Registrar,  
SNDT Women's University,  
1, Nathibai Thackersey Road,  
Churchgate, Mumbai 400 020.

## DETAILED TENDER NOTICE TO CONTRACTOR

**1.1** Sealed **Percentage** tenders are invited from qualified Contractors for the work as per the following details:

<b>1.1.1</b>	<b>Name and Location of Work</b>	<b>Repair work in campus area at SNDT Women's University in Churchgate campus</b>
<b>1.1.2</b>	<b>Cost of Tender</b>	DD of Rs. 500 /- Rupees Five Hundred only (Non Refundable) to be paid through Online Payment Modes i.e. Net Banking, Debit Card and Credit Card during Tender Document Download Stage.
<b>1.1.3</b>	<b>Scope of Work</b>	All civil works including services works.
<b>1.1.4</b>	<b>Date of Commencement</b>	Date of Work Order
<b>1.1.5</b>	<b>Time of Completion</b>	As per E-Tender Schedule from the date of Work Order
<b>1.1.6</b>	<b>Date and Place of Submission of Tender</b>	As per E-Tender Schedule
<b>1.1.7</b>	<b>Time of Opening</b>	14.00 p.m. on 5 <sup>th</sup> September, 2017 at SNDT Women's University, 1, Nathibai Thackersey Road, Churchgate, Mumbai 400 020.
<b>1.1.8</b>	<b>Earnest Money</b>	Rs. 7,300 /- (Rs. Seven Thousand Three Hundred only) to be paid through Online Payment Modes i.e. Net Banking, Debit Card, Credit Card and NEFT/RTGS during Bid Preparation Stage.
<b>1.1.9</b>	<b>Total Deposit Security</b>	a) Total 5% of value of work (inclusive of all Taxes) b) 3% (Including EMD) of accepted tendered amount (including all taxes) to be deposited within ten (10) days of acceptance of tender. c) Remaining 2% of total security deposited will be recovered from the R.A. Bills.
<b>1.1.10</b>	<b>Refund of security deposit</b>	a) 50% of security deposit to be refunded after issue of certificate. Virtual completion. b) Balance 50% of security deposited to be refunded After expiry of defects liability period of 12 months and its proper discharge.
<b>1.1.11</b>	<b>Defects Liability Period</b>	<b>12 months from date of Virtual Completion.</b>
<b>1.1.12</b>	<b>Liquidated Damage</b>	At the rate of 0.25% of contract value per week

1.1 Online tenders in B-1 form are invited for the following work, from Contractors registered in PWD,CPWD,any other Government agencies and in Pvt Sector, Mumbai region.

The offer of the Contractor shall remain valid for acceptance for a minimum period of 120 days from the date fixed for opening of envelope no. 2 (Main Tender) and thereafter until it is withdrawn by the Contractor by notice in writing duly addressed to the authority opening the tender and sent by Registered Post Acknowledgment due.

- 1.2 The tender notice shall form a part of the contract agreement.
- 1.3 The tenders are invited on the design of Architect appointed by SNDT women's university.
- 1.4 The blank tender forms will be available on E Tender form of Government of Maharashtra Portal
- 1.5 The tenderer if firm or company shall in their forwarding letter mention the names of all the partners of the firm or the company (as the case may be) and the name of the partner who holds the power of attorney if any, authorizing him to conduct transaction on behalf of the firm or company.
- 1.6 Right is reserved to revise or amend the contract documents fully or part thereof prior to the date notified or amended for the receipt of tender. Such deviations/amendments if any shall be communicated in the form of corrigendum or by a letter as may be considered suitable.
- 1.7 Right is reserved to reject any or all tenders without assigning any reason thereof.
- 1.8 Tenders which do not fulfill all or any conditions or are incomplete in any respect are liable to summary rejection.

## **2. EARNEST MONEY**

- 2.1 Earnest money of Rs. 7,300 /- (Rs. Seven Thousand Three Hundred only) (if applicable) is to be paid through Online Payment modes i.e. **Net Banking, Debit Card, Credit Card and NEFT/RTGS** during Bid Preparation Stage.
- 2.2 Tender of those who do not deposit earnest money in one of the above acceptable forms shall be summarily rejected.
- 2.3 Earnest money in any other form of cash or cheque will not be accepted.
- 2.4 The amount of earnest money will be refunded to the unsuccessful tenderer on deciding about the acceptance or otherwise of the tender or on expiry of the validity period whichever is earlier.  
In case of the successful tenderer it will be refunded on his paying the initial security deposit and completing the tender documents. If successful tenderer does not pay the security deposit in the prescribed time limit and complete the agreement bond, his earnest money deposit will be forfeited to the SNDT women's university.

## **3. TENDERING PROCEDURES**

### **3.1 Blank tender forms :-**

Blank tender forms can be obtained from the Maharashtra Government's E-Tender Portal.

### **3.2 Manner of submission of tender and its accompaniments**

Tender should be submitted on E-Tender Portal as well as tender should be submitted in two separate sealed envelopes to the address mentioned above.

Tenderer shall submit the tender and documents in two sealed envelopes as below:-

**3.2.1 Envelope No. 1 (Documents) :-**

The first envelope clearly marked as "**ENVELOPE NO. 1**" shall contain the following documents which are obligatory:-

- 1) Forwarding letter indicating the documents contained therein.
- 2) Certificate as registered Contractor with the Government of Maharashtra in Public Works Department in appropriate class as may be applicable (Duly attested by Government Gazetted officer.)
- 3) An upto date payment/clearance certificate for works contract Tax.
- 4) Details of the other works tendered for and in hand with the value of the work unfinished on the last date of submission of tender (in form No. I). The certificate from the Head of the Offices under whom the works are in progress should be enclosed.
- 5) A list of modern machinery and plants immediately available with the tenderer for use on this work (in form No. II).
- 6) Details of works of similar type and magnitude carried out by the Contractor. (in form No. III).
- 7) Details of works carried out in the interior, Backward and Hilly areas during the preceding 5 years (in Form No. IV) if applicable.
- 8) Details of technical personnel on the rolls of tenderer. (in form No. V).
- 9) Attested copy of partnership deed if the tenderer is a partnership firm and Power of Attorney.
- 10) Declaration to be filled in by the Contractor/Firm as in form No. VI.
- 11) Written agreement between main Civil contractor and Electrical contractor (registered with PWD in appropriate class) shall be submitted in original along with the Registration copy of Electrical contractor before the work order is issued..
- 12) Attested copy of **PAN-Card** issued by Income Tax Department or attested copy of latest Income Tax return (**Form-2D**) submitted to Income tax Department.

Note - In absence of the any of the documents listed above, the tender will not be considered for further action and ENVELOPE No. 2 will not be opened.

**3.3.2 Envelope No. 2 (Main Tender) :-**

The second envelope clearly marked as **Envelope No. 2** shall contain only the main tender including the common set of condition/stipulations issued by the University after the Pre-tender Conference. A tender submitted without this would be considered as invalid.

The tenderer should quote his offer on Schedule 'B' of the tender as item rates or percentage of estimated rates at the appropriate place of tender documents, to be submitted only in envelope No. 2. He should not quote this offer anywhere directly or indirectly in envelope No. 1. The Contractor shall quote for the work as per details given in the main tender and also based on the

detailed set of conditions issued/additional stipulations made by the University as informed to him by a letter from University Engineer after Pre-tender Conference. This tender shall be unconditional.

### **3.4 SUBMISSION OF TENDER:-**

No delays on account of any cause will be entertained for the late receipt of tender. Tender offered or received after the date and time is over will either not be accepted or if inadvertently accepted, will not be opened and shall be returned to the tenderer unopened.

iii) All Xerox copies submitted in connection with tender shall be attested by Gazette Officer or Notary. Otherwise their tender will not be considered for further action & Envelope No. 2 will not be opened.

### **3.5 Opening of Tenders:-**

On the date specified in the tender notice following procedure will be adopted for opening of the tender. The authority competent to open the tenders will first open the sealed cover as mentioned above in the presence of tenderers or their authorized representatives as may be present on the day of opening the tender.

#### Envelope No. 1:-

First of all, Envelope No. 1 of the tender will be opened through online procedure to verify its contents as per requirements. If the various documents contained in this envelope do not meet the requirements of the SNTD women's university, a note will be recorded accordingly by the tender opening authority and the said tenderer's Envelope No. 2 will not be considered for further action but the same will be recorded.

#### Envelope No. 2:-

This envelope shall be opened after scrutiny of the documents submitted in Envelope No. 1 and only if contents of Envelope No. 1 are found to be acceptable to the University. The tendered rate in Schedule 'B' or percentage above/below the estimated rates shall then be read out.

### **3.6 Acceptance of Tender:-**

- 3.6.1 The acceptance of tender may be communicated to the Contractor telegraphically or otherwise by the tender opening authority.
- 3.6.2** The successful tenderer will be required to produce, to the satisfaction of the specified concerned authority, a valid and concurrent license issued in his favour under provisions of the Contract Labour (Regulation and Abolition) Act, 1970 before starting the work. On failure to do so, the acceptance of tender is liable to be withdrawn and earnest money forfeited.
- 3.6.3** The tenderer whose tender is accepted will have to give an undertaking in writing to the effect that he/they will pay the labours engaged on the work, the wages as per Minimum Wages Act, 1948, applied to the zone in which the work lies and act accordingly.
- 3.6.4** The Contractor shall comply with the provisions of the payment of Wages Act, 1936, Minimum Wages Act, 1948, Employees' Liability Act, 1938, Workmen's

Compensation Act, 1961, The Contract Labour (Regulation and Abolition) Act, 1979, and any modification thereof or any law relating thereto, and rules made there under from time to time.

**3.6.5** The Contractor whose tender is accepted is required to note that no foreign exchange will be released by the SNTD women's university.

**3.6.6** The Contractor will have to sign the original copy of the tender papers and the drawings according to which the work is to be carried out. The Contractor shall also have to give a declaration to the effect that he has fully studied the plans, specifications, local conditions, and availability of labour and materials and that he has quoted his rates with the consideration to all these factors.

### **3.7 Security Deposit:-**

**3.7.1** The successful tenderer shall have to pay 50% security deposit in cash through challan or in shape of Demand Draft issued by Nationalized Bank and complete the contract documents failing which his earnest money will be forfeited. The balance 50% security deposit will be recovered from the R.A. bills at 5% of the bill amount.

**3.7.2** In the event of failure of the tenderer to pay cash security deposit **within 10 days** (unless extended in writing by the University Engineer SNTD women's university) from the date of receipt of notice (sent by registered Post) of acceptance of his tender, the amount of earnest money shall be forfeited to University and the acceptance of his tender, shall be considered as withdrawn.

**3.7.3** All compensation or other sums payable by the Contractor under the terms of this contract or any other contract or on any account may be deducted from his Security Deposit or from any sums which may be due to him or may become due to him by University on any account and in the event of the security being reduced by reason of any such above noted deductions, the Contractor shall within 10 days of receipt of notice of demand from the Engineer-in-charge make good the deficit.

**3.7.4** There shall be no liability on the University to pay any interest on the Security Deposited by or recovered from the Contractor.

**3.7.5** The Security Deposit shall be refunded after completion of defect liability period prescribed for this contract in accordance with the provisions in clause 1 and 20 of the contract.



## **ACKNOWLEDGEMENT BY TENDERER**

To,

**The Registrar**, (hereinafter referred to as the Owner).

**SNDT Women's University,  
1, Nathibai Thackersey Road,  
New marine lines, Churchgate,  
Mumbai 400 020.**

Dear Sir / Madam,

I / We have visited the site, got all the information of site conditions and information regarding execution of contract, facilities available at site / offered by the University, read and examined all documents relating to the proposed work

- a. Notice inviting tender
- b. Prequalification form
- c. Articles of Agreement
- d. General Conditions of Contract
- e. Special Conditions of Contract
- f. General Specifications of Work
- g. Schedule of Quantities
- h. Drawings as per attached list

I / We hereby tender for execution of the works referred to the in the aforesaid documents upon the terms and conditions contained or referred to therein and in accordance in all respects with the specifications, designs, drawings and other relevant details at the rate contained in the SCHEDULE OF QUANTITIES and within the period (s) of completion as stipulated in APPENDIX 'A' of the Special conditions of contract.

In consideration of I / we being invited to tender, I / we agree to keep the tender open for acceptance for 90 days from the due date of submission thereof and not to make any modification in its terms and conditions which are not acceptable to the Owner.

If I / we fail to keep the tender open as aforesaid or make any modification in the terms and conditions of the tender which are not acceptable to the Owner, I / we agree that the Owner shall, without prejudice to any other right or remedy, be at liberty to forfeit the amount of the above said earnest money absolutely. Should this tender be accepted, I / we agree to abide by and fulfill all the terms, conditions and provisions of the aforesaid documents.

If, after the tender is accepted, I / we fail to commence the execution of the works, as provided in the Special Conditions of Contract / we agree that the Owner shall, without prejudice to any other right or remedy, be at liberty to forfeit the above said earnest money absolutely.

I / we agree that should the Owner decide to forfeit earnest money as aforesaid, unless a sum equal to the earnest money sanctioned above is paid by us forthwith, the Owner may, at its option, recover it out of the deposit and in the event of deficiency, out of any other money due to me/us otherwise.

DULY AUTHORIZED TO SIGN THE TENDER :

\_\_\_\_\_  
(ON BEHALF OF THE CONTRACTOR)

ADDRESS : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DATE : \_\_\_\_\_

PHONE NUMBER : \_\_\_\_\_

EMAIL ADDRESS : \_\_\_\_\_

**WITNESS** : \_\_\_\_\_

SIGNATURE IN THE CAPACITY OF : \_\_\_\_\_

ADDRESS : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DATE : \_\_\_\_\_

## **ARTICLES OF AGREEMENT**

Agreement made at Mumbai this \_\_\_\_\_ day of 2017 BETWEEN "The Registrar, SNTD Women's University, Mumbai" (hereinafter referred to as the Owner which expression shall include it **successors and assigns**) of the one part, AND, M/s \_\_\_\_\_ (hereinafter referred to as the Contractor which expression shall include his heirs, Executors, Administrators & Assigns) of the other part.

WHEREAS the Owner is desirous of Constructing Proposed E-Tender **Repair work in campus area at SNTD Women's University in Churchgate campus, Mumbai.**

**NET TOTAL COST: Rs. \_\_\_\_\_**

(In words Rs. \_\_\_\_\_)  
AND WHEREAS the Contractor has deposited as Security Deposit a sum of Rs. \_\_\_\_\_  
(Rs. \_\_\_\_\_) with the owner for the due performance of this agreement.

NOW IT IS HEREBY AGREED AS FOLLOWS:

- 1) In consideration of the payments to be made to the contractor as hereinafter provided, he shall upon and subject to the said conditions execute and complete the works shown upon the said drawings and such further detailed drawings as may be furnished to him by the University and described in the said specifications and the said priced schedule of quantities.
- 2) The Owner shall pay the contractor such sums as shall become payable hereunder at the times and in the manner specified in the said conditions.
- 3) The drawings, specifications, and priced schedule of quantities above mentioned shall form the basis of this contract and the decision of the University Engineers for the time being as mentioned in the conditions of contract in reference to all matters of dispute as to the material, workmanship or account and as to the intended interpretation of clauses of this agreement or any other document attached hereto shall be final and binding on both parties and may be made a Rule of Court.
- 4) The said contract comprises the constructions above mentioned and all subsidiary works connected therewith within the said site as may be ordered to be done from time to time by the University for the time being even though such works may not be shown on the drawings of described in the said specifications or the priced schedule of quantities.
- 5) The Owner reserves to himself the right of altering the drawings and nature of the work and adding to or omitting any items of the work or of having portions of the same carried out departmentally or otherwise and such alterations or variations shall be carried out departmentally or otherwise and such alterations or variations shall be carried out without prejudice to this contract.
- 6) The said conditions and appendix thereto shall be read and continued as forming part of this agreement and the parties hereto will respectively abide by and

submit themselves to the conditions and stipulations and perform the agreement on their parts respectively in such conditions contained.

- 7) All disputes arising out of or any connected with this agreement shall be deemed to have arisen in Mumbai and only the Hon'ble Court in Mumbai shall have jurisdiction to determine the same.
- 8) The several parts of this contract have been read to us and fully understood by us.

As witness our hands this \_\_\_\_\_ day of 2017.

SIGNED BY THE SAID

**OWNER**

IN THE PRESENCE OF

1.

2.

SIGNED BY THE SAID

**CONTRACTOR**

IN THE PRESENCE OF

1.

2.

## **PRE-QUALIFICATION OF TENDERERS**

### **Pre-Qualification of the Contractors for the Work of:**

**“Repair work in campus area at SNTD Women’s University in Churchgate campus Mumbai.”**

1. The Registrar, on behalf of the Vice Chancellor, SNTD Women’s University, invited eligibility documents from firms/contractors of repute for Pre-qualification of the contractor for issue of tender for the following:

<b>Sr. No.</b>	<b>Name of Work</b>	<b>Estimated Cost</b>	<b>Period of Completion</b>
(1)	(2)	(3)	(4)
1.	<b>Repair work in campus area at SNTD Women’s University in Churchgate campus Mumbai</b>	<b>Rs. 7,23,177.64 /-</b>	<b>15 days</b>

2. Application supported by prescribed annexure along with supporting documents in physical form, shall be placed in sealed envelopes marked "Pre-qualification Eligibility Documents" and shall be submitted as described in detail Tender notice.

3. Final decision making authority

**3.1.SNTD Women’s University reserves the right to accept or reject any bid and to annul the process and reject all bids at any time, without assigning any reason or incurring any liability to the parties.**

4. General

4.1. All information called for in the enclosed forms should be furnished against the relevant columns in the forms. If for any reason, information is furnished on a separate sheet, this fact should be mentioned against the relevant column. Even if no information is to be provided in a column, a "nil" or "no such case" entry should be made in that column. If any particulars/query is not applicable in case of the party, it should be stated as "not applicable" or "N.A.". The parties are cautioned that not giving true and complete information called for in the application forms or not giving it in clear terms or making any change in the prescribed forms or deliberately suppressing the information shall result in the summarily disqualifying the party. Pre-qualification documents received late will not be entertained.

4.2. Overwriting should be avoided. Correction, if any, should be made by neatly crossing out, initialing, dating and rewriting. Pages of the eligibility criteria

document shall be numbered. Additional sheets, if any added by the party, shall also be numbered. All the documents shall be sealed and signed by the party. They shall be submitted as a package with signed letter of transmittal.

4.3. References, information and certificates from the respective clients certifying suitability, technical knowledge or capability of the party shall be submitted along with the tender documents.

4.4. The party may furnish any additional information which he thinks is necessary to establish his capabilities to successfully complete the envisaged work. It is, however, advised not to furnish superfluous information. No information shall be entertained after submission of eligibility criteria document unless it is called for by the SNDT Women's University.

4.5. Any information furnished by the party found to be incorrect either immediately or at a later date, would render him liable to be debarred from tendering/taking up of work in SNDT Women's University. If such party happens to be enlisted contractor in SNDT Women's University, it shall also be removed from the approved list of contractors.

4.6. List of documents / certificates to be submitted by the contractor together with the tender:

- 1 Name of the firm
- 2 Ownership document
- 3 Income Tax Clearance certificate to indicate turnover of the company.
- 4 Last/previous year's balance sheet (audited)
- 5 List of equipment proposed to be employed at site.
- 6 List of manpower proposed to be employed at site.
- 7 Earnest Money deposit in the requisite format.
- 8 List of specialized contractors for the specialized works.
- 9 Construction schedule for the project.
- 10 Details of works carried out in the last 5 years.
11. Copies of registration of
  - ESIC
  - PF
  - ST
  - CST
  - WCT / MP VAT act
  - Labour License

5. Criteria for eligibility:

Contractors who fulfill the following requirements shall be eligible for pre-qualification.

- 5.1. Should have satisfactorily completed the works as mentioned below during the last 5 years ending 31<sup>st</sup> March 2017
- 5.1.1. Three (3) similar works, each costing not less than `14 Lacs, or two (2) similar works, each costing not less than `28 lacs , or one (1) similar work costing not less than `36 Lacs.
- 5.1.2. Similar work shall mean repair and renovation work of Toilet blocks or construction of RCC framed structures of minimum 24.0 m height for Residential / Commercial / Institutional building / Sports Facility building, including Interior Finishing work, Specialized flooring, Plumbing & Fire Fighting work, Electrical work, supply & installation of Elevators, In addition the agency should have executed at least one work involving Structural Steel fabrication work and roofing sheet work etc. (If Applicable)
- 5.1.3. For this purpose cost of work shall mean gross value the completed work including cost of material supplied by the Government/Client but excluding those supplied free of cost. This should be certified by an officer not below the rank of Executive Engineer/Project Manager or equivalent.
- 5.2. Should have had average annual financial turnover of `50.0 lacs or more on construction works during the last three (3) consecutive financial years ending 31<sup>st</sup> March 2017. This should be duly audited by a Chartered Accountant. Year in which no turnover is shown would also be considered for working out the average.
- 5.3. Should not have incurred any loss in more than two (2) years during the last 3 years ending 31<sup>st</sup> March 2017. This should be duly audited by a Chartered Accountant.
- 5.4. Should have a solvency of ` 1 Crore, which should be certified by the bank.
- 5.5. Should have own constructions equipment as per list required for the proper and timely execution of the work. Else, he should certify that he would be able to manage the equipment by hiring etc., and submit the list of firms from whom he proposes to hire.
- 5.6. Should have sufficient number of Technical and Administrative employees for the proper execution of the contract. The party should submit a list of these employees stating clearly how these would be involved in this work.
- 5.7. Financial information
- 5.7.1. Party should furnish the Annual financial statement for the last three (3) years.
- 5.7.2. Party should furnish solvency certificate in Form "B".

5.8. Experience in works highlighting experience in similar works

5.8.1. Party should furnish list of all works of similar nature successfully completed during the last seven years in Form "C".

5.8.2. Party should furnish list of the projects under execution or awarded in Form "D".

5.8.3. Particulars of completed works and performance of the party duly authenticated/certified by an officer not below the rank of Executive Engineer or equivalent should be furnished separately for each work completed or in progress in Form "E".

6. Letter of transmittal

6.1. The party should submit the letter of transmittal attached with the document.

7. Selection criteria

7.1. SNDT Women's University reserves the right, without being liable for any damages or obligation to inform the party to reject any or all the applications without assigning any reason.

7.2. Any effort on the part of the party or his agent to exercise influence or to pressurize the SNDT Women's University would result in rejection of his application. Canvassing of any kind is prohibited.

7.3. The party should disclose details of arbitration / litigation cases, if any, is pending or in progress. Hiding of such information would result in summarily rejection of his bid without assigning any reason.



**Form B**

Form of Bankers' Certificate from a Scheduled Bank for Certifying the Solvency of the Party

This is to certify that to the best of our knowledge and information that M/s.....having marginally noted address, a customer of our bank are/is respectable and can be treated as good for any engagement upto a limit of

Rs. ....

Rupees .....

This certificate is issued without any guarantee or responsibility on the bank or any of the officers.

Date:

(Signature)

Authorized Bank Representative

Notes:

- 1 Bankers certificates should be on letter head of the Bank.
- 2 In case of partnership firm, certificate should include names of all partners as recorded with the Bank.





**Form E**

**Performance Report of Works Referred to in Form B & Form C**

- 1 Name of the work / project location :
- 2 Agreement No. :
- 3 Estimated Cost :
- 4 Tendered Cost :
- 5 Date of Start of Work :
- 6 Date of Completion of Work :
  - i Stipulated Date of Completion :
  - ii Actual Date of Completion :
- 7 Amount of compensation levied for delayed completion, if any :
- 8 Amount of reduced rate items, if any :
- 9 Performance Report :
  - i Quality of Work : Very Good / Good / Fair / Poor
  - ii Financial Soundness : Very Good / Good / Fair / Poor
  - iii Technical Proficiency : Very Good / Good / Fair / Poor
  - iv Resourcefulness : Very Good / Good / Fair / Poor
  - v General Behaviour : Very Good / Good / Fair / Poor

Date:

(Signature)  
Authorized Client's Representative

## **CONDITIONS OF CONTRACT**

**Clause 1 :-** The person/persons whose tender may be accepted (hereinafter called the contractor, which expression shall unless excluded by or repugnant to the contest include his heirs, executors, administrators, and assigns) shall (A) within 10 days (which may be extended by the University Engineer up to 15 days if the SNDT women's university thinks fit to do so) of the receipt by him of the notification of the acceptance of his tender deposit with the SNDT women's university in cash to the Registrar, SNDT women's university sum sufficient which will made up the full security deposit specified in the tender or (B) (Permit University at the time of making any payment to him for work done under the contract to deduct such as will amount to 2.5 percent of all moneys so payable such deductions to be held by University by way of security deposit.) Provided always that in the event of the contractor depositing a lumpsum by way of security deposit as contemplated at (A) above, then and in such case, if the sum so deposited shall not amount to **2.5**percent of total estimated cost of the work, it shall be lawful for University at the time of making any payment to the contractor for work done under the contract to make up the full amount to 2.5 percent by deducting a sufficient sum from every such payment at last aforesaid until the full amount of the security deposit is made up. All compensation or other sums of money payable by the contractor to University under the terms of his contract may be deducted from or paid by sale of sufficient part of his security deposit or from the interest arising there from, or from any sums which may be due or may become due by University to the contractor under any other contract or transaction of any nature on any account whatsoever and in the event of his security deposit being reduced by reason of any such deduction or sale as aforesaid, the contractor shall, within ten days thereafter, make good in cash or University securities endorsed and aforesaid any sum or sums which may have been deducted from or raised by sale of his security deposit or any part thereof. The security deposit referred to, when paid in cash may, at the cost of the depositor, be converted into interest bearing securities provided that the depositor has expressly desired this in writing.

If the amount of the security deposit to be paid in a lumpsum within the period specified at (A) above is not paid, the tender/contract already accepted shall be considered as cancelled and legal steps taken against the contractor for recovery of the amounts. The amount of the security deposit lodged by a contractor shall be refunded along with the payment of the final bill, if the date upto which the contractor has agreed to maintain the work in good order is over. If such date is not over, only 90% amount of security deposit shall be refunded along with the payment of the final bill. In the event of the contractor failing or neglecting to complete rectification work within the period upto which the contractor has agreed to maintain the work in good order, then, subject to provisions of clauses 17 and 20 hereof the amount of Security Deposit retained by University shall be adjusted towards the excess cost incurred by the department on rectification work.

**Clause 2 :-** The time allowed for carrying out the work as entered in the tender shall be strictly observed by the contractor and shall be reckoned from the date on which the order to commence work is given to the contractor. The work shall through the stipulated period of the contract be proceeded with, all due diligence (time being deemed to the essence of

the contract on the part of the contractor) and the contractor shall pay as compensation an amount equal to one percent or such smaller amount as the University Engineer ( whose decision in writing shall be final ) may decide, of the amount of the estimated cost of the whole work as shown by the tenderer for every day that the work remains un-commenced, or unfinished , after the proper dates. And further to ensure good progress during execution of the work, the contractor shall be bound, in all cases in which the time allowed for any work exceeds one month to complete.

1/8 of the work in 1/4	*	of the time
3/8 of the work in 1/2	**	of the time
3/4 of the work in 3/4	***	of the time
Entire work in 1 month within time limit.		

**\*\* Note** – The quantity of the work to be done within a particular time to be specified above shall be fixed and inserted in the blank space kept for the purpose by the officer competent to accept the contract after taking in to consideration the circumstances of each case and abide by the programme of detailed progress laid down by the University Engineer.

The following proportion will usually be found suitable:- In 1/4, 1/2 , 3/4, of the time.

Reasonable progress of earth work 1/6, 1/2,3/4 , of the total value of the work to be done.

Reasonable progress of masonry work 1/10, 4/10, 8/10 of the total value of the work to be done.

In the event of the contractor failing to comply with this conditions shall be liable to pay as compensation an amount equal to one percent or such smaller amount as the University Engineer (whose decision in writing shall be final) may decide of the said estimated cost of the whole work for every day that the due quantity of work remains incomplete provided always that the total amount of compensation to be paid under the provisions of this clause shall not exceed 10 percent of the Estimated cost of the work as shown in the tender. University Engineer should be the final authority in this respect.

**Clause3:-** In any case in which under any clause of this contract, the contractor shall have rendered himself liable to pay compensation amounting to the whole of this security deposit whether paid in one sum or deducted by installment or in the case of abandonment of the work owing to serious illness or death of the contractor or any other cause the University Engineer, on behalf of the University shall have power to adopt any of the following courses, as he may deem suited in the interest of the University.

**a)** To rescind the contract (for which rescission notice in writing to the contractor under the head of University Engineer shall be conclusive evidence) and in that case the security deposit of the contractor shall stand forfeited and be absolutely at the disposal of University.

**b)** To carry out the work or any part of the work departmentally debiting the contractor with the cost of the work, expenditure incurred on tools and plant, and charges on additional supervisory staff including the cost of work-charged establishment employed for getting the unexecuted part of the work completed and crediting him with the value of the work done departmentally in all respects in the same rates as if it had been carried out by the Contractor under the terms of his contract. The certificate of

the University Engineer as to the costs and other allied expenses so incurred and as to the value of the work so done departmentally shall be final and conclusive against the contractor.

**c)** To order that the work of the contractor be measured upto and take such part thereof as shall be unexecuted, out of his hands, and to give it to another contractor to complete, in which case all expenses incurred on advertisement for fixing a new contracting agency, additional supervisory staff including the cost of work-charged establishment and the cost of the work executed by the new contract agency will be debited to the contractor and the value of the work done or executed through the new contractor shall be credited to the contractor in all respects and in the same manner and at the same rates as if it had been carried out by the contractor under the terms of his contract. The certificate of the University Engineer as to all, the cost of the work and other expenses incurred as aforesaid for or in getting the unexecuted work done by the new contractor and as to the value of the work so done shall be final and conclusive against the contractor.

In case the contract shall be rescinded under clause (a) above the contractor shall not be entitled to recover or be paid, any sum for any work therefore actually performed by him under this contract unless and until the University Engineer shall have certified in writing the performance of the such work and the amount payable to him in respect thereof and he shall only be entitled to be paid the amount so certified. In the event of either of the courses referred to in clause (b) or (c) being adopted and the cost of the work executed departmentally or through a new contractor and other allied expenses exceeding the value of such work credited to the Contractor, the amount of excess shall be deducted from money due to the contractor by University under the contract or otherwise howsoever, or from his security deposit or the sale proceeds thereof provided, however that the contractor shall have no claim against University, even if the certified value of the work done departmentally or through a new contractor exceeds the certified cost of such work and allied expenses, provided always that whichever of the three courses mentioned in clause (a), (b) or (c) is adopted by the University Engineer, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchases or procured any materials, or entered into any engagement made any advances on account or with a view to the execution of work or the performance of the contract.

**Clause 4 :-**If the progress of any particular portion of the work unsatisfactory, the University Engineer, shall notwithstanding, that the general progress of the work is in accordance with the conditions mentioned in clause 2, be entitled to take action and of clause 3(b) after giving the contractor 10 days notice in writing. The contractor will have no claim for compensation, for any loss sustained by him owing to such action.

**Clause 5:-**In any case in which any of the powers conferred upon the University Engineer by clause 3 and 4 hereof shall have become exercisable and the same shall not have been exercised, the non exercise thereof shall not constitute a waving of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor for which under any clause hereof he is declared liable to pay compensation amounting to the whole of his security deposit and the liability of the contractor for past and future compensation shall remain unaffected. In the event of the University

Engineer taking action under sub-clause (a) or (c) of clause 3, he may, if he so desires, take possession of all or any tools and plant, materials and stores in or upon the work of the site thereof or belonging to the contractor, or procured by him and intended to be used for the execution of the work or any part thereof paying or allowing for the same in account at the contract rates, or in the case of contract rates not being applicable at current market rates to be certified by the University Engineer whose certificate thereof shall be final. In the alternative the University Engineer, may, after giving notice in writing to the contractor or his clerk of the work, foreman or other authorized agent require him to remove such tools and plants, materials, or stores from the premises within a time to be specified in such notice, and in the event of the contractor failing to comply with any such requisition, the University Engineer may remove them at the contractor's expense or sale them by auction or private sale on account of the contractor and at his risk in all respects and the certificate of the University Engineer as to the expense of any such removal and the amount of the proceeds and expense of any such sale shall be final and conclusive against the contractor.

**Clause 6** –If the contractor shall desire an extension of the time for completion of work on the ground of his having been unavoidably hindered in its execution or on any other grounds he shall apply in writing to the University Engineer before expiration of the period stipulated in the tender or before the expiration of 30 days from the date on which he was hindered as aforesaid or on which the cause for asking for extension occurred, whichever is earlier and the University Engineer, or in the opinion of University Engineer, or Chief Engineer as the case may be if his opinion, there were reasonable grounds for granting an extension, grant such extension as he thinks necessary or proper. The decision of the University Engineer in this matter shall be final.

**Clause 7:-** On the completion of the work, the contractor shall be furnished with a certificate by the University Engineer (hereinafter called the Engineer-in-charge) of such completion but no such certificate shall be given nor shall have the work be considered to be completed until the contractor shall have removed from the premises on which the work shall have been executed, all scaffolding, surplus materials and rubbish and shall have cleaned off, the dirt from all wood work, doors, windows, walls, floor or other parts of any building in or upon which the work has been executed or which he may have had possession for the purpose of executing the work, not until the work shall have been measured by the Engineer-in-charge or where the measurements have been taken by his subordinates until they have received approval from the Engineer-in-charge, the said measurements being binding and conclusive against contractor. If the contractor shall fail to comply with requirements of this clause as to the removal of scaffolding surplus materials and rubbish and the cleaning of dirt on or before the date fixed for the completion of the work the Engineer-in-charge may at the expense of the contractor remove such scaffolding, surplus materials as aforesaid except for any sum actually realised by the sale thereof.

**Clause 8 :-**No payment shall be made for any work estimated to cost less than rupees one thousand till after the whole of work shall have been completed and a certificate of completion given, But in the case of work estimated to cost more than rupees one thousand the contractor shall on submitting a monthly bill therefore, be entitled to receive payment proportionate to the part of the work then approved and passed by the Engineer-in-charge, whose certificate of such approval and passing of the



sum so payable shall be final and conclusive against the contractor. All such intermediate payments shall be regarded as payments by way of advance against the final payments only and not as payments for work actually done and completed and shall not preclude the Engineer-in-charge from requiring any bad, unsound, imperfect or unskillful work to be removed or taken away and reconstructed or reelected nor shall any such payment be considered as an admission of the due performance of the contract or any part thereof in any respect or the occurring of any claim nor shall it conclude, determine or affect in any other way, the powers of Engineer-in-charge as to the final settlement and adjustment of the accounts or otherwise, or in any other way vary or effect the contract. The final bill shall be submitted by the contractor within one month of the date fixed for the completion of the work, otherwise the Architect's certificate of the measurements and of the total amount payable for the work shall be final and binding on all the parties.

**Clause 9 :-** The rates for several items of work estimated to cost more than Rs.1000/- agreed to within shall be valid only when the item concerned is accepted as having been completed fully in accordance with the sanctioned specification. In cases, where the items of work are not accepted as so completed by the Engineer-in-charge, he may make payment on account of such items at such reduced rates as he may consider reasonable in the preparation of final or on account bills.

**Clause 10 :-**A bill shall be submitted by the Contractor in each month or before the date fixed by the Engineer-in-charge for all work executed in the previous month, and the Engineer-in-charge shall take or cause to be taken the requisite

measurements for the purpose of having the same verified and the claim, so far as it is admissible, shall be adjusted, if possible, within ten days from the presentation of the bill. If the contractor does not submit the bill within the time fixed as aforesaid, the Engineer-in-charge may depute a subordinate to measure up the said work in the presence of the contractor or his duly authorized agent whose countersignature to the measurements list shall be sufficient warrant, and Engineer-in-charge may prepare a bill from such list which shall be binding on the contractor in all respects.

**Clause 11:-** The contractor shall submit all bills on the printed forms to be had on application at the office of the Engineer-in-charge. The charges to be made in the bills shall always be entered at the rates specified in the tender or in the case of any extra work ordered in pursuance of these conditions, and not mentioned or provided for in the tender at the rates hereinafter provided for such work.

**Clause 12:-** If the specification or estimate of the work provides for the use of any special description of material to be supplied from the stores of the Public Works Dept. store or if it is required that the contractor shall use certain stores to be provided by the Engineer-in-charge (such material and stores and the prices to be charged therefore as hereinafter mentioned being so far as practicable for the convenience of the contractor but not so as in any way to control the meaning or effect of this contract specified in the schedule or memorandum hereto annexed) the contractor shall be supplied with such materials and stores as may be required from time to time to be used by him for the purpose of the contract only, and the value of the full quantity of the materials and stores so supplied shall be set off or deducted from any sums then due or thereafter to become due to the contractor under the contract, or otherwise, or from the security deposit or the proceeds of sale thereof, if

the security deposit is held in University securities, the same or a sufficient portion thereof shall in that case be sold for the purpose. All materials supplied to the contractor shall remain the absolute property of University and shall on no account be removed from site of the work, and shall at all times be open for inspection by the Engineer-in-charge. Any such materials unused and in perfectly good condition shall be returned to the Public Works Departmental store if the Engineer-in-charge so requires by a notice in writing given under his hand but the contractor shall not be entitled to return any such materials except with consent of the Engineer-in-charge and he shall have no claim for compensation on account of any such material supplied to him as aforesaid but remaining unused by him or for any wastage in or damage to any such materials.

**Clause 12(A):-** All stores of controlled materials such as cement, steel etc. to be supplied by University to the contractor should be kept by the contractor under lock and key and will be accessible for inspection by the University Engineer or his agent at all times.

**Clause 13:-** The contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner, and both as regards materials and every other respect in strict accordance with specifications. The contractors shall also conform exactly, fully and faithfully to the designs, drawings and instructions in writing relating to the work signed by the Engineer-in-charge and lodged in his office and to which the contractor shall be entitled to have access for the purpose of inspection at such office, or on the site of the work during office hours. The contractor will be entitled to receive three sets of contract drawings and working drawings as well as one certified copy of the accepted tender along with the work order free of cost. Further copies of the contract drawings and working drawings if required by him, shall be supplied at the rate of Rs.5,000/- per set contract drawings and Rs.500/- per working drawing except where otherwise specified.

**Clause 14:-** The Engineer-in-charge shall have power to make any alteration in or additions to the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work and the contractor shall be bound to carry out the work in accordance with any instructions in this connection which may be given to him in writing signed by the Engineer-in-charge and such alteration shall not invalidate the contract, and any additional work which the contractor may be directed to do in the manner above specified as part of the work shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work, and at the same rates as are specified in the tender for main work, and if the additional and altered work includes any class of work for which no rate is specified in this contract, then such class of work shall be carried out at the rates entered in the Schedule of Rates of the Division or at the rates mutually agreed upon between the Engineer-in-charge and contractor, whichever are lower. If the additional or altered work for which no rate is entered in the schedule of rates of Division is ordered to be carried before the rates are agreed upon then the contractor shall within seven days of the date of receipt by him of the order to carry out the work inform the Engineer-in-charge of the rate which it is his intention to charge for such class of work. And if the Engineer-in-charge does not agree to this rate he shall by notice in writing be at liberty to cancel his order to carry out such class of work and arrange to carry out in such manner as he may consider advisable provided always that if the contractor shall commence work or incur any expenditure in regard thereto before the rates shall have been

determined as lastly here in before mentioned, then in such case he shall only be entitled to be paid in respect of the work carried out or expenditure incurred by him prior to the date of the determination of the rate as aforesaid according to such rate or rates as shall be fixed by the Engineer-in-charge. In the event of dispute, the decision of the Building and Works committee will be final. Where, however, the work is to be executed according to the designs, drawings and specifications recommended by the contractor and accepted by the competent authority the alterations above referred to shall be within the scope of such designs drawings, and specifications appended to the tender.

The time limit for the completion of the work shall be extended in the proportion that the increase in its cost occasioned by, alterations or additions bears to the cost of the original contract work, and the certificate of the Engineer-in-Charge as to such proportion shall be conclusive.

**Clause 15 :-1)** If at any time after the execution of the contract documents the Engineer-in-Charge shall for any reason whatsoever (other than default on the part of the contractor for which he is entitled to rescind the contract) desire that the whole or any part of the work specified in the tender should be suspended for any period or that the whole or part of the work should not be carried out at all, he shall give to the contractor a notice in writing of such desire and upon the receipt of such notice the contractor shall forthwith suspend or stop the work wholly or in part as required, after having due regard to the appropriate stage at which the work should be stopped or suspended so as not to cause any damage or injury to the work already done or endanger the safety thereof, provided that the decision of the Engineer as to the stage at which the work or any part of it could be or could have been safely stopped or suspended shall be final and conclusive against the contractor. The contractor shall have no claim for payment or compensation whatsoever by reason of or in pursuance of any notice aforesaid, on account of any suspension stoppage or curtailment except to the extent specified hereinafter.

**2)** Where the total suspension of the work ordered as aforesaid continued for a continuous period exceeding 90 days, the contractor shall be at liberty to withdraw from the contractual obligations under the contract so far as it pertains to the unexecuted part of the work by giving a 10 day's prior notice in writing to the Engineer, within 30 days of the expiry of the said period of the 90 days, of such intention and requiring the Engineer to record the final measurement of the work already done and to pay final bill. Upon giving such notice, the contractor shall be deemed to have been discharged from his obligations to complete the remaining unexecuted work under his contract. On receipt of such notice the Engineer shall proceed to complete the measurements and make such payment as may be finally due to the contractor within a period of 90 days from the receipt of such notice in respect of the work already done by the contractor. Such payment shall not in any matter prejudice the right of the contractor to any further compensation under the remaining provision of the this clause.

**3)** Where the Engineer required the contractor to suspend the work for a period in a excess of 30 days at any time or 60 days in the aggregate, the contractor shall be entitled to apply to the Engineer within 30 days of resumption of work after such suspension for payment of compensations to the extent of pecuniary loss suffered by him in respect of working machinery remained idle on the site or on the account of his having and to pay the salary or wages of labour engaged by him during the said period

of suspension provided always that the contractor shall not be entitled to any claim in respect of any such working machinery salary or wages for the first 30 days whether consecutive or in the aggregate or such suspension or in respect of any suspension whatsoever occasioned unsatisfactory work or any other default on his part. The decision of the Engineer in this regard shall be final and conclusive against the contractor.

**4) In the event of.....**

(i) Any total stoppage of work on notice from Engineer under Sub clause (i) in that behalf.

(ii) Withdrawal by the contractor from the contractual obligations complete the remaining unexecuted work under sub clause (2) on account of continued suspension of work for a period exceeding 90 days

**OR**

(III) Curtailment in the quantity of item or items originally tendered on account of any alteration, omission or substitution in the specifications, drawings, designs or instructions under clause (14) 1 where such curtailment exceeds 25% in quantity and the value of the quantity curtailed beyond 25 percent at the rates for the item specified in the tender is more than Rs.5000/-

**4-A)** It shall be open to the contractor, within 90 days from the service of (i) the notice of stoppage of work or (ii) the notice of withdrawal from the contractual obligations under the contract on account of the continued suspension of work or (iii) notice under clause 14(1) resulting in such curtailment to produce to the Engineer satisfactory documentary evidence that he had purchased or agreed to purchase material for use in the contracted work, before receipt by him of the notice of stoppage, suspension or curtailment and require the University to take over on payment of such material at the rates determined by the Engineer, provided, however, such rates shall in no case exceed the rates at which the same was acquired by the contractor. The University shall their after take over the material so offered, provided quantities offered are not in excess of the requirement of the unexecuted work as specified in the accepted tender and are of quality and specification approved by the Engineer.

**Clause 16:-**Under no circumstances whatever shall the contractor be entitled to any compensation from University on any account unless the contractor shall have submitted a claim in writing to the Engineer-in-charge within one month of the case of such occurring.

**Clause 17:-**If at any time before the security deposit or any part thereof is refunded to the contractor, it shall appear to the Engineer-in-charge or his subordinate in charge of the work, that any work has been executed with unsound, imperfect or unskillful workmanship or with materials of inferior quality, or that any materials or articles provided by him for the execution of the work are unsound, or of a quality inferior to that contracted for, or are otherwise not in accordance with the contract, it shall be lawful for the Engineer-in-charge to intimate this fact in writing to the contractor and then notwithstanding the fact that the work, materials or articles complained of many have been inadvertently passed, certified and paid for, the contractor shall be bound forthwith to rectify, or remove

and reconstruct the work so specified in whole or in part, as the case may require or if so required, shall remove the materials or articles so specified and provided other proper and suitable materials or articles at his own charge and cost and in the event of his failing to do so within a period to be specified by the Engineer-in-charge in the written intimation aforesaid the contractor shall be liable to pay compensation at the rate of one percent on the amount of the estimate for every day not exceeding 10 days, during which the failure so continues and in the case of any such failure the Engineer-In-charge may rectify or remove and re-execute the work or remove, and replace the materials or articles complained of as the case may be at the risk and expense in all respects of the contractor. Should the Engineer-in-charge consider that any such inferior work or materials as described above may be accepted or made use of it shall be within his discretion to accept the same at such reduced rates as he may fixed therefore.

**Clause 18:-** All works under or in course of execution or executed in pursuance of the contract shall at all times be open to the inspection and supervision of the Engineer-in-charge and his subordinates, and the contractor shall at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Engineer-in-charge and his subordinate to visit the work shall have been given to the contractor, either himself be present to receive orders and instructions or have responsible agent duly accredited in writing present for that purpose. Orders given to the contractor's duly authorized agent shall be considered to have the same force and effect as if they had been given to the contractor himself.

**Clause 19:-**The contractor shall give not less than five days notice in writing to the Engineer-in-charge or his subordinate in charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof taken before the same is so covered or placed beyond the reach of measurement and shall not cover-up or place beyond the reach of measurement any work without the consent in writing of the Engineer-in-charge or his subordinate in charge of the work, and if any work shall be covered up or placed beyond the reach of measurement, without such notice having been given consent obtained the same shall be uncovered at the contractor's expenses, and in default thereof, no payment or allowance shall be made for such work or for the materials with which the same was executed.

**Clause 20 :-** If during the period of **12 months** from the date of completion as certified by the Engineer-in-Charge pursuant to Clause-7 of the contract or months after commissioning the work, whichever is later in the opinion of the University Engineer, the said work is defective in any manner whatsoever, the contractor shall forthwith on receipt of notice in that behalf from the University Engineer, duly commence execution and completely carry out at his cost in every respect all the work that may be necessary for rectifying and setting right the defects specified therein including dismantling and reconstruction of unsafe portions strictly in accordance with and in the manner prescribed and under the supervision of the University Engineer. In the event of the contractor failing or neglecting to commence execution of the said rectification work within the period prescribed therefore in the said notice and/ or complete the same as aforesaid as required by the said notice, the University Engineer get the same executed and carried out departmentally or by any other

agency at the risk on account and at cost of the contractor. The contractor shall forthwith on demand pay to the Govt., the amount of such costs, charges and expenses sustained or incurred by the University of which the certificate of the University Engineer shall be final and binding on the contractor. Such costs, charges and expenses shall be deemed to be arrears of land revenue and in the event of the contractor failing or neglecting to pay the same on demand as aforesaid without prejudice to any other rights and remedies of University, the same may be recovered from the contractor as arrears of land revenue. The University shall also be entitled to deduct the same from any amount which may then be payable or which may thereafter become payable by the University to the contractor either in respect of the said work or any other work whatsoever or from the amount of security deposit retained by University.

**The defect liabilities period in particular for waterproofing treatment (Building work) shall be 10 years.**

**Clause 21-** The contractor shall supply at his own cost all material (except such special materials if any as may in accordance with the contract, be supplied from the stores), plant, tools, appliances, implements, ladders, cordage, tackle, scaffolding and temporary works requisite or proper for the proper execution of the work, whether, in the original, altered or substituted form, and whether included in the specifications or other documents forming part of the contract or referred to in these conditions or not and which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-charge as to which under these conditions he is entitled to be satisfied or which he is entitled to be required together with the carriage therefore to and from the work. The contractor shall also supply without charge the requisite number of persons with the means and materials necessary for the purpose of setting out works and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or the failing which the same may be provided by the Engineer-in-charge at the expense of the contractor and the expenses may be deducted from any money due to the contractor under the contract or from his security deposit or the proceeds of sale thereof, or of a sufficient portion thereof. The contractor shall provide all necessary fencing and lights required to protect the public from accident and shall also be bound to bear the expenses of defense of every suit, action or other legal proceeding, that may be brought by any person for injury sustained owing to neglect of the above precautions, and to pay any damages and cost which may be awarded in any such suit action or proceedings to any such person or which may with consent of the contractor be paid for compromising any claim by any such person.

List of machinery in contractor's possession and which they propose to use on the works should be submitted along with the tender.

**Clause 21 A:-** The contractor shall provide suitable scaffolds and working platforms, gangways and stairways and shall comply with the following regulations in connections therewith.

**a)** Suitable scaffolds shall be provided for workmen for all works that can not be safely done from a ladder or by other means.

**b)** A scaffold shall not be constructed, taken down or substantially altered except.

**1)** Under the supervision of a competent and responsible person;

**2) as** far as possible by competent workers possessing adequate experience in this kind of work.

**c)** All scaffolds and appliances connected therewith and ladders shall.

**1)** Be of sound material.

**2)** Be of adequate strength having regard to the loads and strains to which they will be subjected and,

**3)** Be maintained in proper condition.

**d)** Scaffolds shall be so constructed that no part thereof can be displaced in consequence of normal use.

**e)** Scaffolds shall not be over loaded and so far as practicable the load shall be evenly distributed.

**f)** Before installing lifting gear on scaffolds, special precautions shall be taken to ensure the strength and stability of the scaffold.

**g)** Scaffold shall be periodically inspected by the competent person.

**h)** Before allowing a scaffold to be used by his workmen, the contractor shall, whether the scaffold has been erected by his workmen or not, take steps to ensure that it complies fully with the regulations therein specified.

**i)** Working platform, gangways stairways shall.

**i)** Be so constructed that no part thereof can sag unduly or unequally.

**ii)** Be so constructed and maintained having regard to the prevailing conditions as to reduce as far as practicable risks of persons tripping or slipping,

**iii)** Be kept free from any unnecessary obstruction.

**j)** In the case of working platform, gangway, working places and stairways at a height exceeding three meters. (to be specified)

**i)** Every working platform and every gangway shall be closely boarded unless other adequate measures are taken to ensure safety.

**ii)** Every working platform and gangway shall have adequate width and

**iii)** Every working platform, gangway, working place and stairway shall be suitably fenced.

**k)** Every opening in the floor of a building or in working platform shall except for the time and to the extent required to allow the excess of persons or the transport or shifting of materials be provided with suitable means to prevent the fall of persons or materials.

**l)** When persons are employed on a roof where there is a danger of falling from a height exceeding 3 meters suitable precautions shall be taken to prevent the fall of persons or materials. ( to be prescribed).

**m)** Suitable precautions shall be taken to prevent persons being struck by articles which might fall from scaffolds or other working places.

- n)** Safe means of access shall be provided to all working platforms and other working places.
- o)** The contractor/(s) will have to make payments to the labours as per Minimum Wages Act 1948.

**Clause 21 B** -The contractor shall comply with the following regulations as regards the Hoisting Appliances to be used by him :

- a)** Hoisting Machine and tackle, including their attachments, anchorages and support shall
  - i)** Be of good mechanical construction, sound material and adequate strength and free from patent defect; and
  - ii)** Be kept in good repair and in good working order.
- b)** Every rope used in hoisting or lowering materials or as a means of suspension shall be of suitable quality and adequate strength and free from patent defect.
- c)** Hoisting machine and tackle shall be examined and adequately tested after erection on the site and before use and be re-examined in position at intervals to be prescribed by the Engineer in Charge.
- d)** Every chain, ring, hook, shackle, swivel and pulley block used, in hoisting or lowering materials or as a means of suspension shall be periodically examined.
- e)** Every crane driver or hoisting appliances operator shall be properly qualified.
- f)** No person who is below the age of eighteen (18) years shall be in control of any hoisting machine, including any scaffold which, or give signals to the operator.
- g)** In the case of every hoisting machine and of every chain, ring, hook, shackle, swivel pulley block used in hoisting or lowering or as means of suspension, the safe working load shall be ascertained by adequate means.
- h)** Every hoisting machine and all gear referred to in preceding regulation shall be plainly marked with the safe working load
- i)** In the case of hoisting machine having a variable safe working load, each safe working, load and the conditions under which it is applicable shall be clearly indicated.
- j)** No part of any hoisting machine or of any gear referred to in regulation (g) above shall be loaded beyond the safe working load except for the purpose of testing.
- k)** Motors, gearing transmissions, electric wiring and other dangerous part or hoisting appliances shall be provided with efficient safeguards.
- l)** Hoisting appliances shall be provided with such means as will reduce to minimum the risk of the accidental descent of the load.
- m)** Adequate precaution shall be taken to reduce to a minimum, the risk of any part of a suspended load becoming accidentally displaced.



**Clause 22** – The contractor shall not set fire to any standing jungle, trees, brush-wood or grass without a written permit from the University Engineer. When such permit is given, and also in all cases when destroying cut or drag trees brushwood, grass etc. By fire, the contractor shall take the necessary measure to prevent such fire spreading to or otherwise damaging surrounding property.

The contractor shall make his own arrangements for drinking water for the labour employed by him and provide sanitary and other arrangements.

**Clause 23**–Compensation for all damages done intentionally or unintentionally by contractor’s labour whether in or beyond the limits of University property including any damage caused by spreading of fire mentioned in clause 22 shall be estimated by the Engineer-in-Charge or such other officer as he may appoint and the estimate of the Engineer-in-Charge subject to the decision of the University Engineer on appeal shall be final and the contractor shall be bound to pay the amount of the assessed compensation on demand, failing which, the same will be recovered from the contractor as damages in the manner prescribed in the clause 1 or deducted by the Engineer-in-Charge from any sums that may be due or become due to the contractor under this contract or otherwise.

The contractor shall bear the expenses of defending any action or other legal proceeding that may be brought by any persons for injury sustained by him owing to neglect of precautions to prevent the spread of fire and he shall pay any damages and cost that may be awarded by the court in consequences.

**Clause 24** - The contractor shall employ the labours with the nearest Employment Exchange.

**Clause 25** –Work shall be done on a Sunday with the sanction in writing of the Engineer-in-Charge.

**Clause 26** – The contract shall not be assigned or sublet without the written approval of the Engineer-in-Charge and if the contractor shall assign or sublet his contract, or attempt to do so or become insolvent or commence any proceedings to get himself adjudicated and insolvent or make any composition with his creditors, or attempt to do so or if bribe, gratuity, gift loan, perquisite ,reward or advantage, pecuniary or otherwise shall either directly or indirectly be given, promised or offered by the Contractor or any of his servants or agents to any public officer or person in the employment of University in any way relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Engineer-in-Charge may thereupon by notice in writing rescind the contract, and the security deposit of the Contractor shall thereupon stand forfeited and be absolutely at the disposal of University , and the same consequences shall ensure as if the contract had been rescinded under Clause 3 thereof and in addition the Contractor shall not be entitled to recover or be paid for any work therefore actually performed under the contract.

**Clause 27** :- All sums payable by a contractor by way of compensation under any of these conditions shall be considered as a reasonable compensation to be applied to the use of University without reference to the actual loss or damage sustained, and whether any damage has or has not been sustained.

**Clause 28 :-** In the case of tender by partners, any change in the constitution of a firm shall be forthwith notified by the contractor to the Engineer-in-charge for his information.

**Clause 29 :-**All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of the University Engineer of the Circle, for the time being, who shall be entitled to direct, at what point or points and in what manner they are to be commenced, and from time to time carried on.

**Clause 30 (1) :-** Except where otherwise specified in the contract and subject to the powers delegated to him by University under the code, rules then in force, the decision of the Architect for the time being shall be final, conclusive, and binding on all parties of the contract upon all question relating to the meaning of the specification, design, drawing, & instructions, hereinbefore mentioned and as to the quality or workmanship, or materials used on the work, or relating to the contract, designs, drawings, specifications, estimates, instructions, orders, or these conditions, or otherwise concerning the works, or the execution, or failure to execute same whether arising, during the progress of the work, or after the completion or abandonment there of for the time being , shall be final conclusive binding on all parties to the contract.

**Clause 30 (2) :-** All the disputes and differences of any kind whatever rising out of or in connection with the contract or in carrying out of the works (whether during the progress of the works or after their completion and whether before or after the determination, abandonment or breach of contract) shall be referred to by the Contractor or by the University's University Engineer of the University to the Sub committee of building and works Committee within 30 days from the date of receipt of the Decision of the Architect and the sub committee shall decide such dispute/difference as expeditiously as possible

**Clause 31 :-** If the Contractor / the university is aggrieved by the decesion of the Sub - Committee , the Contractor / the University Engineer of the University may apply to Vice Chancellor of the University , within 30 days from the date of receipt of decision of the Subcommittee , for entering into the arbitration . On receipt of such application from the Contractor or University engineer of the University, the Vice- Chancellor of the University shall appoint a sole Arbitrator who will be a fellow of Indian Institute of Architect or Institute of Engineer (India) and after the dispute / difference to him. The decision of the Arbitrator shall be binding and final on the both the parties. The Provisions of Arbitration and Conciliation Act, 1996 shall apply to such arbitration. Such arbitration proceeding will be held at Mumbai.

**Clause 32 :-** When the estimate on which a tender is made includes lump sums in respect of part of the work, the contractor shall be entitled to payment in respect of the items of work involved or the part of the work in question at the same rates as are payable under this contract for each item, or if the part of work in question is not in the opinion of the Engineer-in-Charge capable of measurement, the Engineer-in-Charge may as his discretion pay the lumpsum amount entered in the estimate and

certificate in writing of the Engineer-in-charge shall be final and conclusive against the contractor with regard to any sum or sums payable to him under the provision of this clause.

**Clause 33 :-** In the case of any class of work for which there is no such specification as is mentioned in rule 1 of form B-1, such work shall be carried out in accordance with the Divisional specifications, and in the event of there being no Divisional specifications, then in such case the work shall be carried out in all respects in accordance with all instructions and requirement of the Engineer-in-charge.

**Clause 34 :-** The expression "works" or "work" where used in these conditions, shall unless there be something in the subject or context repugnant to such constructions, be construed, to mean the work or works contracted to be executed under or in virtue of the contract, whether temporary or permanent and whether original, altered, substituted or additional.

**Clause 35 :-** The percentage referred to in the tender shall be deducted from/ added to the gross amount of the bill before deducting the value of any stock issued.

**Clause 36 :-** All quarry fees, royalties, and ground rent for stacking materials, if any, should be paid by contractor.

**Clause 37:-**The Contractor shall be responsible for and shall pay any compensation to his workmen payable under the Workmen's Compensation act, 1923 ( VIII of 1923 ), (hereinafter called the said Act ) for injuries caused to the workmen, if such compensation is payable / paid by the University as principal under sub-section (1) of Section 12 of the said act on behalf of the Contractor, it shall be recoverable by the University from the Contractor under sub-section (2) of the said section. Such compensation shall be recovered in the manner laid down in Clause 1 above.

**Clause 37(A):-** The Contractor shall be responsible for and shall pay the expenses of providing medical aid to any workman who may suffer a bodily injury as a result of an accident. If such expenses are incurred by the University, the same shall be recoverable from the Contractor forthwith and be deducted without prejudice to any other remedy of the University from any amount due or that may become due to the Contractor.

**Clause 37 (B):-** the contractor shall provide all necessary personal safety equipment and first aid apparatus available for the use of the persons employed on the site and shall maintain the same in condition suitable for immediate use at any time shall comply with the following regulations in connection therewith.

**a)** The workers shall be required to use the equipments so provided by the Contractor and the Contractor shall take adequate steps to ensure proper use of the equipment by those concerned.

**b)** When work is carried on in proximity to any place where there is a risk of drowning all necessary equipment shall be provided and kept ready for use and all necessary steps shall be taken for the prompt rescue of any person in danger.

c) Adequate provision shall be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.

**Clause 37 (C) :-** The Contractor shall duly comply with the provisions of "The Apprentices Act, 1961" (III of 1961). The rules made there under and the orders that may be issued from time to time under the said Act and the said Rules and on his failure or neglect to do so, he shall be subjected to all the liabilities and penalties provided by said Act and said Rules.

**Clause 38 :-1)** Quantities in respect of the several items shown in the tender are approximate and no revision in the tendered rates shall be permitted in respect of any of the items so long as, subject of any special provision contained in the specifications prescribing a different percentage of permissible variation in the quantity of the item does not exceed the tender quantity by more than 25 percent and so long as the value of the excess quantity beyond this limit at the rate of the item specified in the tender, is not more than RS. 5,000/-

**2)** The Contractor shall if ordered in writing by the Architect to do so, also carry out any quantities in excess of the limit mentioned above in sub clause (i) hereof on the same condition as and in accordance with the specifications in the tender and at the rates (i) derived from the rates entered in current schedule of rates and in the absence of such rates (ii) at the rates prevailing in the market. The said rates being increased or decreased as the case may be, by the percentage which the total tendered amount bears to the estimated cost of the works as put to tender based upon the schedule of rates applicable for the year in which the tenders were invited. (For the purpose of operation of this clause, this cost shall be worked out from the DSR prevailing at the time of acceptance of tender for **Rs. 7, 23,177.64/-** In words **Rs. Seven lakh Twenty Three Thousand One Hundred Seventy Seven and Sixty Four only**).

**3)** Claims arising out of reduction in the tendered quantity of any item beyond 25% will be governed by the provision of clause 15 only when the amount of such reduction beyond 25 percent at the rate of the item specified in the tender is more than Rs.5000/- (Rupees Five Thousand only).

**4)** This clause is not applicable to extra items.

**5)** There is no change in the rate if the excess is more than 25% of the tendered quantity but the value of the excess work at the tendered rate does not exceed Rs. 5000/- (Rupees Five Thousand only).

**6)** The quantities to be paid at tendered rate shall include:-

- a) Tendered quantity plus
- b) 25% excess of the Tendered quantity or the excess quantity of the value of Rs.5000/- at the Tendered rates whichever is more.

**Clause 39:-** The contractor shall employ any famine, convict or other labour of a particular kind or class if ordered in writing to do so by the Engineer-in-Charge.

**Clause 40 :-** No compensation shall be allowed for any delay caused in the starting of the work on account of acquisition of land or in the case of clearance works, on account of any delay in accordance to sanction of estimates.

**Clause 41:-** No compensation shall be allowed for any delay in the execution of the work on account of water standing in borrow pits or compartments. The rates are inclusive for hard or cracked soil, excavation in mud, sub soil, water standing in borrow pits and no claim for an extra rate shall be entertained, unless otherwise expressly specified.

**Clause 42 :-**The contractor shall not enter upon or commence any portion of work except with the written authority and instructions of Engineer-in-Charge or of his subordinate in charge of the work. Failing such authority, the contractor shall have no claim to ask for measurements of or payments for work.

**Clause 43 :-(i)** No contractor shall employ any person who is under the age of 18 years.

**(ii)** No contractor shall employ donkeys or other animals with breaching of string or thin rope. The breaching must be at least three inches wide and should be of tape (Newer).

**(iii)** No animal suffering from sores, lameness or emaciation or which is immature shall be employed on the work.

**(iv)** The Engineer-in-Charge or his Agent is authorized to remove from the work, any person or animal found working which does not satisfy these conditions and no responsibility shall be accepted by the University for any Delay caused in the completion of the work by such removal.

**(v)** The contractor shall pay fair and reasonable wages to the workmen employed by him in the contract undertaken by him. In the event of any dispute arising between the contractor and his workmen on the grounds that the wages paid are not fair and reasonable, the dispute shall be referred without delay to the University Engineer, who shall decide the same. The decision of the University Engineer shall be conclusive and binding on the contractor but such decision shall not in any way affect the conditions in the contract regarding the payment to be made by the University at the sanctioned tender rates.

**(vi)** Contractor shall provide drinking water facilities to the workers. Similar amenities shall be provided to the workers engaged on large work in urban areas.

**(vii)** Contractor to take precaution against accidents which take place on account of labour using loose garments while working near machinery.

**Clause 44 :-** Payment to contractors shall be made by cheque drawn on any treasury within Mumbai convenient to them provided the amount exceeds Rs.10/-. Amounts not exceeding Rs.10/- will be paid in cash.

**Clause 45:-**Any contractor who does not accept these conditions shall not be allowed to tender for work.

**Clause 46:-** If University declares a state of scarcity or famine to exist in any village situated within 10 miles of the work, the contractor shall employ upon such parts of the work, as are suitable for unskilled labour, any person certified to him by the University Engineer, or be any person to whom the University Engineer may have delegated this duty in writing to be in need of relief and shall be bound to pay to such person wages not

below the minimum which University may have fixed in this behalf. Any disputes which may arise in connection with the Implementation of this clause shall be decided by the University Engineer whose decision shall be final and binding on the contractor.

**Clause 47 :-** The price quoted by the contractors shall not in any case exceed the control price, if any, fixed by Government or reasonable price which it is permissible for him to charge a private purchaser for the same class and description, the controlled price or the price permissible under the provisions of Hoarding and Profiteering Prevention Ordinance, 1948 as amended from time to time. If the price quoted exceeds the controlled price or the price permissible under Hoarding and Profiteering Prevention Ordinance, the contractor will specifically mention this fact in his tender along with the reasons for quoting such higher prices. The purchaser at his discretion will in such case exercise the right of revising the price at any stage so as to conform with the controlled price as permissible under Hoarding & Profiteering Ordinance. This discretion will be exercised without prejudice to any other action that may be taken against the contractor.

**Clause 47 A:-** The tendered rates shall be inclusive of all taxes, rates and cesses.

**Clause 48:-** The rates to be quoted by the contractor must be inclusive of sales tax. No extra payment on this account will be made to the contractor.

**Clause 49 :-** In case of materials that may remain surplus with the contractor from those issued for the work contracted for, the date of ascertainment of the materials being surplus will be taken as the date of sale for the purpose of sales tax and the sales tax will be recovered on such sale.

**Clause 50 :-** The contractor shall employ the unskilled labour to be employed by him on the said work only from locally available Labours and shall give preference enrolled under Maharashtra University and Self Employment Departments Scheme. Provided, however, that if the required unskilled labour are not available locally, the contractor shall in the first instance employ such number of persons as is available and thereafter may with previous permission, in writing of the University Engineer-in-Charge of the said work, obtained the rest of requirements of unskilled the labour from outside the above scheme.

**Clause 51:-** Wages to be paid to the skilled and unskilled labourers engaged by the contractor.

The contractor shall pay the labourers skilled and unskilled according to the wages prescribed by the Minimum Wages Act of 1948 applicable to the area in which the work of the Contractor is in progress.

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 University Engineer, may in his discretion may cancel the contract. The contractor shall also be liable, for any pecuniary liability arising out on account of any violation by him of the provision of the Act.

The contractor shall pay the labourers skilled and unskilled according to the wages prescribed by the Minimum Wages act of the 1948 applicable to the area in which the work is in progress.

**Clause 52 :-** All accounts whatsoever which the contractor is liable to pay to the University in connection with execution of the work including the amount payable in respect of (i) materials/ and or stores supplied/issued hereunder by the University to contractor (ii) hire charges in respect of heavy plant, machinery and equipment given or hire by the University to the contractor for execution by him of the work and/or which advances have been given by the University to the contractor shall be deemed to be arrears of the Land Revenue and the University may without prejudice to any other rights and remedies of the University recover the same from the contractor as arrears of Land Revenue.

**Clause 53 :-**The contractor shall duly comply with all the provisions of the Contract Labour ( Regulation and Abolition) Act, 1970 (37 of 1970) and the Maharashtra Contract Labour (Regulation and abolition) Rules, 1971 as amended from time to time and all other relevant statues and statutory provisions concerning payment of wages particularly to workmen employed by the contractor and working on the site of the work. In particular the contractor shall pay wages to each worker employed by him on the site of the work at the rates prescribed under the Maharashtra Contract labour (Regulation and Abolition) Rules, 1971. If the contractor fails or neglects to pay wages at the said rates or makes short payments and the University makes such payment of wages in full or part thereof less paid by the Contractor as the case may be, the amount so paid by the University to such workers shall be deemed to be arrears of Land Revenue and the University shall be entitled to recover the same as such from the contractor or deduct same from the amount payable by the University to the contractor hereunder or from any other amount/s payable to him by the University.

**Clause 54 :-** The Contractor shall engage apprentices such as brick layer carpenter, wiremen, plumber, as well as blacksmith recommended by the State Apprenticeship Advisor Director of Technical Education, Dhobi Talao, Mumbai- 400 001 In the construction work. (As per Government of Maharashtra, Education Department No.TSA/5170/T/5689, dated, 7.7.72)

**Clause 55 :-** ( Government of Maharashtra P.W.D. Resolution No. CAT/1086/CR-243/K/Bldg.2, Mantralaya, Mumbai Dt. 11.8.1987)

CONDITIONS FOR MALARIA ERADICATION  
**ANTI MALARIA AND OTHER HEALTH MEASURES**

- a)** The anti-malaria and other health measures shall be as directed by the Joint Director (Malaria and Filarial) of Health Services, Mumbai.
- b)** The contractor shall see that mosquito-genic conditions are not created so as keep vector population to minimum level.
- c)** The Contractor shall carry out anti -malaria measures in the area as per guidelines prescribed under National Malaria Eradication Programme and as directed by the Joint Director (Malaria and Filarial) of Health Services, Mumbai.
- d)** In case of default in caring out prescribed anti-malaria measures resulting in increase in malaria incidence, contractor shall be liable to pay to University the amount spent by the University on anti-malaria measures to control the situation in addition to fine.

**e) RELATION WITH PUBLIC AUTHORITIES.**

The contractor shall make sufficient arrangements for draining away the sewerage water as well as water coming from the bathing and washing places and shall dispose off this water in such a way as not to cause any nuisance. He shall also keep the premises clean by employing sufficient number of sweepers. The contractor shall comply with rules, regulations, bye-laws and directions given from time to time by any local or public authority in connection with this work and shall pay fees or charges which are livable on him without any extra cost to University.

**Clause 56 :-CONDITIONS RELATING TO INSURANCE OF CONTRACT WORK**

The Contractor shall take necessary Insurance Policy/ Policies so as to provide adequate insurance cover for execution of the awaited contract work for total contract value and complete contract period from the "Directorate of Insurance, Maharashtra state, Mumbai only. Similarly all workmen's appointed to complete the contract work are required to insure under workmen's compensation Insurance policy. Insurance Policy / Policies taken out from any other company will not be accepted and the amount of premium calculated by the Directorate of Insurance will be recovered directly from the amount payable to the Contractor for the executed contract work.



## **SPECIAL CONDITIONS OF CONTRACT**

**Repair work in campus area at SNTD Women's University in Churchgate campus.**

### **Definitions:**

OWNER / CLIENT will mean	SNTD Women's University or its authorised representative.
CONTRACTOR will mean	M/s
CONSULTANT will mean	Any Specialist CONSULTANT appointed by the OWNER/ ARCHITECT to design specialised part of the Project and supervise quality of the same.
MILESTONE will mean	Established progress completion dates set forth.
CONTRACT SCHEDULE will mean	Time schedule agreed by the parties for the completion of project.

### **1. Scope of Work**

The detailed scope of work is as described in the schedule of works (B. O. Q.) However The works comprises of construction of new management institute building which includes RCC, Finishing and all services work. Time of execution of work will **be 15 days.**

All works are to be executed as per the detailed drawings and instructions given by the Architect/Consultants.

### **2. General**

Contractor shall read and study the following conditions carefully, quote his rates and execute the work accordingly. Conditions mentioned herein shall override any condition mentioned anywhere in the contract.

The tender drawings are meant for guidance only and may not represent the exact size and shape of the building. However they will give a fair idea of the work involved. The contractor shall verify the dimensions given in the drawings before starting the work and point out discrepancies, if any.

It is understood that the Contractor has experience in executing similar works and has competence and commensurate technical expertise to carry out work with good engineering practice.

Attention of the Contractor is drawn to the fact that since this is a repair work of an existing old building, he shall take utmost precaution to cover carefully the existing structures and/or Client's property for dust control. He shall take suitable precautions so as to avoid any hindrance in conducting regular activities of Clients. **No extra time and price will be allowed to Contractor for inconvenience or delays caused on this account.**

Contractor shall also take safety precautions to protect injury to Client's staff, students and employees as well as general public.

The work will be carried out in phases, as per the Client's convenience, and no extra time and price will be allowed to the Contractor for the same.

### **3. Site Conditions**

The Contractor shall be solely responsible for satisfying himself concerning the nature of work, site conditions, local conditions including but not limited to the following:

- a. The site, its conditions, its geographical conditions, its topography, its access, **space available** for storing materials (which is limited to a great extent), etc.
- b. Local conditions, rules regulations, etc., and any such things required to be known for fulfilment of this contract.
- c. Attention of the Contractor is drawn to the fact that the work will be executed in the campus, which will be working at all times, and therefore the existing facilities have to be protected from disturbance from noise / movement of workers, material movement, etc. Safety norms will have to be observed strictly.
- d. Contractor should satisfy himself about the working hours possible for construction under this contract. Contractor shall also ensure that day to day working of the campus shall not be hampered.

The Contractor shall draw his own conclusions after examination of the above conditions. The failure on the part of the Contractor will not relieve him of his responsibilities, for not properly estimating the time and price, required for successful performance of the contract. Neither the Architect nor the Owner assumes any responsibility whatsoever in respect of sufficiency or accuracy of the information, records, reports investigations or claim that the information available is true representation of the actual conditions.

### **4. Cleaning**

Contractor shall, at all times, keep the site safe, clean and tidy. As the work is to be executed in a functional campus, the Contractor shall protect Client's material and not allow dirt and dust to accumulate and spread in the premises and other area. The site has to be maintained clean at all times. Client reserves right to keep the site clean at Contractor's expense, if required.

When the work is nearing completion, he shall clear the site by removing the temporary structures, his surplus materials, debris, and equipment to any nearby place at his cost for remaining part of work.

Upon completion of work, the Contractor shall, at his expense, leave the premises in a clean neat and safe condition.

### **5. Water and Electricity for Construction**

Contractor will make his own arrangement for water and its distribution as Clients/Owners will not provide the same.

The Client/Owner shall provide electricity at a single point near the construction site. Further distribution of water and electrical power shall be in the scope of the Contractor. For providing the electrical connection, 1% of the cost of work including all materials will be deducted from every bill of the Contractor.

For meeting the emergency requirement, (in event of failure/unavailability of regular electrical supply), the Contractor may have to get D.G. set as standby so that the work is not hampered due to unavailability of power.

## **6. Site Office, Cement Godown, Labour Camp, etc.**

- 1.1. Contractor shall not be given space by the Client/Owner for his office unless specifically agreed by them in writing. Contractor shall check with Owner about the space required by him for his site office, before quoting for the work.
- 1.2. Cement Godown: The Contractor shall construct a sound, secure, water-tight Godown sufficient for storing cement (approximately 1000 bags at any time), before starting the construction work, at his own cost. Contractor shall check with Owner if such space is available.
- 1.3. Labour Camps: The Contractor shall not be given space to put up labour camps.
- 1.4. The Contractor shall make adequate sanitary arrangements for the staff and workers, which shall conform to the rules and regulations of SNDT and the local authorities.

## **7. Independent and Experienced Contractor**

The Contractor shall work as an independent Contractor and not agent of Owner, Architect or any of the Consultants appointed for the project.

The Contractor represents that he is fully experienced, properly qualified, registered, licensed, equipped, organised and financed to perform the works under this contract. The Contractor represents that he understands the specifications, nature and present scope of work and claims that he has carried out similar work and worked under similar specifications and he is conversant with good engineering practices involved in civil construction. The Contractor promises to execute the work in a professional manner in the given time frame and as per good engineering practice and will hand over the project in trouble-free condition, even at times by suggesting additional specifications, (at extra cost) if the need arises.

Attention of the Contractor is drawn to the fact that the Contractor has to guarantee to the performance of each item of work mentioned in the B.O.Q. of this contract. The building will not have any construction defect left after the building is handed back to the Owners.

The Contractor shall test and verify accuracy, strength, reliability of his materials, equipment, systems used to carry out work and he will be solely responsible for its performance, safety while executing the performance and he will indemnify Owners, Architects and Consultants of any damages or consequential damages in case of its failure for any performance-based specifications. Approval from the Owners, Architects or his Consultants to design, specifications of his equipment, will not absolve Contractor from his sole responsibility and obligations which have to be met solely by him.

## **8. Authorised Representative**

Before starting the work the Contractor shall appoint and inform the Architect in writing the name of the authorised representative who will represent him and is empowered to take the decisions on behalf of the Contractor and the limitations of the representatives. If the work is suspended, he shall be available for discussions at all times with Architect. All the communications made with the authorised representative will be binding on the Contractor. Any change in the authorised representative will be informed to the Architect sufficiently in advance. All the correspondence regarding the CONTRACT will be addressed and sent to the Architect, unless otherwise informed.

## **9. Contractor's Staff**

Contractor shall appoint full-time experienced engineers, supervisors, etc., in the different fields of engineering and who have sufficient previous experience of similar nature of work. Contractor shall inform Architects and convince him about adequacy of his staff. He will have to appoint additional staff, if in the opinion of the Architect it is necessary to do so in the interest of work. Such staff shall not be removed unless alternative arrangements are made for replacement and only after informing the Architect.

Contractor shall get his sub-Contractors approved from the Architect and/or Consultant before they are allowed to work at site.

## **10. Order of preference**

Unless otherwise specified, in case of discrepancy in the contract documents, the contract conditions will be applicable in following order.

1. Special Conditions of Contract
2. Drawings
3. Bill of Quantities (Schedule of works)
4. General Specifications
5. General Conditions of contract
6. Articles of Agreement of **INDIAN INSTITUTE OF ARCHITECTS.**

In case of discrepancy between wording of the General Specifications and that of Schedule of Quantities the wording of the Schedule of Quantities will have precedence over the wording of specifications.

Large-sized details will take precedence over small-sized details.

Architectural drawings will take precedence over Consultant's drawings.

## **11. Applicable Laws, Rules and Regulations**

Contractor shall be responsible to comply with regulations of the local authorities & all applicable laws of Government of India, State, at which the site is situated and the state in which contract is signed, in effect the time of the duration of contract will apply to the contract and the Contractor.

In case of any discrepancy in the contract, the law of the country will prevail.

If any law is changed during the performance of the contract, and which has an effect on the performance and price of the contract, the same shall be brought to the notice of Owner and Architect. In such a case an equitable solution should be found within one month of the time it was brought to the attention of the Owner, in writing.

Contractor shall comply with the instructions of Architect and maintain all books; registers, challans, bills and documents related to work and maintain the records applicable under any law of local-authority, state-govt. Or central-govt. Or the general norms followed for the similar contract.

Owners have the right to deny access to any worker, staff or Contractor's representative by giving the Contractor a written notice, in case any default on their part in complying the provisions of contract or any law.

Contractor will perform all his obligations applicable under the labour laws which are applicable for the work to be performed under this contract. The copies of all the licences/documents required under the laws shall be maintained by the Contractor at site and a copy of the same will be given to the Owner.

Due to the omission on the part of the Contractor, if the Owner is liable to pay to the Government agency, under any provisions of the applicable laws in force at the time of signing the contract, the Owner will make such payment without referring to the Contractor. Such amount will be deducted from the amount due to the Contractor.

## **12. Permits**

Except as otherwise specified, the Contractor shall procure and pay for all permits, licenses, certifications and other applicable governing authority requirements and inspections, other than inspections performed by Architect or Owner and shall furnish any documentation, bonds, security or deposits required to permit performance of the work.

This clause does not cover payments made to statutory authorities for Building permits / sanctioning of plans, etc.

## **13. Security**

The Contractor shall provide identity cards to his workers and his staff with their photographs and names written on it. It will be necessary to get records of staff and workers checked from local police station as the site is a university for women.

The Contractor shall make his own security arrangements of work in progress, equipment at site, materials received (including those supplied by Owner, if any) at site.

As the site is situated in the existing working campus of the Owner, the Contractor shall take proper precautions and ensure that no one:

- a. Damages Owner's property by the actions of his workers and staff.
- b. Enters in their premises.
- c. Interferes or obstructs the use of their premises.
- d. Obstructs the access to their premises.
- e. Uses their facilities.

The Contractor shall comply with the Owner's security requirements for the work site. Such compliance will not be limited to the above and will not relieve the Contractor of his obligation for maintaining proper security nor will it relieve him of his responsibility to establish and maintain secured conditions at the work site.

## **14. Tender drawings**

The tender drawings are meant for guidance only and may not represent exact size and shape but will give a fair idea of the work involved. Complete list of tender drawings available for inspection is given elsewhere in the tender.

Contractor shall examine the relevant tender drawings (which shall be issued along with the tender documents) and specifications of work. No claims shall be entertained for the assumptions made by the Contractor, if any. Contractor shall not write any comments/conditions/figures or change the tender by writing on the same in any manner.

In case price of item is quoted as lump sum item in the B.O.Q. the work described in the tender drawings will be added to the work described in the item of work in the schedule as if it is included in the scope of work where lump sum price is quoted. No extra payment will be made for the work shown in the tender drawings.

## **15. Shop drawings, Data, Samples & Reports**

It is clearly understood that shop drawings are prepared by the Contractor. Architect/Consultant giving approval of shop drawings, and samples, and permission to proceed with the work does not constitute acceptance to design, method of working, testing or certificates submitted by the Contractor and does not relieve him of his responsibility of his contractual obligations.

### **15.1 Shop drawings**

Shop drawings shall be submitted under following cases whichever is applicable.

- a) All specialised items for which the Contractor draws the specifications.
- b) Large-scale drawings showing fixing details of fixers, equipment and showing co-ordination with other services.
- c) Showing any changes in layout in the Consultant's drawings.
- d) Equipment layout, ducting, piping and wiring diagram.
- e) Manufacturer or Contractor's fabrication drawings for any materials or equipment supplied by him.

The Architect will give the Contractor design drawings of various parts and sections of the project. These drawings will give all the information to the Contractor to prepare shop drawing for the work. The Contractor shall check immediately the specifications and compared the same with the drawings. He will also check whether all the information required is available in the drawing and if any discrepancy, if exists should be pointed out to Architect/Consultant, in writing.

Based on the design drawings, the Contractor shall prepare and submit **four copies** of the shop drawings to Architect for himself and/or to his consultants.

The shop drawings shall be submitted at the Mumbai office of the Architect/Consultant. Contractor shall also submit all the required information/calculations along with the shop drawings. In case of incorrect information/discrepancy, Contractor shall arrange to depute a competent person to the Architect/Consultant's Mumbai office to explain/clarify the details in the shop drawings. Under no circumstances the distance between site of work and the Architect's office, the expenses involved in deputing a person or the extra time required will be entertained as an excuse to condone the preparation of shop drawings.

The Contractor shall submit four copies of catalogues, manufacturer's drawings, equipment characteristics data or performance charts as required by the Architect/Consultant.

Architect/Consultant will send two copies of the approved drawings to the contractor with any one of the following comments:

- i. Approved for Construction (AFC)
- ii. Approved as noted (AAN)

iii. Rejected and to be revised 'or' Revise and Resubmit (RAR).

However, the Contractor shall not carry out the work unless he receives the design and/or shop drawing with a stamp of Approved for Construction.

Such Approved for Construction (AFC) drawings will form part of the contract and if there is any change in the original specification as a result of AFC drawings such change should be brought to the notice of Architect / Owner and change order is to be made before such item is executed.

Any variation between AFC drawings, Good for Construction (GFC) drawings and tender drawing will not make the contract void and the Contractor cannot refuse to carry out the work as per AFC drawings.

### 15.2 Samples

The Contractor shall submit the samples of finishing items as instructed by the Consultant/Architect for his approval. The samples shall be submitted in triplicate. Each sample will have Project Name and Item number of the contract, Manufacturer's name, etc. Rejected samples should be immediately removed from site.

Out of three approved samples, one sample will remain with the Architect and one will be displayed at site on Sample board. Only the approved sample shall be kept at site. The materials used in the work shall strictly conform to the approved sample.

Contractor should obtain approval for material which is not specified and quote rate as per best material available in market. Substandard material will not be allow to use in any stage of work and if found so the university will take prompt action against contractor.

### 15.3 List of Approved Makes

As far as possible Contractor shall use the materials, for construction, specified in the **LIST OF APPROVED MAKES**. In case of discrepancy/doubt regarding the materials being not specified clearly, the Contractor shall take prior approval from Architect before using such materials. In no case shall non-IS specified materials be used for construction/execution.

### 15.4 Reports and Review Meetings

The Contractor shall submit **3 copies** each of the following reports:

No.	Report	Duration
1.	Quality Control	Whenever requested
2.	Progress Report and comparison with approved schedule, information required and reasons for delay, if any.	Every two weeks

The reports mentioned above shall include the following information:

#### Fortnightly Progress Reports

The Contractor shall submit on first day of each month an updated **M.S. PROJECT** report showing the actual rate of progress till that day. The report will include 2 copies of photographs, with the date on which it is taken, of post card size for work in progress, as directed by Architect. In the event of actual rate of progress falls behind the scheduled progress as indicated in the bar chart the Contractor shall accelerate the works within

next 7 days so as to make up the lost works and time within 15<sup>th</sup> of each month to the satisfaction of the Architect.

The monthly report shall also include resource planning for the next month and also the expected value of the next month's R.A. bill.

#### Site Register

The Contractor shall maintain at the site, a diary showing an accurate record of the progress of the works, item-wise the number of men employed under each trade, plant and equipment operating at site. Reasons for stoppage of work will also be noted in the register.

#### Review Meetings

A senior representative of the Contractor (Senior than the Site Manager) shall attend weekly review meetings at the work site. The Contractor shall give the list of information required by him, in writing, to the Architect well in advance. In addition, co-ordination meetings shall be called monthly or fortnightly, as the need be. The meeting will be attended by the Owner/Owner's representative, Consultants, Architect and the Contractor (partner/chief executive) to review the progress of work and sort out problems, if any, with an idea of ensuring the completion of the project within the stipulated time period.

### **16. Specifications**

Entire work shall be as per specifications given in the tender, which will be taken as minimum specifications and as per relevant specifications of INDIAN STANDARD SPECIFICATION in case the specifications are not given in the contract.

Contractor shall inform Architect about deficiency in specifications, if any, at the time of submitting the tender and get the clarifications about the specifications. In case of deficient specifications found by the Contractor, affecting his performance guarantee, he must suggest his specifications at the time of finalising the contract and settle the revision in the rates quoted by him in the tender.

At no time the Contractor shall give excuse of defective/inadequate specifications for not providing the building which is free from defects and will be responsible for the quality of work executed by him.

### **17. Right to delete part of work**

The Architect have the right, at their discretion, to add or delete any item in part or full and/or to alter any drawings and the Contractor shall not be entitled for any compensation for such commission. However, the Owner cannot award such work, omitted from the Contractor's agreed scope of work, to another agency without permission of the Contractor. However, in the opinion of Architect, if the quality of the work executed by the Contractor is not satisfactory, the Architect will have authority to get the same work done by any agency of his choice at the expense of Contractor. The Architect's decision in this regard will be final, binding on the Contractor and without appeal.

In case of any of the items in the scope of this tender are given to any agency for execution, because of Contractor's inability to perform the work in a manner acceptable to Architect, and if the agency claims extra amount due to extra work necessary to be re-done because of the main Contractor's defective workmanship, all such extra amounts claimed by that agency, will be deducted from the main Contractor's dues. Or if, there



are no dues to the main Contractor, this extra amount will be deducted from his retention money.

## **18. Good for Construction (GFC) or Approved for Construction (AFC) Drawings**

Contractor shall indicate the dates on which he requires drawings before starting the work. Contractor shall give a notice of 15 days to Architect / Consultant about the requirement of the drawing/decisions required by him to complete the project as per schedule. It is understood that all the drawings are not required at the beginning of the project for completing the project on time.

Consultant shall forward the drawings to the Contractor. Contractor shall, immediately on receipt of 'GOOD FOR CONSTRUCTION' (GFC) drawings, check all specifications (technical specifications and pay item specifications/description) and GFC drawings and shall promptly (within a maximum time limit of three weeks) notify in writing to the Architect of any such omissions or discrepancies in such specifications or drawings.

Any claim/claims, which may result due to non-compliance of the above, shall not be entertained and work, shall be executed/completed at the cost and consequence of the Contractor.

Contractor shall call for the missing information/drawings from the Consultants in the prescribed form (Request for Information (RFI)) only. Contractor shall give a time of 10 days to supply such necessary information required by him. Without specific request from the Contractor, about information required, it will be construed that all the information is available with the Contractor.

Any delay in giving drawings/decisions/approval of samples shall be recorded by the Contractor and specific extension of time to complete the contract shall be given against such delays to the Contractor for completing the project. At the end of each month Contractor shall inform Owner/Architect about such cumulative delays affecting the schedule and obtain confirmation about the same. In the absence of such confirmation from time to time, Contractor's claim for extension of time will not be granted.

The Architect / Consultant will grant suitable extension in time if there is delay of supplying the information than specified above.

The decision of the Architect / Consultant on the extension of time is binding on the Contractor and will be outside the purview of arbitration

## **19. Contract Schedule & Mile Stones**

### **19.1 Time and Starting Date**

No extension of time will be allowed due to change in quantity within the limits specified elsewhere in the contract unless satisfactory justification is given to the abnormal increase in the quantity affecting schedule of work.

Site shall be considered as handed over to the Contractor on the date of letter of intent though Contractor shall not have any lien on the site.

Contractor shall be given 7 days from and including the date on the letter of intent to start work and time period will be calculated from the 8th day from and including date on which letter of intent was handed to the Contractor.

## 19.2 Milestones

Contractor Should submit the Milestones and should stick with these milestone by without hampering Quality of Work.

## 19.3 Contract Schedule

Within 7 days of the issue of letter of intent/work order, Contractor shall prepare bar chart on **M. S. PROJECT ONLY showing linking of each activity and critical path** and finalise the same in consultation with Architect before mobilisation advance is paid to the Contractor. This bar chart will also indicate inputs from Architect and Owner. The bar chart shall include procurement of materials, approval of samples, drawing requirements along with proper linkages. The bar chart should include and confirm the milestones to be achieved as mentioned in the contract elsewhere.

Not submitting the bar chart in appropriate form could lead to delay in payment of mobilisation advance. The Contractor will not be eligible to claim extension of time or damages in any form if the delay in payment of mobilisation advances due to above reason.

Contractor shall carry out work as per bar chart.

If at any time the Contractor's actual progress does not conform to milestones mentioned in clause 20.2 above, the Owner/Architect will notify the Contractor to improve upon his progress. The Contractor upon such notification must improve his labour, number of shifts, material position, and equipment, etc., without additional cost to the Owner. Failure to issue such notice will not relieve Contractor of his obligation to achieve the necessary progress and milestones. Failure to act on the notice of Owner/Architect shall be sufficient grounds for termination of the contract.

Owners have the right to terminate the contract, without prejudice to the other rights and compensations to be recovered from the Contractor and without any compensation payable to the Contractor, if Contractor fails to achieve the milestones as agreed by both parties. Under the circumstance Contractor shall vacate the site within one month of such termination notice.

## 20. Termination

Owner reserves the right to terminate the contract at intermediate stage and charge the Contractor liquidated damages at the agreed rate in case

- Contractor fails to execute the project as per agreed milestones,
- Architect feels that Contractor will not be able to complete the work as per schedule.
- Persistent default in quality of work not as specified and not acceptable to the Architect/Consultant.

No compensation will be granted for such termination of the contract. Contractor shall prepare his final bill within one month of notice of such termination of work is given to him. Contractor shall not prevent another Contractor from moving on to site after such notice is given. Owner shall settle Contractor's bill within 45 days including time required for certifying the bill. Any additional time in settling the bill will attract interest burden at the rate of 12% per annum on the net amount due to the Contractor, as per certificate of Architect.

## **21. Performance Bond-cum-Security Deposit**

Successful Contractor, within 7 days of letter of intent, shall submit irrevocable and unconditional security Bank Guarantee for 5% of contract value in the approved form, towards the guarantee of successful completion of contract as per specifications and time.

This guarantee shall be valid from the date of letter of intent till 90 days after final completion date of project.

This guarantee will be released after ascertaining that there is no claim against the Owner and/or Contractor from any party and after ascertaining that Owner has no claim on the Contractor.

This deposit shall be forfeited if Contractor refuses or fails to complete the project as per terms of the contract.

## **22. Finance and Payments**

### **22.1 Mobilisation Advance**

Mobilization Advance and material advance shall be paid if University higher authority feels so. To obtain advance Contractor has to submit request letter. The request letter should not be considered as a confirmation of payment, rights of such payments reserved by the university. Contractor should not stop work because of non payment of advance he must have arrange sufficient funds to start the work.

### **22.2 Secured Advance**

No secured advance shall be paid.

## **23. Bills and Procedure for payments**

Following procedure for measurement of quantities, certification of bills and issue of certificate of payments shall be followed.

Contractor will make one bill in a month.

- i. The Contractor will take joint measurements of work done with clerk of works up to 25<sup>th</sup> of each month in triplicate book.
- ii. Owner's representative (Site Engineer) and Contractor will sign such joint measurements.
- iii. Owner's representative will record any dispute in measurements, in a separate sheet.
- iv. Any work, not fully completed, as per schedule of work, will not be measured. Part rate giving recommendation of percentage of completed work e.g. door fixing without hardware or paint, etc. will not be paid.
  - One copy of corrected measurement sheets and the bill is to be given to Owner's representative for records.
  - Three copies of corrected measurement sheets are to be handed over to the Owner's representative to forward to Architect/Consultants along with three copies of the bill.

- One copy of corrected measurement sheets is to be forwarded to Owner along with bill.
  - One copy of corrected measurement sheets and the bill is to be retained by the Contractor.
- v. Contractor must make a bill after measurements are checked and submit the bill to the Consultant for certification.
- vi. Contractor shall submit following with the bill.
1. Soft copy of his bill in excel format.
  2. Measurement sheets duly signed by Owner's representative.
  3. Challans /Invoices of materials signed by Owner's representative.
  4. Summary sheet in a Performa similar to Certificate of Payments as issued and directed by Architect.
- vii. Architect/Consultant shall issue certificate of payment without cost of extra items, which have not already been settled in the previous bill within ten days of submission of bill as stated above. Two copies of the bill (including measurement sheets) will be returned to the Client who will retain one copy and forward one copy to the Contractor.
- viii. Extra items will be scrutinised and paid only after Architect and owner approves the rates. Contractor should note that there would be inherent delay in certifying the cost of extra items if the relevant documents are not presented with the analysis of extra item.
- ix. Extra item, once certified, will be treated like normal percentage rates.
- x. Owner shall make payments as per the certificate of payment within 15 working days of submitting the certificate to them. (100 % payment for tender (settled items) in each R.A. bill shall be released).
- xi. The quality of the work shall be certified by Architect. Architect withholds the right to deduct reasonable money/or not pay for the defective /substandard quality of work, which cannot be dismantled, removed for bad workmanship.
- xii. Giving interim certificate of payment does not mean that the quantity of work has been accepted. Architect, if disapproves the quality, the amount of the certified/paid will be recovered in the next certificate/s.
- xiii. Escalation in contract rates will be considered if applicable due to increase in direct taxes; the same can be claimed in a separate bill for which separate certificate will be issued.
- xiv. Contractor should raise his claims, if any, in every running bill. Claims raised after two months after they are due will not be considered.

Any amount, which may be otherwise payable, may be withheld in whole or part if Owner files any claim on Contractor.

Contractor is in default on any of the contract conditions including but not limited to safety, quality, time schedule, insurance, and adjustments due to over payment from previous bills, payments if not made by the Contractor to the nominated sub-Contractor after he receives payment from the Owner.

After withholding such payments as per the reasons stated above, the Owner will make payment to the Contractor, the amount certified by Architect/Consultant after deducting taxes as per law of the country.

If claims are filed against the Contractor connected with this contract in which Owner will be held liable, if unpaid, the Owner may deduct all such expenses required to pay and/or defend the claim from the amount due to the Contractor and if the money is insufficient from the bills, the same will be deducted /withheld from the performance guarantee given by the Contractor.

## **24. Rates**

All rates will be inclusive of cost of cement and steel.

No escalation shall be allowed in prices during the tenure of the contract

The tender is an Percentage rate tender. If the rate of any item is on lump sum basis, the work involved in the item will be taken as that described in the item together with what is shown in the tender drawings.

The rates quoted by the Contractor shall include charges for royalty, LBT, excise sales tax, levies of local-authority, state-govt.& central-govt. and any other taxes as applicable and constituted by law INCLUDING **works contract tax/ Contract VAT as well as SERVICE tax.**

However the Contract, VAT and Service Tax on the Bill amount will be shown separately.

In case contractor provides other services which have not been covered under the Architects' scope of services and also which categorise as consultancy services then the component of service tax will be shown and be paid separately.

Rates quoted in schedule of works are to be full and inclusive of the works described in the item together with other associated items such as general risk, liabilities and obligations, construction of temporary stores, watching, lighting the area, insurance of men and materials and other insurance mentioned elsewhere in the tender, cleaning the site before and after completion of work, etc.

Rates quoted for same items for different building/works shall remain same. In case Contractor quotes different rates for same item the lowest of all the rates shall be made applicable for that item.

## **25. Rates of extra items**

All the extra percentage rates will be settled by the Architect (before starting the work), whose decision will be final in this regard, by deriving them from similar items already quoted in the tender. In case this is not possible, the extra percentage rates shall be calculated as per the cost of the materials (including taxes and transport and wastage) plus cost of labour plus 20% of cost of materials and labour to cover his overheads and profits. The Architect's decisions in settling the rates of extra items shall be final and binding on the Contractor.

The Contractor shall furnish, on request from the Architect all documents required to justify his claim of rates of non-tender items/extra items, which he may be called upon to carry out.

The Architect will approve all extra percentage rates. No work shall be carried out unless rate of extra item is approved.

All extra items and their cost implications shall be prepared well in advance. These extra items shall only be executed after written approval from Owner.

## **26. Taxes**

The Contractor will be reimbursed statutory increase made by the Government in taxes, after the award of this work, which have direct financial effect on the quoted rates after producing documentary evidence of its levy and subsequent payment. The amount equal to the increase will only be paid and no extra on any other account will be paid.

Likewise, if there is statutory decrease, it will be deducted from the bills raised by the Contractor.

## **27. Retention money**

5% value of the cost of the work shall be retained from every running bill towards retention money. No interest will be paid on the retention amount. This retention money will be retained in the form of cash. 50% of the retention money will be released on Architect issuing final completion certificate. And remaining 50% of the money which can be in the form of Bank Guarantee, will be released after two years after the final completion certificate after deducting for the expenses made by the Owner on cost of rectification/replacement of defective work or any other claim by the owner, in case Contractor refuses to carry out such rectification/replacement of defective work as may be advised by Architect. The defects liability period of such work will be extended by one more year from the date of rectification/replacement.

## **28. Interest on delayed payments**

Any reasonable delay in making payments will not vitiate the schedule or make contract void. Contractor will be entitled to charge interest on delayed payment. Contractor will be entitled for extension of time (without any claims other than interest and escalation) for persistent delays in making payments. Contractor has a right to stop the work if his two successive bills certified by Architect remain unpaid. In such a case, Contractor can claim the damage due to idle time and labour to be certified by Architect/consultant, whose decision will be binding on Owner and Contractor and will be out of purview of arbitration.

## **29. Guarantees Warranties to be submitted by the Contractor**

The entire Bank Guarantees to be submitted shall be irrevocable, unconditional and without referring to the Contractor.

- 1) Mobilisation advance.
- 2) Performance Guarantee
- 3) Retention money
- 4) 10 years Guarantee for Anti-termite treatment
- 5) 10 years Guarantee for Waterproofing treatment

All Bank guarantees shall be from a NATIONALISED BANK ONLY.

## **30. Variation in the Contract Sum**

Contract will be valid for variation of up to  $\pm 50\%$  of contract amount.

### **31. Basic Rates**

The basic rates of the material will be as follows:

**Cement: Rs. 6500/-** per metric tonne

**Reinforcing Steel: Rs. 54000/-** per metric tonne

**Structural Steel: Rs. 62500/-** per metric tonne

### **32. Owner Supply of Materials**

Not Applicable.

### **33. Indenting Materials supplied by Owner**

Not Applicable.

### **34. Reconciliation of Cement and Steel supplied by Owner**

Not Applicable.

### **35. Inspection, Quality Surveillance, Rejection of Materials and Workmanship**

All material and equipment furnished and work performed shall be properly inspected by Contractor at his expense, and shall at all times be subject to quality surveillance and quality audit by Architect or his authorised representatives who, upon reasonable notice, shall be afforded full and free access to the shops, factories or other places of business of Contractor and its suppliers and sub-Contractors of any tier for such quality surveillance or audit. Contractor shall provide safe and adequate facilities, drawing, documents and samples as requested, and shall provide assistance and co-operation including stoppage of work to perform such examination as may be necessary to determine compliance with their equipment's of this contract. Any work covered prior to any quality surveillance or test by Architect shall be uncovered and replaced at the expense of Contractor if such covering interferes with or obstructs such inspection or test. Failure of Architect to make such quality surveillance or to discover defective design, equipment, materials or workmanship shall not relieve Contractor of its obligations under this contract nor prejudice the rights of Owner thereafter to reject or require the correction of defective work in accordance with the provisions of this contract.

If any work is determined by Architect to be defective or not in conformance with this contract the provisions of the general condition titled "warranty" shall apply.

### **36. Testing**

Unless otherwise provided in the contract, testing of equipment, materials or work shall be performed by contract at its expense and in accordance with contract requirements. Should Owner desire tests in addition to those required by this contract, Contractor would be given reasonable notice by Architect to permit such testing. Such additional test will be at Owner's expense.

Contractor shall furnish samples as requested and shall provide reasonable assistance and co-operation necessary to permit tests to be performed on materials or work in place including reasonable stoppage of work during testing.

Contractor shall conduct and carry out tests for quality of cement, steel and other materials from every batch procured by him, and see that the same satisfies the criterion of I. S. Code. Further if any material is rejected, Contractor shall intimate Owner immediately in writing and arrange to segregate the rejected materials. Actual

cost of testing the same will be also be borne by the Contractor. However the rolling margin criterion will be ignored and will not be the reason for rejecting the material.

### **37. Warranty**

Contractor shall submit draft copies of all WARRANTIES that would be required to be submitted by the Contractor as per the conditions of contract along with the duly-filled tender proposal.

All workmanship shall be first class and performed in accordance with sound construction practices acceptable to Architect. All equipment, materials and workmanship shall also conform to the requirements of this contract.

Contractor warrants all equipment and material it furnished and all work it perform against defects in design, equipment, materials or workmanship for a period from work commencement to a date **twenty-four (24) months** after acceptance of the work.

If at any time during the warranty period, Architect, Owner or Contractor discovers any defect in the design, equipment, materials, or workmanship immediate written notice shall be given to the other parties. Contractor shall within a reasonable time propose corrective actions to sure such defects to meet the requirements of this contract act as follows:

1. Rework, repair, or remove and replace defective equipment and materials or re-perform defective workmanship to acceptable quality at a time and in a manner acceptable to Architect.
2. Co-operate with other agencies assigned by Architect to correct such defects and pay to Owner all actual costs reasonably incurred by Owner in performing or having performed corrective action. or
3. Propose and negotiate in good faith an equitable reduction in the contract in lieu of corrective action.

All costs incidental to corrective actions including demolition for access, removal, disassembly, transportation, and re-installation, re-construction, re-testing and re-inspection as may be necessary to correct the defect and to demonstrate that the previously defective work conforms to the requirements of this contract shall be borne by Contractor.

Contractor further warrants any and all corrective actions it performs against defects design equipment, materials and workmanship for a period of twenty four (24) months in addition to any existing warranty period, following acceptance by Architect.

### **38. As-Built Drawings**

At the time of submitting final bill or within 30 days of it, the Contractor will submit as-built drawings of items which have been executed by him or for proprietary items, items for which the Contractor had sought deviations from working drawing, catalogues, guarantees, warrantee manuals of equipment, maintenance manuals to the Architect. All the revisions, variations in the original drawings and contract must reflect in the As-Built Drawings. The Contractor will submit two hard copies of the complete set of drawings and two soft copies of the same in the format as specified by the Architect. Final payment will not be made unless As-Built drawings are received by Architect/Owner. Contractor shall issue a certificate to state that the As-Built drawings are accurate and complete after recording all deviations. The Architect will sign the acceptance of such as-built drawings before final payment is released.



### **39. Site Photographs**

The Contractor shall take photographs of the works every month, and submit copies of the same showing the date of the photograph, to the Owner and Architect. The photographs should be sufficient to show the progress of work at site. Without photographs the claims of delay from the Owner/Architect will not be entertained.

The photographs shall be submitted with each bill and without which the Contractor's R.A. bills will not be entertained.

### **40. Measurements**

Unless otherwise specified, measurements shall be based on I.S. 1200 (latest edition). The work will be measured in M.K.S. Units.

All measurement shall be recorded in the format approved by the Architect. All measurement shall be recorded for the work done up to 25<sup>th</sup> of the month. The recording of the measurements shall be carried out between 25<sup>th</sup> to 30<sup>th</sup> of the month.

### **41. Defective work**

Defective work will not be measured if defects are found after the work was measured. Architect will have right to delete the quantities of such defective work and reduce the cost of the work payable to the Contractor at any stage of the contract, till the defective work is rectified. All the tolerances will be as per relevant I.S. Codes, and in special cases also at the discretion of the Architect.

### **42. Use of Completed Portion of Work**

Not Applicable.

### **43. Non - waiver**

Failure by Architect or Owner to insist upon strict performance of any terms or conditions of this contract, or failure or delay to exercise any rights or remedies provided herein or by law, or failure to properly notify Contractor in the event of breach, or the acceptance of or payment for any goods or services hereunder, or the review or failure to review design shall not release Contractor from any of the warranties or obligations of this contract and shall not be deemed a waiver of any right of Owner to insist upon strict performance hereof or any of its rights or remedies as to any prior or subsequent default hereunder nor shall any termination of work under this contract by Owner operate as a waiver of any of the terms hereof.

### **44. Virtual Completion**

Will be issued by architect after completed work satisfactorily.

### **45. Final Completion**

On final completion of work, Owner, along with Architect and Contractor, shall inspect the work and shall give final approval, in the form of certificate for acceptance of work, for the work executed by the Contractor and certify that the work is complete as per terms and conditions of contract.

Contractor shall give an undertaking to the Owner that payroll, bills of materials and equipment, all charges by Contractor and sub-Contractors and other indebtedness connected with the work have been paid for before final certificate of payment is given.

For any dispute arising out of this contract, the judicial jurisdiction will be Mumbai.

#### **46. Insurance**

All the insurance cover as stated below will remain valid during till the contract is in force and the Owner accepts project. The contractor should provide Marine Insurance on an "All Risk" basis.

a. Workman's Compensation/Employer's Liability

The Contractor shall absolve the Owner of any payment on account of Worker's Compensation Act/Labour Rules/ESIS, if applicable/Provident Fund/Workers and Employees of Contractor's and their sub-Contractor's, etc., and any other regarding Indemnity Insurance as applicable by law of the country.

Contractor shall take all insurance policies as required by law.

b. Contractor's All-Risk Policy

Contractor shall take out insurance of any damage to property during construction to cover all risks. The value of such insurance shall be equal to total value of the tender + 10% of the replacement cost to cover, design and management cost and for covering the work.

c. Public liability policy

The Contractor will take out comprehensive insurance liability policy for personal injury and property damage. It will cover any third party, Owner, and Architect along with their representatives for personal injury of not less than Rs.10,00,000/- (Rupees Ten Lakhs Only) for any one claim per person and for Rs. 50,00,000/- in total per year, when they visit site. This will be in addition to the other insurance he has to take out as per various clauses of conditions of contract.

The above policies and the limits specified therein will not relieve Contractor of his obligation to pay the actual damages

Contractor will deposit two copies of all the above policies with the Owner out of which one will be marked with Attention of Architect within one month of accepting the Letter of intent/work order.

Contractor shall also provide to Owner/Architect copies of the insurance premium receipts in respect thereof and should the Contractor make default in insuring or continuing to insure as aforesaid the Owner may himself insure against any risk with respect of which the default shall have occurred and deduct a sum equivalent to the amount of premium so paid from any amounts due or to become due to the Contractor.

d.Contractor's plant and machinery

Contractor shall take out insurance of any damage to his own property during construction to cover all risks.

## 47. Indemnity

- i. The Contractor shall indemnify the Owner member, officer and employee of the Owner against all actions, proceedings, claims, demands, costs and expenses whatsoever arising out of any failure by the Contractor in the performance of the obligations of relevant labour laws, acts, regulations etc., and under the contract documents. The Owner shall not be liable for or in respect of any damage and or compensation payable by law in respect or in consequence of any accident or injury to any workmen or any other person in employment of the Contractor or his sub-Contractor and Contractor shall indemnify and keep indemnified the Owner against all such damages and compensation against all claims, damage, proceedings costs, charges and expenses whatsoever in respect there of or in relation thereto. **He will indemnify Owners, Architects and Consultants of any damages or consequential damages in case of its failure of the system, materials employed by him for executing work as stated elsewhere in this contract.**
- ii. Should the Owner have to pay any money in respect of such claims or demand as aforesaid the amount so paid and the costs so incurred by the Owner shall be charged to the Contractor and the Contractor shall not be at liberty to dispute or question the right of the Owner to make such payment, notwithstanding same may otherwise to the contrary. The above-mentioned amounts shall be deducted from Contractor's dues.
- iii. In every case which by virtue of the provision of Workmen's Compensation Act, or other applicable provision of any other Act in force the Owner pays compensation to Contractor's workers during the execution of works, the Owner will recover from the Contractor's the amount of the compensation so paid and without prejudice to other rights, the Owner shall be at the liberty to recover such amount or sum due to the Contractor whether under this contract or otherwise. The Owner shall not be bound to contest any act, except on the written request of the Contractor and upon his right giving right becoming liable in consequence of contesting such claims.

## 48. Units

In units of schedule of quantities, the abbreviations shall mean following:

Cu. M	=Cubic Metre
R. M. or R. Mt	=Running Metre
Sq. M	=Square Metre
MT.	=Metric Tonne
Q. R.	=Quote Rate Only

## 49. Sub-Contractors

The Contractor is not allowed to sublet the work.

**Sub-Contractors appointed by the Contractor for any important works such as Anti-termite treatment, false ceiling, Aluminium works, curtain walling, etc., should be approved and acceptable to Architect.**

## 50. First Aid Facilities

Where Owner has first aid facilities at the job site they may, at their option, make available such first aid facilities for the treatment of employees of Contractor who may be injured or become ill while engaged in the performance of the work under this contract. Contractor should provide his own First-Aid Kits at the site.

If first aid facilities and/or services are made available to Contractor's employees then, in consideration for the use of such facilities and the receipt of such services, Contractor hereby agrees:

1. To include as part of its obligation under the general condition titled "indemnity" the obligation to release, defend, indemnify and hold harmless Architect, Architect and Owner from all claims, demands and liabilities arising from the use of such services or facilities and
2. In the event any of Contractor's employees require off site medical services, including transportation thereto, to promptly pay for such services directly to the providers thereof.

## **51. Safety Precautions**

To ensure effective enforcement of the Rules and Regulations relating to Safety Precaution, the arrangement made by the Contractor shall be open to inspection by the Welfare Officer, or Safety Engineer or any persons nominated by the Owner or their representatives.

The Contractor shall be solely responsible for conducting operations under this contract to avoid risks involved in performing the work to all concerned.

He should follow, as a minimum, the following safety codes but not limit himself to only those mentioned below.

1. In respect of all labour, directly or indirectly employed in the work for the performance of Contractor's part of this agreement, the Contractor shall at his own expense arrange for all the safety provisions mentioned in the following:
  - a) Safety codes of CPWD
  - b) Indian Standards Institution
  - c) The Electricity Act
  - d) The Mines Act
  - e) OWNER safety policy
  - f) Any other Act as applicable
2. Before starting construction work, Contractor shall consult Architect and he (Contractor) must make safety plan to their satisfaction.
- 3. The Contractor should strictly follow all the existing labour laws, and also should execute the work strictly adhering to the following labour regulating & safety codes.**

- 1) No labour below the age of 18 years shall be employed on work.
- 2) The Contractor shall not pay less than what is provided under law to labourers engaged by him or his sub-Contractors on this work
- 3) In respect of all labour, directly or indirectly employed in the work for the performance of Contractor's part of this agreement the Contractor shall at his own expense arrange for all the safety provisions as per safety codes of CPWD, Indian standards institutions, the Electricity Act, the mines act and such other acts as applicable.

The Contractor shall adhere to safe construction practice and guard against hazardous and unsafe working conditions.

Some of the safety rules of CPWD as set forth herein.

- 1) Contractor shall maintain First Aid facilities for his employees and those of his Sub-Contractors.
- 2) Contractor shall make outside arrangements for Ambulance service and for the treatment of industrial injuries. Names of those providing these services shall be furnished to the resident engineer prior to start of construction and their telephone number shall be prominently posted in Contractor's field office.
- 3) All critical industrial injuries shall be reported promptly to the resident engineer, as also copy of Contractor's report covering each personal injury requiring the attention of a Physician shall be furnished.
- 4) No person shall carry any photographic files, inflammable materials within the premises of the projects.
- 5) Contractor shall erect and maintain barricades in the form of Metal sheets around all nearby buildings, required in connection with this operation to guard or protect site and also along the compound wall
  - a) Excavation
  - b) Hoisting areas
  - c) Area adjudged hazardous by Resident Engineers or Owner's Safety Engineers.
  - d) Existing property subject to damage by Contractor's Operations.
  - e) Rail-road unloading spots.
  - f) Blasting operations, if required to be carried out.
- 6) Contractor's employees and those of his Sub-Contractors shall become acquainted with barricading practice of CPWD and shall respect the provisions thereof.
- 7) Barricades and hazardous areas adjacent to and along normal routes of travel shall be marked by approved by type of electric red flasher lights at night.
- 8) Suitable warning boards of standard traffic type shall be erected 30m away from each road barricades as well as barricades of work spots within 2m of road curb.
- 9) Suitable scaffolding should be provided for workers for all works that cannot safely be done from the ground or from solid construction except such short period work as can be done safely from ladders. When a ladder is used, an extra labourer shall be used for holding ladder and if the ladder is used for carrying materials as well, suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1 in 4 (1 horizontal to 4 vertical).
- 10) Scaffolding or staging more than 35m above the ground or floor swing or suspended from an overhead support or erecting with stationery support shall have a guard rail properly attached, bolted, braced and otherwise rewarded at least 1m high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for delivery of the materials, such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structures.
- 11) Working platform, gangway or the stairways should be so constructed that they should not sag unduly or unequally and if the height of the platform or the gangway or the stairway is more than 3.5m above ground level or floor lever, they should be closely boarded. It should have adequate width and should be suitably fastened.
- 12) Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1m.

- 13) Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or public. The Contractor shall also provide all necessary fencing and lights to protect the workers and staff from accidents, and shall be bound to bear the expenses of defence of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit or action or proceedings to any such persons or which may with the consent of the Contractor be paid to compromise any claims by any such persons.
- 14) All trenches, 1.2m or more in depth, shall at all times be supplied with at least one ladder for every thirty meter length or fractions thereof.
- 15) Ladder shall be extended from bottom of the trench to at least one meter above the surface of the ground. The size of the trenches, which are 1.5m, or more in depth shall be stepped back to give suitable slope, or securely held by timber bracing so as to avoid the danger of sides to collapse. The excavated material shall not be placed within two meters of the edge of the trench or the trench depth whichever is more. Cutting shall be done from top to bottom with proper slope. Under no circumstances shall undermining or undercutting be done.
- 16) Before any demolition work is commenced and also during the process of the work:
  - a. All roads and open area adjacent to the work site shall either be closed or suitably protected.
  - b. Electric cable or apparatus which is liable to be a source of danger or a cable or apparatus used by the operator shall not remain electrically charged.
  - c. All practical steps shall be taken to prevent danger to persons employed, from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or material as to render it unsafe.
- 17) All necessary personal safety equipment, as considered adequate by Resident Engineer, should be kept available for the use of the persons employed on site and maintained in a condition suitable for immediate use, and Contractor should take adequate steps to ensure proper use of equipment by those concerned.
- 18) Workers employed on mixing asphalt materials, cement and lime mortars shall be provided with protective footwear and protective gloves.
- 19) Those engaged in white washing and mixing or stacking of cement bags or any materials which are injurious to the eyes shall be provided with protective goggles.
- 20) Those engaged in welding and cutting works shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
- 21) When workers are employed in sewers and manholes, which are in use, the Contractor's shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into the manholes, and the manholes so open shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public.
- 22) No paint containing lead or lead product shall be used except in the form of paste or ready-made paint.

- 23) Suitable face masks should be supplied for use by the worker when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.
- 24) Overalls shall be supplied by the Contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during and on cessation of work.
- 25) Every rope used in hoisting or lowering materials or as a means suspension shall be of durable quality and adequate strength and free from patent defects.
- 26) Every crane driver or hoisting appliances operator shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding winch or give signals to the operator.
- 27) In case of every hoisting machine and of every chain ring, hook, shackle, swivel and pulley block used in hoisting or lowering or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above in this paragraph shall be plainly marked with safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any other gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
- 28) As regards Contractor's machine, the Contractor shall notify the safe working load of the machines to the Architect wherever he brings any machinery to site of work and get it verified by the Architect, if he so desires.
- 29) Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce, to the minimum risk of accidental descent of the load. Adequate precautions should be taken to reduce to the minimum, the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energized, insulating mass working apparels such as gloves, sleeves and boots and insulated tools as may be necessary should be provided. The workers shall not wear any rings, watches and carry key or other materials, which are good conductors of electricity.
- 30) All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe conditions and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.

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

To ensure effective enforcement of the Rules and Regulations relating to safety precautions, the arrangements made by the Contractor shall be open to inspection by the Welfare Officer, Resident Engineer or Safety Engineer of the Owner or their representatives.

Notwithstanding the above clauses, there is nothing in these to exempt the Contractor from the operations of any other act or rules in force in Republic of India.

## **52. Assistance to other Contractor**

Not Applicable.

### **53. Labour Licence**

The Contractor shall obtain work-permit & labour-licence for the number of people to be employed. The contractor shall ensure that the number does not exceed the limit, as specified in the licence, at any point of time. The contractor should ensure minimum wages and also the other statutory benefits to the workers.

### **54. Statutory Records & Safety Precautions**

The Contractor shall maintain attendance registers, muster-roll, record of ESIC & P.F. numbers for each worker including the supervisors. The contractor shall register each workman under Building Contract Labour Act with the labour department. The contractor shall submit the bills along with the P.F. & ESIC challan.

The Contractor shall ensure that all the workers follow the safety procedures. Contractor shall give them Personal protective Equipment / safety-kit for the safe working environment.

**Note: Time period will be taken as time from 08<sup>th</sup> day from the date of issue of letter of intent to time of final completion. However the defects mentioned before completion will have to be rectified by the Contractor at his expenses only after which final completion certificate will be given. Contractor's defects liability period will start after final completion certificate is issued.**

**List of Warranties to be submitted by the Contractor** (reference: Clause 38 of Special Conditions of Contract)

Following is the list of items for which WARRANTIES are to be submitted by the Contractor. This list is not complete and binding on the Contractor. Architect may request Contractor to submit WARRANTY for certain additional items of work depending upon site conditions, nature of the work, etc.

- 1) Water Proofing
- 2) Pest Control Treatment

**55.** Final check list of entire work will be issued to contractor after LOI and contractor will follow the same during execution of work.

### **56. Municipal / Town Planning approvals and No Objection Certificates (N.O.C.'s)**

- 56.1** The Contractor shall, at his own cost obtain the required N.O.C.'s from the Mumbai Municipal Corporation / Town Planning / Governmental Organizations whichever is applicable for obtaining completion certificate.
- 56.2** The NOCs and Approval shall be procured by the Contractor at his own cost and expense and these shall be deemed to be INCLUDED in the submitted quotation. No expenses shall be re-reimbursed.
- 56.3** In the event of the failure of the Contractor to procure the above approvals and NOCs within the stipulated time frames. The owner shall be at liberty to engage any other agency to carry out the work and ALL expenses incurred in the process shall be recovered from any payments due to the contractor or from the security deposit or retention amount held by the owner.
- 56.4** No virtual completion certificate for the work shall be issued to the Contractor unless all the above NOCs and approvals are procured by the Contractor.



## A) TECHNICAL SPECIFICATIONS:

**1.00** Unless otherwise specified, PWD specifications latest Volume I – VI with upto date correction slip shall be followed in general. Any additional item of work if taken up subsequently, shall also conform to the relevant PWD specifications mentioned above. Should there be any difference between description of items as given in the Schedule of Quantities, nomenclature and specifications for individual items of work (special conditions) and I.S. codes, work shall be got done in the following order of precedence :

- i) Description of items as given in Bill of Quantity.
- ii) Drawings
- iii) Technical Specifications, Special Conditions of Contract and General Conditions.
- iv) PWD specifications.
- v) I.S. Codes.
- vi) Architects decision in writing

In case of items not covered by the PWD specifications referred to above, or particular specifications attached, reference shall be made to appropriate latest I.S. codes and the decision of the Engineer-in-charge / Architect shall be final and binding on the Contractor.

1.01 All stone aggregate and stone ballast shall be hard stone variety to be obtained from approved quarries at Mumbai region, or any other source to be got approved by the Architect.

1.02 The river sand shall also be obtained from Vaitarna / Mahad region or any other source to be got approved by the Architect and shall be screened as required for satisfying the specifications. If the sand brought to site is dirty it must be washed in clean water.

1.03 Bricks shall be of crushing strength not less than 35 kg./sq.cm. The average water absorption of brick shall not be more than 20% of its dry weight when immersed in water for 24 hours.

1.04 The standard sectional weights considered for conversion of length of various sizes of M.S. bars and Tor steel bars into weight are as under :

Size (Diameter)	Weight Kg./m.	Size (Diameter) mm.	Weight Kg./m.
6.	0.222	25	3.853
8.	0.395	28	4.834
10.	0.617	32	6.313
12.	0.888	36	7.990
16.	1.578	40	9.865
18.	1.998	45	12.485
20.	2.467	50	15.413
22.	2.984		

- 1.05 Rate for every item of work to be done under this contract shall be for all lifts and leads, heights and depths, length and widths excepts when specially mentioned in the item otherwise and nothing extra will be paid on any account.

The rate for all items of work shall be unless clearly specified otherwise, includes cost of all labour, materials and other inputs involved in the execution of the item.

No extra payment shall be made for richer mix of concrete which flows from one member to another member during concreting of junction of beams, slabs etc.

The rate for all items in which use of cement is involved is inclusive of charges for curing.

- 1.06 The foundation trenches shall be kept free from water, while all the works below ground level are in progress. Nothing extra shall be paid for the same.

- 1.07 The masonry work shall be suitably recessed for provision of vertical electrical conduits and metal boxes according to the elevational drawings for electrical services. The horizontal electrical conduits shall generally be placed along joints of courses resorting to minimum cutting of masonry.

After the conduits and boxes are fixed by the Electrical Contractor the chase shall be closed neatly with cement mortar of same mix as that of plaster and nothing extra shall be paid for this. The Contractor shall have to work in co-operation with the Contractor for electrical work. No deduction for the recesses will be made in the measurement for masonry work and nothing extra shall be paid for making and closing the recessed chases.

- 1.08 All the materials equivalent to the specified one should be got approved by the Architects in writing before using such materials on the work.

- 1.09 The sanitary fittings, paints and other materials shall be obtained from one of the firms on the list of approved manufacturers of ISI mark. The materials shall be tested as per provision in relevant I.S. codes. The Contractors rates for items involving the use of the above materials shall be deemed to cover the cost of samples. Cost of packing, transportation and testing charges shall be borne by the Contractor.

- 1.10 The Contractor should submit a tentative programme of work within 15 days from the date of awarding the work.

- 1.11 The work of water supply, internal sanitary installations and drainage shall be carried out according to Municipal bye-laws. Nothing extra shall be paid to the Contractor for this. It shall be the Contractors sole responsibility to get the fixtures approved and the same connected to the Municipal main and delay in this regard shall be at Contractor's own risk and cost.

- 1.12 The tenderer should not quote unnecessary conditions contradicting the general conditions and particular specifications given in this tender, as such conditions apart from being not agreed to, can lead to rejection of the tender.

- 1.13 Any damage to work resulting from rains or from any other cause until the work is taken over by the department after completion shall be made good by the Contractor at his Own cost.

## **2.00 INTERNAL CEMENT PLASTER :**

- 2.01 Preparation of surface : The walls to be plastered to have all joints raked out to a depth of 5 / 10 mm. if not already done RCC surface shall be properly hacked to get good key to the plaster. All dust and oily matter if any shall be brushed and cleaned and the surface to be plastered shall be kept wet for 6 hours before plastering is commenced.
- 2.02 Proportion of mortar : Unless otherwise mentioned, the proportion of internal cement plaster for walls and ceiling shall be 1:4 (1 cement : 4 sand). Sand shall be from approved source, free from foreign matter and as applicable to internal wall and ceiling plastering. No more cement mortar shall be prepared than that can be used within half an hour.
- 2.03 Application of Plaster : The mortar shall be applied evenly with force on the surface to be plastered. The mortar surface shall be finished at once by being rubbed over with a trowel till the cement appears on the surface. All corners, angles and junctions shall be truly vertical and horizontal as the case may be, carefully and neatly finished. Rounding of corners and junctions where required shall be done without extra charge. The mortar shall adhere to the surface intimately when set and there shall be no hollow sound when struck. The thickness of plaster shall be minimum 12 mm. over the proudest part of the surface of brick wall and RCC surfaces and 20 mm. over stone walls. Plaster for ceiling shall not be more than 8 mm.
- 2.04 When neat cement finish is specified over the plaster surface, a coat of pure Portland cement slurry 1.5 mm. thick shall be applied and well rubbed to the plastered surface while the plaster surface itself is fresh.
- 2.05 When no finish is specified, the plastered surface shall be rubbed well to an even plane with a wooden float for external surface and finished smooth with a steel trowel for internal surface.
- 2.06 Rates to include : Apart from other factors mentioned elsewhere in this contract, rates for the item of plaster shall include for the following :
- (i) Erecting, dismantling and removing the scaffolding.
  - (ii) Preparing the surface to receive the plaster.
  - (iii) Providing cement plaster of the specified average thickness.
  - (iv) All labour, materials, use of tools and equipment to complete the plastering as per specifications.
  - (v) Curing for 14 days.
  - (vi) Any moulding work is shown on the drawings or as specified unless : separately provided in the tender.
  - (vii) Plaster work in jambs, arises, rounded angles, fair edges, narrow returns, quirks, `V' joints, splays, drip mouldings, making good to metal frames, junctions with skirting or dado, narrow widths and small quantities, marking good around pipes, conduits, timbers, sills, brackets, railings etc. and making good after all the Sub-Contractors or nominated Sub-Contractors have done their work.
  - (viii) Neeru or cement finish when specified in the item.

2.07 Mode of Measurements: Plaster shall be measured in Square Meters.

(a) Walls:

(i) The measurements of wall plastering shall be taken between the walls or partitions (the dimensions before plastering shall be taken) for the length, and from the top of floor skirting / dado (as the case may be) to the ceiling for the height.

(ii) Deductions:

(A) For jambs, soffits sills etc. and for opening not exceeding 0.5 sq.mt. each in area, ends of joists, beams, posts, girders, steps etc. not exceeding 0.5 Sq.mt. each in area and openings not exceeding 3 Sq.mt. each, deductions and additions shall be made in the following manner.

(a) No deduction shall be made for ends of joists, beams, posts etc. and openings not exceeding 0.5 sq.mt. each, and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings nor for finishing the plaster around ends of joists, beams, posts etc.

(b) Deductions for openings exceeding 0.5 sq.mt. but not exceeding 3 sq.mt. each shall be made as follows and no addition shall be made for recess, jambs, soffits, sills etc. of these openings :

(1) When both faces of wall are plastered with the same plaster deduction shall be made for one face only.

(2) When two faces of wall are plastered with different plasters or if one face is plastered and the other pointed, deduction shall be made from the plaster or pointing out the side of frames for doors, windows etc. on which the width of reveals is less than that on the other side, but no deduction shall be made on the other side.

B. In case of openings of area above 3 Sq.mt. each, deductions shall be made for the openings but jambs, soffits and sills shall be measured.

(b) Ceiling:

(i) Ceiling shall be measured between the walls for partitions and the dimensions before plastering shall be taken.

(ii) Ceiling with projected beams shall be measured over beams and the plastered sides of beams shall be measured and added to plastering on ceilings.

### 3.0 EXTERNAL PLASTER.

3.0 The external plaster shall be applied in two coats and finished Sand faced. All the precautions such as covering windows by plywood / tin sheet and tying stitched Hessian to external face of the scaffolding shall be taken. The debris shall be taken down and stacked or carted away as directed.

The existing plaster if cracked, damaged or spalled, the loose and damaged plaster shall be broken and removed carefully by chipping or by light chiseling, so as not to disturb the sound concrete inside or so as not to break the brick wall.

If the plaster is to be applied on repaired concrete surface, the same shall be made rough to provide a key to the plaster. If brickwork is to be plastered, the joints shall be cracked out at least 12 mm deep and cleaned.

If the existing masonry is not maintained in proper line & level or the masonry is caved while removing of external plaster, the same shall be provided with dash coat in cement sand (1:4) to maintain the external original wall surface.

The surface to be plastered shall be cleaned of loose materials, thoroughly watered and kept adequately wet during plastering.

If plaster is done in patches, approved bond coat must be applied on the edges of old plaster in contact with new plaster. The external plaster shall be applied in two coats.

- (a). The first coat is made of 12 mm thick mortar in cement sand (1:4) with water cement ratio not exceeding 0.55. The workability and imperviousness of mortar is achieved by a addition of super plasticizers/waterproofing & polypropylene fibers(125 Grams/bag or as per manufacturer specification) . The first coat is made rough to provide a key to the second coat is applied & shall not be allowed to dry for at least Five days.
- (b). The Second coat shall be a thin layer of 8 mm thick mortar with cement: sand (1:4) with addition of super plasticizers/waterproofing material & polypropylene fibers. Precaution shall be taken that water cement ratio not exceeding 0.55. The workability and imperviousness of mortar is achieved by a addition of super plasticisers& polypropylene fibers (125 Grams/bag as per manufacturer specification). Finishing to plaster with granular texture by a rubber sponge. The final line, level and plane shall match with the existing unbroken plaster.
- (c). Second coat shall be kept moist by watering and shall not be allowed to dry for at least Ten days.

Measurement: - The plaster shall be measured as per IS 1200 mode of measurement.

#### **4.0 CERAMIC TILES / GLAZED TILES IN FLOORING & DADO :**

##### 4.01 Flooring:

##### 4.1.1 Tiles:

Ceramic Tiles including special shall be of approved make and quality and shall conform to IS: 777 in all respects. Samples of tiles shall be got approved by the Engineer-in-charge who will keep them in his office for verification as to whether the materials brought for use conform to the approved samples. Ceramic tiles shall be of the size as specified in BOQ.

##### 4.1.2 Mortar Bedding:

Cement sand mortar for bedding shall be prepared in a mortar mill. The amount of water added shall be minimum necessary to give just sufficient plasticity for laying and satisfactory bedding. Care shall be taken in preparing the mortar to ensure that there are no hard lumps that would interfere with the even bedding of the tiles. Before spreading mortar, sub-floor or base shall be cleaned off all

dirt, scum, loose materials and laitance if any, by scrubbing with coir or steel wire brush or by hacking if necessary and then well wetted without forming any pools of water on the surface. Before laying the mortar, the sub-grade shall be got approved by the Engineer-in-charge. In case of RCC floors, the top shall be left a little rough. All point of level for the finished paving surface shall be marked out. The mortar shall then be evenly and smoothly spread over the base by the use of screed battens only over so much area as well as covered with tiles before the setting of the mortar. The thickness of the mortar bed shall not be less than 15 mm. and not more than 25 mm. Unless otherwise specified, the proportion of mortar bedding shall be C.M. 1:4.

Sand for mortar bedding shall be from approved source and shall conform to I.S. no. 2116-1965 as applicable to unreinforced masonry work.

#### 4.1.3 Laying finishing, curing and cleaning :

The tiles before laying shall be soaked in water for atleast 2 hours. Tiles which are fixed in the floor adjoining the wall shall be so arranged that the surface of the round edge tiles shall correspond to the skirting or dado. Neat cement grout of honey like consistency shall be spread over the bedding mortar just to cover so much area as can be tiled within half an hour. The edges of the tiles shall be smeared with neat white cement slurry and fixed in this grout one after the other each tile being well pressed and gently tapped with a wooden mallet till it is properly bedded and in level with the adjoining tiles. There shall be no hollows in bed or joints shall be kept as close as possible and in straight lines. The joints between the tiles shall not exceed 1.5 mm. wide. After fixing the tiles finally, in an even plane, the flooring shall be covered with wet saw dust. The tile flooring shall be cured for 14 days.

After the tiles have been laid in a room or the day's fixing work is completed the surplus cement grout that may have come out of the joints shall be cleaned off before it sets. Once the floor has set the floor shall be carefully washed, cleaned and dried. When dry, the floor shall be covered with oil free dry saw dust which shall be removed only after completion of the construction work and just before the floor is occupied.

#### 4.1.4 Rates to include:

Apart from other factors mentioned elsewhere in this contract, the Contractors rates quoted shall include for the following :

- i) Cleaning the base and providing and laying bedding mortar and levelling.
- ii) Providing and fixing the tiles including all specials like round edges, corner cups, angles etc. in neat cement float over the bedding mortar.
- iii) Filling the joints of tiles with neat white cement slurry.
- iv) Finishing, curing and cleaning.
- v) All labour materials and use of tools for carrying out the item as specified above.
- vi) In dado keystone should be pre-set on the back side of the tiles as instructed by the Engineer-in-charge.

#### 4.1.5 Mode of Measurement: Measurement for flooring tiles shall be square meters as provided.

### **5.1.0 Ceramic Tiles Dado :**

(a) Tiles:

Ceramic tiles shall be same as described under Ceramic tiles flooring.

(b) Mortar backing:

All the joints in the face work shall be raked out to a depth equal to not less than the width of the joints or as directed by the Engineer-in-charge. Concrete surface shall be properly hacked. All dirt, dust, oil or any other material that might interfere with satisfactory bond shall be removed. The surface shall be cleaned and scrubbed with fresh water and kept wet for 6 hours prior to applying and hacking mortar. The dado work shall not be commenced unless the preparatory work is passed by the Engineer-in-charge. The proportion of mortar for backing shall be 1:3 cement mortar. Sand in mortar bedding shall be from approved source, as applicable to internal wall and ceiling, plastering and external wall plastering. The thickness of mortar backing shall not be less than 12 mm. not more than 20 mm.

(c) Fixing dado tiles:

Dado work shall be done only after fixing tiles on the floor key stone / chips are to be fixed at the back of tile with Araldite or any other epoxy based synthetic solution as per instructions of the Engineer-in-charge. The Ceramic tiles shall be soaked in water for atleast 2 hours before being used for dado work.

Tiles shall be fixed when the cushioning mortar is still plastic and before it gets very stiff. The back of tiles shall be covered with a thin layer of neat cement paste and the tile shall then be pressed in the mortar and gently tapped against the wall with a wooden mallet. The fixing shall be done from bottom of wall upwards without any hollows in the bed or joints. Each tile shall be fixed as close as possible to the one adjoining. The tiles shall be jointed with white cement slurry. Any difference in the thickness of tiles shall be evened out in cushioning mortar so that all tiles faces are in one vertical plane. The joints between the tiles shall not exceed 1.5 mm. in width and they shall be uniform. While fixing tiles in dado work care shall be taken to break joints vertically. After fixing the dado, they shall be kept continuously wet for 14 days. If doors, windows, or other openings are located within the dado area, the sills, jambs, angles etc. shall be provided with white ceramic tiles and appropriate specials according to the foregoing specification and such tiles area shall be measured not alongwith the dado.

(d) Cleaning:

After the tiles have been fixed the surplus cement grout that may have come out of the joints shall be cleaned off before it sets. After the complete curing the dado or skirting work shall be washed thoroughly clean.

### **5.1.2 Rates to include:**

Apart from other factors mentioned elsewhere in this contract the rates for the item of dado or skirting shall include the following:

i) Backing mortar.

ii) Providing and fixing tiles including all specials like round edges angles, capping etc. in neat cement float over backing mortar.

iii) Jointing of the tiles with white cement slurry.

- iv) Curing
- v) Cleaning.
- vi) All labour material, use of tools and equipments for carrying out the items as specified above.

5.1.3 Mode of Measurements: Dado shall be measured in square meters as provided.

## 6.0 SPECIFICATIONS FOR GENERAL STRUCTURAL REPAIRS

- 6.1. This covers the general requirements of items involved in Structural repairs viz. Breaking and chiseling. Surface preparation and treatment: restoration and curing etc. Since there is an element of judgment and actual extent of deterioration involved, definite instructions of these can be given only at site during actual execution.

All repairs to the affected Structural members must be preceded with a proper support system. This structural support system shall be worked out for various members. Necessary suitable propping is required to be provided to ensure release of loads on the treated members. The Contractor shall compulsorily seek prior approval of the intended support system from the Consultants. However the ultimate responsibility of the support system rests with the Contractor.

### 6.2 Chiseling of concrete surface :-

The surface of the reinforced concrete element viz. Column, beam, slab, wall etc. will be exposed using chisel and hammer carefully up to the reinforcement rods. All corrosion on the rods shall be physically removed by chiseling in order to further expose them. Where there are deep cracks in the concrete element, special precaution will be taken while chiseling so as to avoid further distress to the element. Steel rods or mesh may also be required to be removed along with chiseling. The chiseled surface shall be cleaned with water and wire brush.

### 6.3. Breaking of plaster:-

The coats of plaster over concrete and masonry wall will be removed carefully with chisel and hammer such that the masonry / concrete element underneath is not damaged. All coats of the plaster shall be removed along with visible traces of cement / lime and the surface thoroughly cleaned and hacked where required, receiving new coats of plaster. For ease and neatness in working, the edges of the exposed portions shall be straightened.

Measurement for breaking plaster shall be taken as the actual area exposed projected to the original surface of the element. Where the plaster is removed together with the chiseling or breaking of concrete no measurements shall be taken separately for this.

### 6.4. Breaking of reinforced concrete:-

Part of full reinforced concrete element viz. Slab beam, wall, column, fin, etc. will be broken carefully using chisel and hammer. For neatness of work, the edges of the broken portion shall be fairly straight. The broken surface shall be chiseled straight and cleaned so as to facilitate bond with new mortar /concrete. All highly deteriorated steel reinforcement shall be provided with extra steel as directed. Where insufficient lap length for new reinforcement is available, additional



concrete may have to be broken in order to expose adequate length of the existing reinforcement may be directed.

Measurement shall be taken as actual volume of concrete broken with the steel based on the original dimension of the concrete element.

**6.5. Application of Rust remover:-**

The entire surface of the exposed reinforced concrete element should be thoroughly cleaned. The reinforcement rods must be thoroughly cleaned using a chisel, scrapper, wire brush and emery paper. The rust remover is to be applied carefully on the exposed dry surfaces of the reinforcement rods with a brush. The rust remover must be applied as per the manufacture's specification. Allow air-drying of 24 hours before any further treatment is done on this surface after cleaning.

Measurement shall be taken of the entire chiseled area where reinforcement rods are exposed and rust remover applied or Actual quantity used (see BOQ)

**6.6. Scaffolding:-**

Scaffolding shall be safe to erect. Under no circumstances will holes be allowed to be made in the walls to support the scaffoldings. Tying of scaffolding to the old pipes of the building will be disallowed. Temporary props between balconies or chajjas to give lateral support to the scaffolding will be permitted where feasible.

**6.7. Sand:-**

Sand for concrete and plaster mortar shall be only river sand of proper gradation. Silt and other impurities must not exceed 4%. If it is more than the same should be thoroughly washed to reduce the silt contents at site. Improper sand shall be immediately removed from the site and the decision of the Consultant shall be final.

**6.8. Curing:-**

New concrete shall be maintained damp for a period of 2 weeks minimum. New plaster shall be cured a latest 3 times a day for a period not less than 8 days. The 1<sup>st</sup> coat of plaster shall be cured for a period not less than 8 days. If required the surface shall be maintained damp using a wet Hessian cloth.

## **APPROVED MAKES OF MATERIALS- CIVIL**

**NOTE :**

1. All materials shall be of first quality as produced by the manufacturer. This is particularly applicable to glazed and ceramic tiles, paints and sanitary fittings.
2. In case it is established that brands specified below or not available in the market or the delivery period is too long; equivalent brands may be used after approval by the Architects, in which case contractor shall produce all necessary documents such as catalogs, certificates etc., to prove their suitability.
3. Approved samples shall be kept at site in the office of the clerk-of-works.
4. Where specifically called for, warranties shall be obtained from the manufacturers in favor of the owner.

<b>No.</b>	<b>MATERIAL</b>	<b>APPROVED MAKE / BRAND</b>
1.	Cement (53 grade)	Ultratech, A.C.C., Birla shakti, Ambuja
2.	Cement (43 grade)	Ultratech, A.C.C., Birla shakti, Ambuja
<b>3.</b>	<b>PPC</b>	Ultratech, A.C.C., Birla shakti, Ambuja
4.	White cement	Birla, J.K.
5.	Putty	Birla White / JK White
6.	Cement and mixtures (Plasticizers hardness, retardant etc.)	Fosroc, Sikaqualcrete, Bauchemie
7.	High yield strength deformed bar	As specified, make Rajouri / Kalika / Rajlakshmi
8.	Steel Sections	Jindal, Hindustan & Tata.
9.	Anti termite treatment	Dursban (TC) (Chlorpyifos 20% EC)
10.	Glazed tiles	1 <sup>st</sup> quality Nitco / Kajaria / Johnson / Euro or equivalent.
11.	Ceramic Tiles	Kajaria / Nitco/ Euro / Johnson
12.	Kotah / Granite / Rough Shahabad flooring stone	Export Quality / As approved.
13.	Katni Marble	Export Quality / As approved.
14.	Flush Doors	Anchor, National, Tower, Classic
15.	Commercial Plywood	Anchor, Euro, National, Century, Greenply.

16.	Marine Plywood	Anchor, Euro, National, Century, Greenply.
17.	PVC Doors	Eureka / Sintex / Rajashree
18.	Laminates	Formica, Royal Touch, Marino, Greenlam
19.	Aluminium Sections	Jindal, Hindalco
20.	Glazing (Float Glass)	Modi Float, Triveni, Asahi, Saint Gobain
21.	SPIDER FITTINGS	Delco, Dorma, or equivalent.
22.	Floor springs/ Lock patch	Enox, Hardwyl,
23.	Silicon	dowcorning, Ge make
24.	Waterproofing Compounds	Dr.Fixit., Pedilite, Impermo.
25.	Paints	Asian / Berger / Nerolac / Dulux
26.	Waterproof cement paint	Snowcem
27.	Asbestos Roof Sheets	Everest, Charminar
28.	Expansion bolts	Fischer / Hilti
29.	Acp work (elevation treatment )-fittings	Euro bond, Timex
30.	Vitrified tiles	Kajaria / Nitco/ Euro / Johnson
31.	Light Weight Bricks	Ecolite, U-crete, Ultratech, Flyo-crete.
32.	Gypsum –finished item	Gypsum india,
33.	Metacolour sheet	Tata, CRIL

Any material other than list should need to get approved from University engineer and architect. Material sent for approval must be good standard and quality.

## **STANDARDS OF CEMENT CONSUMPTION**

Sr. No.	Item	Unit	Requirement in bags
	<b>PLAIN CEMENT CONCRETE</b>		
1.	Cement concrete (1:2:4)	Cum.	5.84
2.	Cement Concrete (1:3:6)	Cum.	4.05
3.	Cement Concrete (1:4:8)	Cum.	3.20
4.	Cement concrete (1:5:10)	Cum.	2.52
	<b>REINFORCED CEMENT CONCRETE (as per mixed design)</b>		
5.	Cement concrete M-15	Cum	Minimum As per IS Code / Design Mix
6.	Cement concrete M-20	Cum	Minimum As per IS Code / Design Mix
7.	Cement concrete M-25	Cum	Minimum As per IS Code / Design Mix
8.	Cement concrete M-30	Cum	Minimum As per IS Code / Design Mix
9.	Cement concrete M-35	Cum	Minimum As per IS Code / Design Mix
	<b>BRICK WORK</b>		
10.	B.B. Masonry in C.M. 1:6	cum.	1.44
11.	B.B. Masonry in C.M. 1:8 proportion	Cum.	1.13
12.	Half brick masonry in C.M. 1:3 proportion	Sqm.	0.17
13.	150 mm thick brick masonry	Sqm.	0.22
	MASONRY		
14.	U.C.R.S. Masonry in C.M.1:6 proportion	Cum	1.77
15.	C.R.S. Masonry in C.M. 1:5 proportion	Cum	1.80
16.	C.R.S. masonry in C.M. 1:6 proportion	Cum	1.50
	<b>DAMP PROOF COURSE</b>		
17.	Providing & laying damp proof course 50 mm thick in (1:2:4)	Sqm.	0.35
18.	Finishing the terrace slab 20 mm thick in C.M. thick in 1:3 proportion	Sqm.	0.20
19.	Providing water proofing to W.C. and bath	Sqm.	0.276
20.	Providing water proofing in W.C. and bath including brick bat coba.	Cum.	4.00
21.	Box Type Water proofing	Sqm.	0.50
	<b>PLASTERING</b>		
22.	Providing internal cement plaster 6 mm thick single coat in C.M. 1:4	Sqm.	0.045
23.	Providing internal cement plaster 6 mm thick single coat in C.M. 1:3	Sqm.	0.07
24.	Providing cement plaster 12 mm thick in single coat in C.M. 1:5	Sqm.	0.08
25.	Providing cement plaster 12 mm thick in single coat in C.M. 1:4	Sqm.	0.10
26.	Providing cement plaster 12 mm thick in single coat in C.M. 1:3	Sqm.	0.12
27.	Providing cement plaster 20 mm thick in	Sqm.	0.19

	single coat in C.M. 1:3		
28.	Providing cement plaster 20 mm thick in single coat in C.M. 1:5	Sqm.	0.13
29.	Providing cement plaster 20 mm thick in single coat in C.M. 1:5 proportion	Sqm.	0.13
30.	Providing cement plaster 20 mm thick in single coat in C.M. 1:4 proportion	Sqm.	0.15
31.	Providing cement plaster 20 mm thick in single coat in C.M. 1:3 proportion	Sqm.	0.19
32.	Providing cement plaster 25 mm thick in two coat in C.M. 1:4 proportion	Sqm.	0.22
33.	Sand faced plaster in two coats	Sqm.	0.22
34.	Rough cast plaster in two coats in C.M. 1:4 proportion	Sqm.	0.22
35.	Providing flush groove pointing in C.M. 1:3 for brick work	Sqm.	0.03
36.	Providing flush groove pointing in to stone masonry in C.M. 1:3 proportion	Sqm.	0.025
37.	Providing tuck pointing with C.M. 1:3 prop	Sqm.	0.05
38.	Providing vee pointing for stone masonry in CM 1:3	Sqm.	0.03
39.	Providing fine finish 1.5 mm, thick over green surface	Sqm.	0.044
<b>PAVING, FLOORING FINISHING AND DADO</b>			
40.	Providing and laying R.S.H. flooring 25mm to 30mm on bed of 1:6 C.M. and pointing C.M. 1:3	Sqm	0.135
41.	Providing and laying R.S.H. flooring 40mm to 50mm on bed of 1:6 C.M. and pointing C.M. 1:3	Sqm	0.14
42.	Providing and laying R.S.H. flooring 50mm to 60mm on bed of 1:6 C.M. and pointing C.M. 1:3	Sqm	0.150
43.	Providing and laying polished Shahabad stone flooring 25mm to 30 mm thick on bed 1:6 proportion	Sqm.	0.13
44.	Providing and laying polished Tandur stone flooring 25mm to 30 mm thick on bed 1:6 proportion	Sqm.	0.130
45.	Providing and laying polished Kotah stone flooring 25mm to 30 mm thick on bed 1:6 proportion	sqm.	0.130
46.	Providing and laying skirting and dado of polished Shahabad stone 25mm to 30 mm with 1:4 C.M.	Sqm	0.18
47.	Providing and laying skirting of polished Tandur stone 25mm to 30 mm with 1:4 C.M.	Sqm.	0.18
48.	Providing & laying C.C. flooring 40 mm thick with C.C. 1:1½:3	Sqm.	0.36
49.	Providing & laying C.C. flooring 50 mm thick with C.C. 1:1½:4	Sqm.	0.44
50.	Providing and laying flooring of plain cement tiles of 25 x 25 mm on bed for flooring	Sqm.	0.15
51.	Providing and laying plain cement tiles for	Sqm.	0.18

	dado and skirting 1:4 proportion		
52.	Providing and laying coloured tiles 25 x 25 mm size	Sqm.	0.15
53.	Providing and laying for coloured tiles for dado skirting	Sqm.	0.18
54.	Providing and laying white glazed tiles for flooring	Sqm.	0.22
55.	Providing and laying glazed tiles for dado and skirting	Sqm.	0.21
56.	Providing and laying gray cement base mosaic tiles for flooring 25 x 25 cm	Sqm.	0.15
57.	Providing and laying for dado and skirting cement base mosaic tiles 25 x 25 cm	Sqm.	0.18
58.	Providing and laying machine cut white Makrana flooring	Sqm.	0.17
59.	Providing and laying is situ marble mosaic tiles 10 mm thick		
	Gray Cement	Sqm.	00.200
	White Cement	Sqm.	0.130
60.	Providing and laying is situ dado tiles 10 mm thick		
	Gray Cement	Sqm	0.20
	White Cement	Sqm	0.08
61.	Providing & laying required position flooring of broken china	Sqm.	0.30
62.	Providing and laying polished shahabad stone 25 mm to 30 mm thick for tread and riser	Sqm.	0.18

## **B) TECHNICAL SPECIFICATIONS FOR THE PLUMBING & SANITATION**

### **1.1 COMPLETENESS OF CONTRACT:**

- 1.1.1 If there is any description between specification BOQ, drawings, more straight would be allow.
- 1.1.2 Contractor shall be deemed to have carefully examined the specifications, general conditions and tender drawings, etc. and to have fully assessed and have satisfied himself as to the nature and character of the work to be executed, site conditions and other relevant matters and details.
- 1.1.3 Contractor shall provide all item whether specifically mentioned or not but which are usual or require to make a complete working system and ensure safe and satisfactory operation, apparatus, appliances, with the intent or purpose of these specifications. In case of doubt or doubts, the tenderer shall clearly point out his understanding of the specifications, before award of contract.
- 1.1.4 Contractor shall study the site conditions before tendering and shall satisfy himself before submitting his Tender as to the nature of the ground and subsoil, form and nature of the site, the hydrological, climatic and physical conditions at the site the quantities and nature of the work and the materials necessary for the completion of the work, the means of access to the site, the proneness of site to floods as found in the past also the accommodation required by him, and in general, shall himself obtain all necessary information as to the risks, contingencies, and other circumstances, which may influence or affect his Tender. The contractor has to include for all requirements such as scaffolding, making opening, grouting, welding jointing materials, gaskets, nuts & bolts, screws, paintings, including making good the opening and chases in walls, slabs, etc. in the price quoted.
- 1.1.5 Unless otherwise agreed in writing, the specifications, drawings and general conditions etc. form the contract documents and all clauses and conditions specified by the contractor stands null and void.
- 1.1.6 The quantities mentioned hereinafter are approximate and subject to variation without violating the contract.
- 1.1.7 Contractor has to provide special fittings like safety valves, pressure gauges etc, as necessary and should specify the Brand names and rating offered as part of the prices quoted.

### **1.2 REFERENCES:**

- 1.2.1 References to standards, codes, specifications, recommendations shall mean the latest edition of such publications adopted and published at date of invitation to submit proposals.

### **1.3 DRAWINGS AND LITERATURE :**

- 1.3.1 Before proceeding with the work, the Contractor shall submit for approval general layout and working drawings as are necessary to demonstrate fully that all parts of the materials to be furnished will conform to the specifications.
- 1.3.2 Within 15 days of acceptance of the Tender, the Contractor shall furnish three (3) prints of layout, assembly and erection drawings for approval. If any modifications are proposed by the Owner/Consultant, three further prints of the modified drawings shall be submitted. No modifications shall be made in a drawing after it has been approved by the Consultant / Owner, without prior consent.
- 1.3.3 Approval by the Owner / Consultant of the drawings shall not relieve the Contractor of any part of his obligation to meet all the requirements of the Contract or the responsibility for and pay for all alterations to the works due to discrepancies or omissions in the drawings or other particulars supplied by him, whether such drawings have been approved or not.
- 1.3.4 After execution of works, contractors shall furnish a set of original tracings of as-built drawings incorporating the modifications if any during execution.

### **1.4 INSPECTION & TESTING – AT CONTRACTOR’S PREMISES :**

- 1.4.1 Owner or its authorized representatives shall have full power to inspect drawings of any portion of the work or examine the materials and workmanship of the plant at the Contractor’s works or at any place from which the material is obtained. Acceptance of any material proves satisfactory but shall have to be paid by the Contractor in case the material or work is found defective or of inferior quality.

### **1.5 MATERIAL AVAILABILITY:**

- 1.5.1 In case of non-availability of any particular material the Contractor shall procure next best available material and install the same at no extra cost to the owner, after written approval of the Owner through the consultant. Final decision on same would be taken by owner.
- 1.5.2 Materials & Samples- The materials / products used on the works shall be one of the approved make / brands out of list of manufacturers / brands / makes given in the tender document. The contractor shall submit sample / specimens out of approved makes of materials / products to the project manager for prior approval. In exceptional circumstances, project manager may allow alternate makes / brands of products / materials at his sole discretion. The final choice of brand / make shall remain with the project manager whose decision shall be final & binding and nothing extra on this account shall be payable to the contractor.



## **2.0 BASIS OF TENDERING:**

- 2.1 The tender shall be complete covering the entire work of system and ancillary services including all building system and outside utilities as shown and specified.
- 2.2 The contractor shall consult specification, drawings and the schedule of quantities which gives an idea of these systems.

## **3.0 DRAWING:**

- 3.1 The drawing accompanying these specifications are design drawings and generally are schematic. They do not show every offset, To cross Y's junction coupling/Flanges/ disconnection arrangements/ etc. which are required for installation in the space provided. The Contractor shall follow the drawings, as closely as is practicable and install additional bend, elbows or junctions, etc, where required to suit local site conditions, from actual site measurement taken, subject to approval and without additional cost to the Owner. The Consultant reserves the right to make any reasonable change in outlet location prior to roughing in. All connection and appurtenances, shown in the various diagrams, shall be included in the finished job
- 3.2 It shall be the Contractor's responsibility to co-ordinate with all other agencies at site, for proper and adequate installation clearance.

## **4.0 ORDINANCE, CODE & REGULATIONS**

- 4.1 It shall be the Contractor's responsibility to provide complete system, as indicated as and as required by applicable code. All clarifications and modifications, which have to be cleared with the appropriate, shall be carried out without additional cost, to Owner. Unless otherwise approved, the product shall bear the mark of approval of Indian standards, as required, the government bodies, code and ordinances of local authorities whose permissions are required for occupation of the building on completion.

## **5.0 UPVC PIPES FOR SEWAGE SYSTEM**

### **5.1 SOIL, WASTE, VENT AND ANTI SIPHONAGE PIPES & FITTING:**

All soil, waste, rain water pipes vent & anti siphon pipes or within plumbing shafts, vertical run shall be SWR UPVC of class B type conforming to IS No 13592. All UPVC pipes & fittings shall be of best approved make. The pipes should be of uniform thickness and they shall not be brittle but withstand for weather conditions. The fittings shall be of standard thickness. The pipes shall be installed and fixed securely to the wall with UPVC saddles away from wall and also should have threaded door cap for inspection incase of removal of chocked waste matter. The jointing of pipes & fittings should be with rubber rings for vertical and solvent cement for horizontal.

The support brackets and hangers and other supports, their spacing shall be as described under point no 8.

Also pipelines and fixtures in sunken portion should be properly encased at the locations and intervals as per requirements and as directed by Engineer in Charge / Project Manager.

All soil pipes shall be extended at least 900 mm above parapet top.

## 5.2 MATERIAL AND FIXING

All soil, waste and anti-siphon pipes and fittings used within sunken floor areas or within plumbing shafts vertical run, shall be of the best approved Indian make of quality truly cylindrical and of uniform thickness. They shall not be brittle but shall allow for heavy cutting, and drilling, and shall not be less than diameter, mentioned in the schedule of quantities and shall be fixed away from the wall on special saddles. It will protect the brick wall from any leakage from vertical pipes.

## 5.3 JOINTS:

Jointing shall be carried out with rubber rings or solvent cement. The spigot of the pipe must be forced well home into socket and must be entered so that the joint may be of even thickness all rounding.

5.4 Supports, pedestals, and base for inspection chambers, gully traps and pipes shall be in 1:3:6 cement mix.

5.5 Pipe sleeves and insert, etc. through RCC walls either external or internal shall be of G.I or M.S., provided with water bar flange or as per the details given in drawing.

5.6 During installation opening of pipe shall be plugged with wood cut into required shape and wrapped with gunny bags and maintained free from dirt getting in.

5.7 The size of branch waste for difference fittings shall be as follows:

Lavatory Basin	40 mm (1 ½)"
Urinal	40 mm (1 ½)"
Sink	40 mm (1 ½)"
Nahani trap	80 mm (3")
Special floor trap	80 or 100 mm as required with Grating as specified.

5.8 Rainwater flushing shall be made as per details with rectangular shape grating and extension piece as specified.

5.9 All roof drain pipes and fittings shall be SWR UPVC of class A type conforming to I.S. **13592**. This shall apply to pipes outside building or within the building or inside separate shafts.

5.10 The floor traps for toilet blocks shall be PVC with stainless steel grating, and traps shall have ISI stamping.

5.11 Bathroom C.P. grating shall be of boiled down design out of heavy cast brass with the chromium plating of the best approved standard.

5.12 The connection between the main pipe and branch pipes shall be made by using branches and bends with access doors for cleaning.

- 5.13 Floor traps shall be provided with 75 mm dia. Puff pipe where the length of the waste is more than 1.80 meter or the floor trap is connected to waste stack through bends. These Puff pipe connections shall not be measured separately and shall be deemed to have been allowed for, while quoting.
- 5.14 The waste from lavatories kitchen, basins, sinks, baths and other floor traps shall be separately connected to respective waste stack of upper floors. The waste stack of lavatories will be connected directly to manhole while the waste stack of others shall be separately discharged over gully trap.
- 5.15 The cost of fittings is to be covered under rate of pipe and hence payment will be made considering linear measurement of pipe only in Meter.
- 5.16 Hydrostatic Test
- 1 The purpose of this test is to locate any leaks at the joints and correct them prior to putting system into operation It is important to Visually inspect the joints.
  - 2 To isolate each floor or section being tested, test plugs are inserted through test fittings in the stack. All other opening should be plugged or capped with test caps. Fill the system to be tested with water at the highest point. All entrapped air in the system should be expelled.
  - 3 Hydrostatic pressure of  $0.5\text{kg/cm}^2$  (5M) should be applied. Fifteen minutes is suitable time for the test.
  - 4 Once the stack is filled to desired level of water column, a visual inspection of the section being tested should be made to check the leaks.
  - 5 If the leak is found, it should be removed and section retested.

## **6.0 C.P.V.C & U.P.V.C. PIPES & FITTINGS:**

- 6.1 All supply pipes shall be of approved make of I.S. quality or equivalent to the requirements of the local authorities or as specified in the schedule and conforming to IS.
- The support brackets and hangers and other supports, their spacing shall be as described under point no 8.
- 6.2 The joints shall be distributed in strict conformity with regulations. They shall be away from of the wall surface by at least 50 mm by means of support stand/saddles. All control valves, stop cocks, ball valves; bib-cocks shall be of the best approved quality procurable of heavy cast drawn brass. All branches shall have individual control arrangements with full way valves, to enable regulations and cut off as required. They shall be of best Indian manufacture specified in the Schedule of quantities and of stampings and bear I.S.I. markings. All fittings shall be of approved quality make.
- 6.2.1 The water tightness of joints shall be assured by approved methods of jointing material
- 6.2.2 Approved Solvent Cement shall be used to make water tight joints.

### 6.3 INTERNAL WORK

For internal work C.P.V.C.(SDR – 11) pipes and fittings outside the walls shall be fixed either visible by means of approved pattern holder-bat clamps, keeping the pipe clear off the plastered wall by 15 mm for cold water and 15 mm for hot water. Wherever indicated on the drawings or as directed by the Consultants, chasing of walls shall be done to embed pipes. Regulation and National Building Code. All embedded hot water pipes are to be painted and coated and wrapped as above and then wrapped with three ply asbestos twine wrapped tightly around the pipe.

### 6.4 Alternative Materials:

In case the CPVC pipes are changed to G.I. / Kitec pipes if desired by the owner / employer the work is to be executed all as per manufacturer's specifications and in workmanlike manner.

### 6.5 TESTING:

All CPVC / G.I. Pipes and fittings are to be tested to a pressure of 125% of its designed working pressure one hour to ensure that pipes have proper joint and that proper materials have been used in jointing. All leaky joints must be made leak proof by redoing at Contractors expense.

6.6 All water fittings shall be of approved make and shall in all respects comply with the latest Indian Standard Specification I.S. The brass fittings shall be fixed in the pipe line in a workman like manner. Care shall be taken to see that joints shall sustain the above Hydraulic Test. The defective fittings and the joints shall be repaired, redone or replaced at Contractors expense.

6.7 Whenever a CPVC pipe crosses a floor, then a CPVC sleeve with the floor should be provided .On no account should lime or lime concrete come in direct contact with CPVC pipe and fittings. This important condition shall not be waived under any circumstances.

6.8 The cost of fittings, Brass fittings for connection of Valves, and other CP fittings is to be covered under rate of pipe and hence payment will be made considering linear measurement of pipe only in Meter.

No extra payment for any type of fitting will be made.

## **7.00 SANITARY FITTINGS:**

All sanitary fittings shall be specified in Schedule of Quantities and approved by the Consultants / Owner. The same may also be procured by the Owner and issued for fixing, if so desired.

### 7.1 GENERAL

All setting and bedding of sanitary fittings shall be done carefully to suit the required levels. Mortar drops, paint slashes etc. shall be removed from fittings, walls and floor immediately before these get dry.

### 7.2 WOODEN PLUGS

The plugs shall be of hard wood and of size 50 mm x 38 mm at top and of length 50mm. These shall be fixed on wall in cement mortar 1:3 (1 cement: 3 sand), after the plugs are fixed in the wall the mortar shall be cured till it is set

### 7.3 WALL HUNG WATER CLOSETS :

Wall hung Box Rim Closets having back inlet and 'P' trap outlet shall be fixed on appropriate C.I. or M.S. brackets of suitable design to suit the thickness of toilet walls and ensure that the chair is self supporting and Independent of the wall.

### 7.4 PLASTIC SEAT AND COVER:

The seat shall be fixed to the pan by means of two 8 mm dia. corrosion resistant C.P. hinge bolts with a minimum length of shank of 65 mm and threaded to within 15 mm of the head. Each bolt shall be provided with two suitably shaped washers of rubber or other similar material for adjusting the level of the seat while fixing it to the closet. In addition one 8 mm non-ferrous metal of the washer shall be provided with each bolt. The maximum external diameter of the washers fixed on the underside of the pan shall not be greater than 25 mm. One arm of the hinge shall be fixed to the underside of the cover flush with the surface by means of 3 nos. 10 mm long C.P. screws.

### 7.5 BOWL PATTERN LIP URINALS:

Urinals shall be fixed in position by using screws, and shall be at a height of 65 cm from the floor level to the lip of urinal, unless otherwise directed. The wooden plugs shall be fixed in the wall in cement mortar 1:3

(1 cement: 3 fine sand). Each urinal shall be connected to waste pipe which shall discharge into the channel or floor trap. The connection between the urinal and flush or waste pipe shall be made by means of heavy type PVC trap which will not be affected by Uric Acid.

7.5.1 All urinal pans will have flushing system of approved type and make as approved by the Client / consultants.

7.5.2 All connections shall be made leak proof.

14.6. 7.5.3 At specific instances semistall, full stall or squatting slab urinals may be specified in the schedule and / or drawings.

Semistall urinal pans should have approved type concealed chair brackets and accessories as demanded. The bottle traps should be made of PVC/HDPE extruded section to be free from action of acid etc. The fixing of the units shall be as per manufacturer's instruction.

7.5.4 Spreaders, inlet, outlet connection shall be prepared to actual site measurements, to ensure proper verticality and elegance. These shall be full bore and shall not form any dents.

### 7.6 WASH BASIN

The basin shall be supported on a part of concealed C.I. brackets fixed in cement mortar, 1.3 (1 cement: coarse sand). The C.I. brackets shall conform to I.S.775. The wall plaster on the rear shall be cut to rest over the top edge of the basin. After fixing the basin, plaster shall be made good and surface finished matching with the existing one. The C.P. brass trap and union shall be connected to 40 mm dia. waste pipe which shall be suitably bent towards the wall and shall discharge direct into the floor trap. The height of the front edge of the wash basin from the floor level shall be 80 cm.

## 7.7 PANTRY SINK

C.P. brass trap and union shall be connected to 40 mm nominal bore waste pipe instead of 32 mm nominal bore which shall suitably bend towards the wall.

- 7.8 The description in the bill of quantities is an indication of the style of plumbing unit required. The specialist plumber shall provide all the necessary plumbing hardware required for the specific type of unit and the quoted will provide for all contingent accessories, if not detailed, but are required for the functioning of the units.

Positioning of the units shall be planned with reference to the lines as a grid pattern so that all fixtures shall be tiles junctions and not in the tile surface. Connecting pipe shall be suitably ordered. The owners reserve right to procure the Sanitary pottery ware directly from approve source and the cost incurred will be recovered from the quoted while making payment. The material will be in the custody of the contractor, thereafter till commissioning.

- 7.9 All chromium plated pipe section, shall be of extruded heavily plated, and shall not peel off or fade out due to use.

- 7.10 Defects noticed in the fittings during the extended maintenance period due to latent/ patent shortcomings in quality manufacture or workmanship shall be replaced free of charge.

- 7.11 The short length of pipe connections to sanitary pottery ware exposed on wall shall be of full bore C.P brass pipe made actual measurement taken at site to suit locations as per detailed instructions and interior drawings.

Pipe with dents / deformation made to standard fittings available in the market shall not be placed on works.

- 7.12 Material used on urinal waste connection shall not form a discoloration

- 7.13 Disconnecting please, nipples etc, required for C.P connections, inlet / outlet caps to unit etc, shall be inclusive the rate quoted and shall not be considered for extra payment.

- 7.14 The test to guarantee the quality of fixtures and their connections to the system shall be performed by the contractor after installation.

## 8.0 HANGERS AND SUPPORTS

### 8.1 GENERAL:

Provide proper solid angle iron / channel section, supports for all pipes complete with clamps, provide wooden guide to support pipe on the angle iron/hanger supports, in general where a bunch / slabs to facilitate welding of angle iron supports. For attachment in concrete, use "Dash" fasteners or Anchor plug type inserts or equivalent. Provide hangers within 1 meter of all change in direction of mains and a minimum of

three hangers per expansion bend. Provide all additional structural steel angles, channels or other members not specifically shown but are required for proper support.

8.2 Where necessary additional hangers to be provided to arrest hammers or hydraulic with proper rubber.

8.3 Space hangers as noted below except of all soil pipe which shall have a hanger of multiple fittings, sufficient hangers shall be provided maintain proper slope without sagging, in cast of angle. Suspended line, the following is suggested.

A)

**PIPE MATERIAL SPACING AND SUPPORTS**

<b>MATERIAL</b>	<b>NOMINAL PIPE SIZE</b>	<b>HORIZONTAL (M)</b>	<b>VERTICAL (M)</b>
<b>P.V.C.</b>	15	0.6	2.4
	20	0.6	3.0
	25	0.6	3.0
	32	1.2	3.0
	40	1.2	3.0
	50	1.2	3.0
	65	1.2	3.0
	80	1.2	3.0
	100	1.2	3.0
	150	1.4	3.0
<b>C.P.V.C.</b>	15	0.5	1.0
	20	0.5	1.0
	25	0.5	1.0
	32	0.8	1.4
	40	0.8	2.0
	50	1.2	2.2
	65	1.5	2.2
	80	1.5	2.4
	100	1.8	2.4
	150	1.8	2.4

\* **Note:** This is as referred in uniform Plumbing code .But in case the manufacturer recommends less spacing than above, the same will be applicable.

8.4 Provide floor stands, wall brackets of masonry piers, etc. for all lines running near the floor or near walls so that those lines, near concrete or masonry walls may hung also by hangers carried from wall brackets at a higher level than pipe. Hanging of lone pipe from another is prohibited.

**9.0 VALVES AND PRESSURE GAUGES:**

9.1 Pressure gauges shall have not less than 115 mm dia 10 mm gas threads, brass body; siphon and gauge cock of 10 mm size, Dial ranges shall be adequate for the pressure encountered and as specified.

9.2 Provide valve on branch pipe connection to equipment where indicated. Valves are to be located for easy access and are to be full bore of pipe connected

together. Support all valves wherever necessary. The Valves should be tested and approved by local authorities as per Byelaws in force.

- 9.3 Valves shall be tagged with permanent label under hand wheel indicating type and duty.
- 9.4 Where indicated and specified, angle pattern stopcocks, at each hot and cold water inlet be provided. They should be Anti-scaling pattern same as faucets of approved manufacture.
- 9.5 Strainers: C.I. pot strainer with G.M. mesh screen in perforated brass strainer body of approved manufacture with a cock for blowing down. Screening area of strainer shall be minimum of 5 times more than pipe area, with 1 mm maximum size holes.
- 9.6 All tapping from distributors from main feeder shall have isolation valves in shafts, to ensure proper facility for maintenance and minimize the area of cut off during repairs.

### **10.0 CUTTING, PATCHING, REPAIRING AND MAKING GOOD**

- 10.1 Cutting, Patching and repairing required for the proper installation and completion of the work, specified in each division, including chasing plastering, masonry work, concrete work etc. and making good shall be carried out by the contractor wherever required. Holes which are oversize shall be refilled, so that a tight fit is obtained around the pipe or other object passing through.

Any damage to water proofed location should not be patched up without rectification by the water proofing agency (specialist contractor) to ensure his guarantee.

Indiscriminate cutting and patching work should be avoided by proper coordinate planning the sleeves etc. while works of other agencies are in progress.

### **11.0 EQUIPMENT PROTECTION**

- 11.1 All pipe and conduit openings shall be kept closed by means of plugs or caps to prevent the entrance of foreign matter. All piping conduit, fixtures, equipment or apparatus shall be protected from damages. Any item damaged prior to final completion of work shall be restored to its original conditions or replaced at no expense to the Employer.
- 11.2 Accessibility: The installation of Valves, thermometers, clean out fittings another indicating equipment or specialties requiring frequent reading, adjustment, inspections, repairs, removal or replacement, shall be conveniently and accessibly located. Thermometers and gauges shall be installed so as to be easily read from the floor.

#### **11.3 Inserts and Sleeves**

##### **A) GENERAL**

In advance of placing of concrete slabs or construction of walls, furnish location of Inserts and sleeves necessary as a result of this operation shall be at no expense to the Owner. Opening shall be made as per Structural Consultant's approval.

##### **B) PIPE SLEEVES:**

##### **1) WALL SLEEVES:**



C.I or M.S. black pipe wall sleeves in cold store and pipe for cable, conduits, gas pipes, etc are to be inside flush with wall on both sides. Sleeves shall be large enough in diameter to provide 15 mm clearance around pipe for insulation Exterior wall sleeves for cable entry / pipe / earthing strips, etc. shall be flush with wall on both sides. Sleeves shall be large enough to allow caulking from outside using lead wool.

2) FLOOR SLEEVES:

Interior floor sleeves shall be of C.I. extending 50 mm more above finished floor. All pipes passing through sleeves shall be caulked with asbestos rope and finished with cement mortar, insulation butted to floor sleeves and sealed with insulating cement on both sides.

Interior floor sleeves for pantry areas shall be G.I. steel pipe extending 50 mm above finished floor. Caulking shall be the same for general areas.

Note: floor on grade sleeves shall be the same as exterior wall sleeves, caulked and made water tight.

**12.0 EQUIPMENT, MATERIAL AND WORKMANSHIP:**

12.1 Each piece of equipment shall meet the detailed requirements of the contract documents and suitable for the installation shown. Equipment not meeting all requirements will not be provided, even though specified along with other manufactures, in the list of approved makes.

12.2 Where two or more units of the same class are furnished, product of the same manufacture has similarity and easy replacement of spares. Furnish all materials and equipment, new and free from defects and of size, make, type, and quality here in specified or approved by the Consultant. All shall be installed in a neat and workmanlike manner.

**13.0 CLEANING OPERATION AND TESTS:**

13.1 Plumbing Equipment fixtures, piping etc. shall be free of stamping, marking (except those required by codes). Iron cuttings and other foreign material.

13.2 Water systems shall be cleaned thoroughly filled and flushed with water.

13.3 The entire mechanical apparatus shall operate at full capacity without objectionable noise or vibration.

13.4 The system has to be periodically given the tests specified in the presence of site Engineer and the client's representatives as herein specified.

All test equipment, accessories, materials and labour necessary for conducting the test and for inspection and repair work shall be arranged well in advance of the test date.

After shortcomings are repaired or defective items replaced the tests will be repeated until the entire system is found satisfactory. If the local regulations insist on similar tests in the presence of approving authorities, the same shall be complied with and acceptance from the authorities lodged with the Consultants / Employers.

13.5 The entire system of soil, waste and vent piping to be tested with water after the roughing -in is completed and before the fixtures are set. After setting the fixtures, provide smoke tests, after sealing all traps.

13.6 Water Tests:

Test entire system or sections, of system by closing all opening in piping except the highest opening and filling system with water to the point of overflow, if the system is tested in sections, plug each opening except the highest opening of the section filled with water. Keeps the water in system or in the specific section under test for at least 45 minutes before inspection starts with test pressure/ head lasting for two hours. The system must be free from leakage and defect at all joints.

13.7 Test all down spouts or rain headers and their branches within the building by water as described for the above soil, waste and vent system.

13.8 All Water Piping: Hydro –static test at 125% of its designed working pressure for a minimum of one hour without drop in pressure as required.

13.10 All systems shall be tested in sections as required to expedite the work of other trades and meet construction schedules and final test on completion.

13.11 On completion of the works, the following tests shall be performed to the satisfaction of the consultants/clients representatives to enable them issue of Virtual Completion.

- a)           a.     Hydraulic test
- b.     Tests for anti-siphon system
- d)           c.     Pump rating and output.
- e)           d.     Inspection of all units and fixtures

13.12 The Contractor shall arrange on his own initiative for similar tests during the progress of works to ensure that there are non defects in material/workmanship in portions of work to be concealed or embedded under the floor in felling.

a) HYDRAULIC TEST:

1. Suitable section as directed by the Engineer-in-charge shall be taken for such testing from time to time during progress of the work and satisfactory test given for that section. All testing apparatus, gauges, connections etc. and water required for testing shall be arranged by the Contractor at his cost. Owner does not undertake any responsibility to supply water for testing, which the Contractor has to arrange from the Municipality / M.I.D.C. or otherwise by paying the required charges directly. The owner shall have the right to recover such charges from his bills if complaint are received that Contractor has not paid the charges thereof.
2. Satisfactory hydraulic test shall be regarded when the section under test shall withstand the pressure as specified by the Engineer-in-charge for about ONE Hour without operating the test pump, the test pressure being maintained at the specified figures during that ONE Hour interval.
3. The entire pipe line, specials and all joints in that section appear to be dry. During testing if any joints are found leaky they shall be repaired and/or redone by the Contractor at his cost till the test is found satisfactory. Similarly, any pipes, collars, specials, show hair cracks, leaks, etc. during

testing, the Contractor shall replace them with sound pipes and specials together with new joints, entirely at his own cost, till a satisfactory test is given. The pipe specials, etc. which crack during testing will, however, be supplied by the Contractor for replacement free for cost. The hydraulic test shall be given in presence of the Engineer-in-Charge.

**14.0 EQUIPMENT & PIPING IDENTIFICATION;**

14.1 Pipe Markers: Each piping systems shall be provided with a nameplate properly clamped or stenciled. Letters are to be 10 mm if 3 meter above the floor and 50 mm minimum if below that height. Nameplates on parallel group's pipes etc. shall be neatly lined up. Wording of lettering shall correspond to the equipment designation used in piping legend and shall be as approved. Name plated to be of GI. Sheets (gauge 20 SWG on 25 x 25 angle) secured on to sheet metal and angle iron to be welded on main pipe. In case of insulated pipe the 25 x 25 mm angle bracket should be projecting beyond insulation thickness.

14.2 VALVE REGISTER:

To be submitted in triplicate along with location and identification number in final drawing to be furnished by contractor.

**15.0 MODE OF MEASUREMENT:**

15.1 All work shall be measured net in decimal system, as fixed in its place, subject to the tolerance given below, unless otherwise stated:-

- a) Dimensions shall be measured to the nearest 0.01 meter.
- b) Areas shall be worked out to the nearest 0.01 Sq. meter.

All measurements of cutting shall, unless otherwise stated, be held to the consequent waste.

15.2 All PVC pipes, such as soil, waste, vent and CPVC, UPVC & G.I. Pipes shall be measured in linear lengths along the center line, as completed. The rates shall include all joints and clamps etc. as specified in the respective items.

15.3 All full way valves, ball valves, non-return valves, sluice valves etc. shall be measured in number after excluding them from liner measurement.

15.4 The diameters of pipes and fittings mentioned in the specifications are the inside diameter in all cases unless otherwise stated. (as in case of P.V.C. pipes)

**16.0 TOOLS AND MATERIAL AND STORAGE:**

- a) The Contractor at his own cost and charge shall provide all materials, tools, tackles, measure, scaffolding, labour and water necessary for the completion of the whole work in all respects.
- b) The Contractor shall pay the fees for testing the material to local authorities, or other statutory authorities.
- c) The Contractor will obtain from time to time various permissions, and the completion certificates as per rules of all local and statutory authorities.
- d) The Contractor shall arrange for the material and storage facility with the Building Contractor.

- e) Any material, brought at site, shall not be removed without the written authority of the Consultants and owner when the contractors shall have received payment in respect of any certificate in which it is stated that the value of any unfixed materials on the work has been taken into account; such materials shall become the property of owner and the Contractor shall be liable for any loss or damage there to.
- f) The Contractor shall insure the work against damages, for such sum as the owner may direct from time to time. All Insurance Policies are to be taken out in the joint name of owner and the Contractor in an office selected by the owner and all policies and receipts shall be deposited with the owner.
- g) All the brackets and hangers for pipe shall be fixed to the wall or RCC slab using 'Dash' fasteners, wherever necessary. Exposing reinforcement bars for hooking will not be permitted.
- h) Surplus material from the site shall be carted away by the Contractor without any cost to the owner and the storage space provided to the Contractor shall be handed over to the owner clean and ready for occupation, free from all encumbrances.

**17.0 GENERAL SERVICES:**

The Contractor shall pay the fees for testing the materials by the Municipal Corporation.

The Contractor will process and arrange from time to time various permissions and obtain the drainage completion certificate and adequate water supply Certificate under the rules of the local authorities.

**18.0 BUREAU OF STANDARDS, COLOUR CODE:**

In industrial and multidisciplinary installation like Hotels and Hospitals, additional item may be added for other systems.

To indicate the class of its contents, each pipe and appurtenances connected therewith shall be marked as under.

1	Water Drinking	-	Sea Green
2	Non Potable Water	-	Orange
3	Treated Effluent	-	Admiralty Blue

Charts showing the colors for primary identifications should be displayed at points where they are likely to be needed for references.

### **LIST OF APPROVED MAKES - PLUMBING**

1	R.C.NP2Pipes	Local Make
2	Eco Drain (PVC Pipe) for External Drainage	Supreme/D-rex/Astral
3	G.I. Pipes Heavy Grade as per IS 1239	Tata, Zenith, Siddharth
4	CPVC / UPVC pipe	Astral / Prince / Supreme
5	Gun Metal valve & fittings	Leader, Audco, TBS, Sant
6	PVC Valve	Astral / Prince / Supreme
7	Float / Equilibrium Valves	Prayag
8	Pressure Gauges	Flgt, H Guru, pricol
9	SMP pipe	NIECO
10	RCC Manhole cover	Make-nico , Pratibha
11	SWR PVC Pipe	Prince / Supreme
12	Pumps	CRI / Kirloskar / LaxmiLada /
13	Butterfly Valves, Check Valves	Audco, Intervolve
14	Brass & Gun metal, gate valve, Strainers.	Leader, Audco, Sant
15	Pressure Reducing Valve	OR – TBS, ZOLOTO, VARTSILA
16	Ball Valves	ZOLOTO / RB / Giacomini
17	HDPE Pipes	Reliance, Godavari Polymers
18	Water supply fancy fitting like pillar taps, showers, sink mixers etc.	Metro / Johnson / As approved.
19	Flush valves	Metro / Johnson / as approved
20	SS Sinks	Nirali, Equivalent approved
21	Flush Valve	Slimiline
22	Sanitary Ware	Parryware / Hindware
23	PVC Pipes & Fitting	Supreme / Finolex.
24	Non Return Valve	ZIP, Advance
25	Air Release Valve	Giacomini / RB
26	Water Meters	Capstan, Keycee
27	Anchor Fasteners	Hilti, Fischer

## **C) TECHNICAL SPECIFICATIONS - ELECTRICAL**

### **CONTENTS**

1	MV Switchgear Panel (PCC)
2	1.1KV Power & Control Cables
3	Cable Laying
4	Wiring
5	Cable trays and Structural Steel
6	Indoor & Outdoor light fixtures
7	Earthing
8	Earthing Connections
9	Recommended Makes

### **1 MV SWITCHGEAR PANEL (PCC)**

- Unless otherwise specified elsewhere in this specification, the rating performance and testing of the Boards shall conform to the latest revision of all the relevant standards.
- A list of some of the applicable standards is enclosed at ANNEXURE I.

#### **• GENERAL TECHNICAL REQUIREMENT**

##### **• SHEET METAL WORK**

- The switchgear frame shall be fabricated using suitable mild steel structural sections or pressed and shaped cold rolled sheet steel of thickness not less than 2.5 mm.
- Frames shall be enclosed by sheet steel of thickness not less than 2 mm cold rolled or 2.5 mm hot rolled, smoothly finished, levelled and free from flaws. Doors and covers shall be made of sheet steel of thickness not less than 1.6 mm cold rolled or 2 mm hot rolled. Stiffeners shall be provided wherever necessary.
- All panel edges and door edges shall be reinforced against distortion by rolling, bending or by the addition of welded reinforcement members.
- Cut-outs shall be true in shape and devoid of sharp edges.
- The complete structures shall be rigid, self-supporting, free from vibration, twists and bends.

##### **• PAINTING**

- All sheet steel work shall be phosphate in accordance with the following procedure and in accordance with relevant standards.
- Oil, grease, dirt and warp shall be thoroughly removed by emulsion cleaning.

- Rust and scale shall be removed by pickling with dilute acid followed by washing with running water, rinsing with slightly alkaline hot water and drying.
- After phosphating, through rinsing shall be carried out with clean water, followed by final rinsing with dilute dichromate solution and oven drying.
- The phosphate coating shall be sealed by the application of two coats of ready mixed, stoving type zinc chromate primer. The first coat may be 'flash dried' while the second coat shall be stoved.
- The panels shall then be painted with power coating having Siemens grey colour shade as per IS - 5
- The final finished thickness of paint film on steel shall not be less than 60 microns, and shall not be more than 80 microns.
- Finished painted appearance of equipment shall present an aesthetically pleasing appearance, free from dents and uneven surfaces.
- Alternatively, powder coated panels are also acceptable.
- CONSTRUCTIONAL FEATURES
- Switchgear shall be :
  - of the metal enclosed, indoor, floor mounted modular type
  - made up of the requisite vertical sections
  - of dust and vermin proof construction
  - provided with a degree of protection of IP 52, unless otherwise specified.
  - easily extendable on both sides by the addition of vertical sections after removing the end covers.
  - provided with a metal base frame made of structural steel channel section properly drilled for mounting the Switchgear along with necessary mounting hardware. Hardware shall be zinc plated and passivated.
  - provided with labels on the front and rear indicating the switchgear designation.
  - provided with cable entry facilities at top / bottom as specified with 3 mm thick removable gland plates.
  - of uniform height of not more than 2150 mm.
  - of single front execution .
  - provided with gaskets all round the perimeter of adjacent panels, and base frame, removable covers and doors.
  - provided with bus bars running at the top, all along the length of the switchgear in a separate sheet steel enclosure.

- Operating devices shall be incorporated only in the front of the switchgear.
- The switchgear shall be divided into distinct vertical sections each comprising :
  - A completely metal enclosed bus bar compartment running horizontally.
  - Individual feeder modules arranged in multitier formation. It is essential that the modules are integral multiples of the basic unit size to provide for flexibility in changes, if any, at site.
  - Enclosed vertical bus bars serving all modules in the vertical sections. For safety isolation of the vertical bus bars, insulating barrier with cut-outs shall be provided to allow the power stab contacts to engage with vertical bus bars.
  - A vertical cable alley covering the entire height. The cable alley shall be minimum 200 mm wide for Switch control modules and 500 mm wide for circuit breaker controlled modules.
  - A horizontal separate enclosure for all auxiliary power & control buses, as required , shall be located so as to enable easy identification, maintenance and segregation from the main power buses. Tap-off connections from these buses shall be arranged separately for each vertical section.
- Each vertical section shall be equipped with space heaters which may be located in the cable alley.
- One metal sheet shall be provided between two adjacent vertical sections running to the full height of the switchgear except for the horizontal bus bar compartment. However, each shipping section shall have metal sheets at both ends.
- All equipment associated with a single circuit shall be housed in a separate module compartment of the vertical section. The compartment shall be sheet steel enclosed on all sides and the rear, with the withdraw able units in position or removed, except on the cable alley

side. A plate cover with a slot to permit wiring connections shall be provided on the side corresponding to the cable alley. The front of the compartment shall be provided with a hinged door.

- For draw-out type modules, only the handles of control and selector switches, push buttons, knobs & cut-outs for lamps and meters shall be arranged on the front doors of the respective compartments to permit operation without opening the door. On circuit breaker controlled circuits, protective relays shall be mounted on the front door of the compartment. All other equipment pertaining to a circuit shall be mounted on the withdraw able chassis. All cut-outs shall be provided with gaskets for the purpose of dust-proofing.
- Current transformers shall not be directly mounted on the buses. Current Transformers on circuit breaker controlled circuits shall be mounted on the fixed portion of the compartment.



- In breaker compartments, suitable barriers shall be placed between circuit breaker and all control, protective and indication circuit equipment including instrument transformers. External cable connections shall be carried out in separate cable compartments for power and control cables.
  - After isolation of the power and control connections of a circuit, it shall be possible to safely carry out maintenance in a compartment with the bus bars and adjacent circuits live.
  - The with drawler chassis shall move on suitable guides and on suitably plated steel or stainless steel rollers or balls to facilitate easy withdrawal.
  - Cable alleys shall be provided with suitable hinged doors. It shall be possible to safely carry out maintenance work on cable connections to any one circuit with the bus bars and adjacent circuits live. Adequate number of slotted cable support arms shall be provided for clearing the cables.
  - Rear of single front switchgear shall be provided with removable panels. It shall be possible for one person to remove and fix the removable panel.
  - All doors shall be provided with concealed type hinges and captive screws.
  - Interchange ability
- Components and equipment that are not fully interchangeable are liable for rejection. VENDOR shall replace all such equipment by fully interchangeable equipment at his cost.
  - The draw-out contacts shall be only between copper / copper alloy / aluminium faces, which are silver or tinplated. The contact design shall be such that there should be no arcing / deformation under the associated peak short-circuit current.
  - Switchgear shall be designed in such a way that all component equipment and bus-bars operate satisfactorily without exceeding their respective maximum permissible rise in temperature under ambient temperature conditions prevailing within the switchgear cubicle, with reference ambient temperature outside the switchgear cubicles.
  - Provision of ventilating louvers is considered undesirable. If ventilating louvers are considered essential by the VENDOR, these may be provided. However, all ventilating covers shall be provided with fine-screened brass or GI meshes to prevent entry of vermin and dust.
  - All dummy cubicles necessary to meet the requirement shall be included in the VENDOR's scope.
  - MAIN BUS BARS AND TAPS
  - Switchgear shall be provided with three phase and neutral bus bars as specified.
  - Bus bars shall be of uniform cross section throughout the length of the switchgear, and up to the incoming terminals of feeder circuit breaker / switch.

- The bus bars shall be made of high conductivity copper or aluminium alloy of E91E grade as specified.
- Bus bars shall be provided with at least the minimum clearances in air as per applicable standards for a 500 V, 3 phase system.
- All bus-bars, bus-taps shall be insulated with close fitting sleeve of hard, smooth, dust and dirt free plastic insulation of high dielectric strength (450 V / min.) to provide a permanent high dielectric non-ageing and non-tracking protection; impervious to water, tropical conditions and fungi. The insulation shall be non-inflammable and self-extinguishing and in fast colours to indicate phases. The joints shall be insulated in such a way as to provide for accessibility of contact bolts for maintenance. The dielectric strength and properties shall hold good for the temperature range of 0<sup>0</sup> C to 90<sup>0</sup> C. If the insulating sleeve is not coloured but black, busbars shall be colour coded with coloured bands at suitable intervals.
- Bus bars shall be adequately supported and braced to withstand the stresses due to the specified short circuit currents for the associated switchgear. Bus bar supports shall be made of Hylam sheets, glass reinforced moulded plastic material, Permali wood or cast resin.
- Separate supports shall be provided for each phase of the bus bars. If a common support is provided for all three phase, antitracking barriers shall be incorporated.
- Bus bar joints shall be complete with high tensile steel bolts and Belleville washers and nuts. Bus bars shall be thoroughly cleaned at the
- Joint locations and a suitable contact grease shall be applied just before making a joint.

- **CIRCUIT BREAKERS**

Circuit breakers shall be -

- of the air break draw out type, mounted along with its operating mechanism on a wheeled carriage moving on guides, designed to align correctly and allow easy movements.
- of the shunt trip type as specified associated with the O/L, S/C protection releases.
- provided with an operating mechanism of the type specified in Data Sheet .
- provided with mechanically operated targets to show `Open` `Closed` `Service` and `Test` positions of the circuit breaker.
- provided with locking facilities in the `Service` `Test` and `Isolated` positions. In test position the breaker will be tested without energising the power circuits. The breaker shall remain fully housed inside the compartment in the test position.
- provided with 6 NO & 6 NC potential free auxiliary contacts, rated 10 A at 240 V A.C. and 1 A (inductive breaking) at 220 V D.C.

- provided with 'red', 'green' and 'amber' indicating lamps to show 'Closed' 'Open' and 'Auto-trip' conditions of the circuit breaker when breaker operating is controlled by a control switch.
- Circuit breakers shall be provided with the following interlocks :
  - It shall not be possible to plug-in a closed circuit breaker, or to draw out a circuit breaker in the closed position.
  - It shall not be possible to operate a circuit breaker unless it is in the fully plugged-in, test, or fully isolated position.
  - Closing and trip coil shall operate satisfactorily under the following conditions of supply voltage variation :
    - Closing coils - 85% to 110 % of rated voltage
    - Trip coils-50 % to 110 % of rated voltage
  - When shunt trip circuit breakers are specified the following series trip releases with adjustable settings shall be provided
    - a) Overload
    - b) Short circuit and
    - c) Under voltage
  - In addition to the adjustable current setting range specified in the, short circuit releases shall be provided with at least four adjustable time delay settings. If it is not possible to provide the specified adjustable current setting range for the short circuit releases, shunt trip circuit breakers together with necessary protective relays shall be offered.
  - Facilities shall be provided for blocking the under voltage release, if so required at Site.
  - Each of the foregoing releases shall be provided with a single pole, double throw, potential free alarm contact rated for 0.5 A, 220 V DC.
  - Operating Mechanism
    - Circuit breaker shall be provided with a manual operating mechanism.
    - Manually operated mechanism shall be of the spring charging stored energy type, unless otherwise specified.
    - The closing action of the circuit breaker shall charge the tripping spring ready for tripping.
    - Speed of closing of contacts shall be independent of the speed with which the handle is operated.
    - Circuit breakers provided with stored energy operating mechanism shall be provided with the following interlocks.
    - The circuit breaker shall not close unless the spring is fully charged.

- Shocks, vibrations, or failure of springs shall not operate the breaker or prevent intended tripping.
- MINIATURE CIRCUIT BREAKERS
- Miniature circuit breakers for use on Lighting Panels & DBs shall comply with the requirements of applicable standards.
- CURRENT TRANSFORMERS
- Current transformers shall be of the dry type.
- Current transformers shall have a short time withstand rating equal to the short time withstand rating of the associated switchgear for one second.
- Unless otherwise specified, the minimum performance requirement of current transformers are as follows :
- Measuring CT's - 10VA, accuracy class 1.0 and an instrument safety factor of 5.
- Protective CT's - 15 VA, accuracy class 5 P and an accuracy limit factor of 10.
- Notwithstanding the above clause 4.11.3, it shall be the VENDOR'S responsibility to co-ordinate the current transformer burden with the requirements of relays, instruments and leads associated with that particular current transformer.
- All current transformers shall be earthed through a separate earth link on the terminal block to permit easy measurement of the current transformers insulation resistance. (CTS built-in with the thermal relays of the contactors are excluded.)
- INDICATING INSTRUMENTS AND METERS
- Electrical indicating instruments shall be minimum 96 mm square size, suitable for flush mounting.
- Indicating instruments shall have provision for zero adjustment outside the cover.
- Instrument dials shall be parallex free with black numerals on a white dial.
- Ammeters provided on motor circuits shall be provided with a suppressed extended scale to indicate motor starting current.
- Watt hour meters shall be of the direct reading electro-dynamometer type complete with cyclometer type dials and reverse running stops.
- MULTI FUNCTION ELECTRICITY METER (MFE METER)
- Multifunction electricity meter shall be provided on the panel for indicating the instantaneous parameters like voltage, current, frequency, power factor, apparent power, reactive power, active power, etc. and the integrated parameters like kwh, kvarh, etc.

- A single meter capable of recording energy and the various system parameters like, voltage, current frequency, power factor, active power, reactive power etc. shall be preferred.
- Multi function meter shall be microprocessor based compact unit having serial-port(s) for interface with local computer / Data Acquisition system.
- The meter shall have digital display unit. The digits shall be clear and bright. The unit shall have digits not less than 6. The design shall be such that the digits (counter) shall not reset for at least 5 years.
- All readings on the meter shall be direct reading type, that is, without involving any external multiplying factor. It shall be possible to programme the meter, at site, to suit the actual CT & PT ratios.
- M.F.E. meter shall be flush mounting type having all connections from the rear. Provision shall be available for testing / calibration of the meter.
- Meter shall be suitable for 50 Hz AC system with 5A CT secondary and 230V PT secondary rating and shall be 4-wire 3 element type capable of reading correctly even when used for unbalanced loads.
- Feather-touch push buttons shall be provided on the meters for enabling selection of various system parameters to be read. The parameters being displayed shall be identified on the displayed unit.
- MFE meter shall preferably be self-powered type. It shall have non-volatile memory so as to retain the recorded parameters during power failure / storage. In case the meter is having built-in self chargeable type battery back-up to support the retention of energy recording during storage / aux. supply failure, the same shall have a life not less than 7 years.
- The meters shall be of proven design and having been in satisfactory service in any similar (CT/PT operated) system for more than 12 months.
- INDICATING LAMPS
- Indicating lamps shall be :
  - Of the LED type and of low watt consumption
  - Provided with translucent lamp covers of colours `Red', `Green' and `Amber' as required in the control wiring diagrams.
- Bulbs and lenses shall be easily replaceable from the front.
- PUSH BUTTONS
- Push buttons shall be :
  - of the momentary contact, push to actuate type rated to carry 10A at 240V AC and 1A (inductive breaking) at 220V DC.
  - fitted with self reset, 2 NO and 2 NC contacts
  - provided with integral escutcheon plates marked with its function.
- `Start' `Open' `Close' push buttons shall be green in colour.

- `Stop` push buttons shall be red in colour.
- All other push buttons shall be black in colour.
- `Emergency Stop` push buttons shall be of the lockable in the pushed position type and shall be shrouded to prevent accidental operation. Key shall not be required for the operation of the push button.
- SPACE HEATERS
- Space heaters for switchgear panels shall be suitable for operation on the specified supply system.
  - provided with single pole MCB with overload and short circuit release.
  - provided with thermostat to cut off the heaters at 45 Deg. C.
- INTERNAL WIRING
- Wiring inside the switchgear shall be carried out with 1100 / 650 V grade, PVC insulated, stranded conductor wires. Minimum size of conductor for power circuits is 4 sq.mm copper or equivalent size aluminium conductor. Control circuits shall be wired with copper conductor of at least 2.5 sq.mm for CT circuits & 1.5 sq.mm for other circuits, the number and size of strands shall be 7 of 0.67 mm and 0.5 mm diameter respectively.
- Engraved identification ferrules, marked to correspond with the wiring diagrams shall be fitted to each wire. Ferrules shall be of yellow colour with black lettering.
- Spare auxiliary contacts of all equipment forming part of the switchgear shall be wired upto the terminal blocks.
- Wiring for equipment if supplied by the PURCHASER for which the VENDOR has to provide cut-outs (where indicated in the data sheets) shall be provided upto the terminal blocks.
- Spare and unassigned modules shall be complete with internal wiring.
- Wiring shall be terminated on preferably stud type terminal blocks such that the wires are connected by cable-lugs with nuts & washers / lock - nuts.
- Not more than two connections shall be made on any one terminal.
- TERMINAL BLOCKS
- Terminal blocks ( both for power and control circuits) shall be of reputed make specially for CT and VT circuits. It shall comprise finely threaded pairs of brass studs of at least 6 mm diameter, links between each pair of studs, washers, nuts and locknuts. The studs, shall be accurately locked within the mounting base to prevent their turning. Insulated barriers shall be provided between adjacent terminals.

- Terminals for circuits with voltage exceeding 125 V shall be shrouded. Terminal blocks shall be grouped depending on circuit voltage. Different voltage groups of terminal blocks shall be segregated.
- Terminal blocks shall be adequately rated to carry the current of the associated circuit. Minimum rating of the terminal block is 10 A.
- Terminals shall be numbered for identification as per enclosed drawings. Engraved white-on-black labels shall be provided on the terminal blocks, describing the function of the circuit.
- **LABELS**
- All labels shall comprise white letters on a black background.
- Labels shall be made of non-rusting metal or 3-ply lamicaid, or engraved PVC.
- Labels shall be properly fixed, with provision to prevent distortion due to expansion.
- Size of lettering shall be 6 mm, unless otherwise specified.
- **EARTHING**
- Each Panel shall be provided with an earth bus bar running along the entire length of the board. Material and size of the earth bus bar shall be as specified in data sheets. At either end of the earth bus, one (1) clamp type terminal with nuts, bolts and earthing conductor of size and material indicated in data sheets. In case the earth bus is provided near top of the switchgear, one down comer at either end shall be provided for connection to the purchaser's earthing conductor.
- Earth bus bars shall be supported at suitable intervals.
- Positive connection between all the frames of equipment mounted in the switchboard and earth bus bar shall be provided by using insulated copper wires / bare bus bars of cross section equal to that of the bus bar, or equal to half the size of circuit load current carrying conductor, whichever is smaller.
- All instrument and relay cases shall be connected to the earth bus bar using 1100 / 650 V grade, 2.5 sq.mm stranded, copper earthing conductor.
- **TESTS**
- Switchgear shall be subjected to following tests :
  - Temperature rise test on power circuits.
  - Mechanical operation test.
  - High voltage test
  - Electrical control, interlock and sequential operation tests.
  - Verification of wiring as per approved schematic.

- Routine tests shall be carried out on all associated equipment as per relevant standards.

- **INSPECTION**

- The boards shall be inspected by purchaser's representative at following stages.
  - a) After fabrication of the boards but before painting
  - b) Completely painted & assembled Board for final inspection.
- A tentative schedule of the inspection programme shall be conveyed to the purchaser at least a week in advance to arrange for inspection. A copy of the internal test report shall be forwarded along with the inspection call.

**ANNEXURE - I**

**LIST OF STANDARDS**

Sr. No.	Specification No.	Title
1.	IS 2516	Circuit Breakers
2.	IS 4237	Metal Enclosed Switchgear
3.	IS 2705	Current Transformers
4.	IS 3156	Potential Transformers
5.	IS 375	Arrangement for Switchgear Bus bars Main connection and Auxiliary Wiring
6.	IS 2544	Bus bar support Insulator
7.	IS 2147	Degree of protection
8.	IS 3231	Electrical Relays for Power System protection
9.	IS 1248	Electrical Indicating Instruments
10.	IS 722	AC Electricity meters
11.	IS 5082	Aluminium bus bars
12.	IS 6005	Code of practice for phosphating Iron & Steel
13.	IS 2208	HRC Fuses



## ANNEXURE - II

### SPECIFIC TECHNICAL REQUIREMENTS

1.0	GENERAL CONSTRUCTION OF SWITCHGEAR		
	Applicable for		Power Distribution Board/ MLDB / LP
	Enclosure		Indoor, Metal clad, compartmentalised single front, floor mounted, front operated, self supporting, suitable for rear access.
	Module Construction		Draw out type ACB / Switch modules as specified
	Degree of Protection		IP 42
	Cable Entry		Top /Bottom
2.0	BUS BARS		
a)	Material - 3 Ph & N		High Conductivity Aluminium / Aluminium Alloy E 91E
	- Earth		Aluminium strip
b)	Voltage Rating		415 ± 10 %
c)	System Frequency		50 Hz, + 3 % to - 3 %
d)	HV Power frequency withstand test voltage		2500 V RMS, 50 Hz for one minute
e)	Rated Current		
	a)	Continuous	As per SLD
	b)	Short time	50 kA RMS for 1 Second
	c)	Maximum limit of temperature	80 Deg. C
	d)	Sleeving	Heat Shrink Sleeving, Red, Yellow, blue for phases and black for neutral
3.0	CIRCUIT BREAKER		
	a)	Service	Indoor
	b)	Type	As shown on Single Line

			Diagram enclosed
	c)	Rated voltage	415 V $\pm$ 10 %
	d)	No. of Poles	3 pole
	e)	Frequency	50 Hz + 3 % to - 3 %
	f)	System earthing	solidly grounded
	g)	Insulation level (1 minute power frequency withstand voltage)	2.5 kV RMS
	h)	Operating mechanism	Spring charged
	i)	Protective Releases	With $\mu$ p based
4.0	CURRENT TRANSFORMERS		
	a)	Service	Indoor
	b)	Type	Resin Cast / Bar primary
	c)	Mounting	Inside Cubicle on stationary portion
5.0	PAINT SHADE		Siemens Grey as per IS 5
6.0	SELECTOR SWITCH		
	a)	Rated voltage of main contacts	415V, AC
	b)	Rated voltage of coils, auxiliary contacts	240V, AC
	c)	Rated duty	AC3
7.0	CONTROL WIRING		
	a)	Size	4.0 Sq. mm Cu for CT circuits 2.5 Sq. mm Cu for other circuits
	b)	Type	Stranded
	c)	Insulation	PVC
	d)	Voltage grade	650 V
	e)	Colour code	Grey / black
8.0	CONTROL TERMINALS		
	a)	Type	Clip on

	b)	Voltage grade	1100 V
	c)	Current rating	10 Amp
	d)	10% spare terminal to be furnished	Yes
9.0	PUSH BUTTON		
	a)	Type	ON / OFF Momentary
	b)	Rating	10 Amp
10.0	INDICATING LAMP		
	a)	Type	Cluster LED Type
	b)	Lamp Wattage	0.25, 240 V
11.0	INDICATING METERS		
	a)	Type	Moving iron
	b)	Size	96 x 96 Sq.mm
	c)	Accuracy class	1.5

## 21.1KV POWER & CONTROL CABLES

- **SCOPE**

The scope of this specification covers design, manufacture, inspection, testing at works. packing and forwarding of 1100 V grade LT Power and control cables.

- **STANDARDS**

The cables offered shall conform to the latest revision of relevant Indian Standard Specifications. Some of these standards are listed below.

Sr. No.	Spec. No.	Title
1.	IS 1554	PVC insulated heavy duty electrical cables for working voltages up to 1100 V
2.	IS 8130	Conductors for insulated electric cables and flexible cords
3.	IS 5831	PVC insulation & sheath of electric cables
4.	IS 3975	Mild steel wires, strips and tapes for armouring of cables

5.	IS 2633	Methods of testing weight, uniformity of coating, thickness on hot drip galvanised articles.
6.	IS 209	Specification for zinc
7.	IS 3961	Recommended current ratings for cables - PVC insulated & PVC sheathed
8.	IS 1753	Aluminium conductors for insulators cables

- **PRINCIPAL PARAMETERS**

- The LT Power & Control cables shall be used indoors / outdoors, directly buried or in open racks in the plant premises.
- They shall meet the requirements of IS specifications listed above and the general technical requirement detailed below.

- **GENERAL TECHNICAL REQUIREMENT**

- The cables shall be brand new. They shall be suitable for laying on trays, in trenches, ducts, conduits & underground buried installation
- All the LT power & control cables shall be heavy duty type, 1100 V grade with aluminum / copper conductor, PVC insulated, inner sheathed, armoured & over all PVC sheathed.
- The construction of the conductors shall be stranded for aluminium cables and solid for copper cables. Conductors of nominal area of 25 Sq.mm shall be circular. Those above may be circular or oval shaped.
- The core insulation shall be with PVC compound applied over the conductor by extrusion only & shall conform to the type A compound of IS 5831. Control cables having 6 cores or above shall be identified with prominent and indelible white coloured arabic numerical on the outer surface of the insulation at every 500 mm.
- The inner sheath shall be applied over the laid up cores by extrusion and shall be of PVC conforming to the requirements of type ST1 PVC compound. The extruded inner sheath shall be of uniform thickness of 0.5 mm up to 16 Sq.mm 0.8 mm up to 120 Sq.mm & 1.0 mm above 120 Sq.mm conductor size.
- The armoring shall be by single round galvanised steel wires for cable diameter up to 13 mm and galvanised steel strips for cables diameters above 13 mm.
- The outer sheath of the cables shall be applied by extrusion and shall be of PVC compound. Suitable chemicals shall be added to the PVC compound of the outer sheath to protect the cable against rodent and termite attack.
- The dimensions of the insulation armour and outer sheath materials shall be governed by IS 1554.
- The Bill of Material for the various cables is enclosed at annexure I

- **TESTS**

All routine tests shall be conducted on the cables as specified in relevant IS. The test report shall be submitted to the purchase for approval.

- **INSPECTION**

The cables shall be offered for Inspection by the purchaser's representative at manufacturer's works.

- **PERFORMANCE GUARANTEE**

The cables shall be guarantee for satisfactory performance for a period of 18 months from the date of dispatch or 12 months from the date of commissioning whichever is earlier.

- **DOCUMENTATION**

The supplier shall submit the drum wise routine test report of the supplied cables in 4 sets.

- **PACKING & FORWARDING**

- The cables shall be packed in wooden drums of suitable barrel diameter and fully protected against mechanical damage.
- Necessary information such as manufacturer's name, type size, voltage grade, Length of cable, drum number etc. An arrow shall be printed on the drum to show the direction in which the cable should be unwound from the drum.

### **3 CABLE LAYING**

- **SCOPE**

The scope of this specification covers requirements for the installation, testing and commissioning of cabling system including supply and installation of cable accessories.

- **STANDARDS**

- The cabling system installation work shall comply with the latest applicable standards, regulation and safety codes and good engineering practices.
- The installation work shall conform to the latest applicable codes, Electricity rules, fire insurance regulations the applicable Indian standards specifications and the approved drawings.

- **PRINCIPAL PARAMETERS**

- The installation, testing & commissioning of cabling system shall be carried out in accordance with the general technical requirements furnished below and related specific project drawings.

- Supply of cabling accessories such as lugs, glands, termination kits, termination boxes, junction boxes, cable trays, conduits, pipes etc. shall be as per the technical specifications detailed herein.

- **GENERAL TECHNICAL REQUIREMENT**

- **General scope of cable installation**

- The cable installation work shall include unloading of cables (whether supplied by Bidder or Client) storing in Client's / Bidders stores, preparation of cutting schedules for each drum, cutting, transporting to location, laying, fixing, putting identification tag numbers, properly dressing, terminating, testing and commissioning and any other work necessary for completing the work.
- The above work shall include laying of HT / LT power, control , lighting & communication cables as specified which shall be laid in trenches, on cable trays, in conduits as specified and as detailed in relevant drawings and cable schedules.
- The Bidder shall provide all supervision, labour, tools, testing equipments as required. All incidental hardware & miscellaneous items such as saddles, spacers, bolts / nuts, anchor fasteners , cable route & cable joint markers, protective bricks for buried cables, cable identification tags & ferrules, nylon cord, G.I.Wire / aluminium clamp as required for cable installation shall be part of installation work
- Related civil works such as trenches, tray supports, embedded conduits etc. shall be done by a separate civil contractor. However minor civil works such as patching up any holes made in walls, embedment of short conduits in floors, walls etc. shall also be a part of cable installation work.
- The manufacturer's, Owner's or Consultant's drawings schedules, instructions, cable entry locations and recommendations shall be correctly followed by the Bidder in handling, laying & terminating the cables. In case of any doubts or misunderstanding as to correct interpretation of instructions or drawings, necessary clarification shall be obtained by the Bidder for the Client.
- Any changes in the cable route required to be made due to site conditions shall be carried out by the Bidder in consultation with the Consultant and Client & after their approval.
- The Client shall arrange to clear the areas, routes, trenches through respective Bidders. The cabling contractor shall clean the trench, remove the cable drums, and other surplus material after the installation work.
- The Bidder shall ensure good workmanship and shall assign qualified supervisors and skilled labour for this work.

- **Cable Laying**

- The Bidder shall install test & commission power & control cables which will be either furnished by the Owner or procured by the Bidder himself.
- The cables shall be laid as per the route shown on relevant drawings. The cable laying work shall include laying, pulling, dressing on cable trays,

racks, vertical raceways & supply and installation of cable fixing saddles, spacers and nylon cords, G.I. Wires. Aluminium strip clamps as required for tying as necessary

- The quantities indicated in the cable schedule are approximate. All cable routes shall be carefully measured and cables cut to the required lengths leaving sufficient length for final connection of cable to the terminals in the equipment. Care shall be taken to minimise cable wastage. Drum wise cutting schedule shall be prepared before the cables are cut from the drums. An additional loop of 5 mtr. for main incomer cable at each panel & if proposed for other cables shall also be provided in the cable & cable length cut accordingly.
- Cables shall be laid in complete uncut Length from one terminal to another. No joints shall be allowed in the straight runs of the cables.
- Cable reels shall be utilised for cable pulling. After each cable is laid, identification cable tags shall be provided at each end of the cable. Cables shall be protected at all times from mechanical injury and from absorption of moisture through unprotected ends. Ends of cables shall be taped with PVC insulating Tape.
- Cables shall be neatly arranged in trenches and on trays in such a manner so that criss crossing is avoided and easy take off to equipment is facilitated.
- Sharp bending of cables shall be avoided. The bending radius of cables shall not be less than that recommended by the cable manufacturer.
- Where cables cross road, oil / water pipes, open gutters etc. they shall be run in hume pipes / steel pipes as directed by the consultant. The depth of burial of pipe shall not be less than 750 mm.
- Directly buried cables shall be laid underground in excavated cable trenches. The trenches shall be of sufficient depth & width for accommodating all the cables correctly spaced. Minimum depth of buried cable shall be 750 mm for LT cables & 900 mm for HT cables. Before cables are placed in the trench the trench bottom shall be covered with a layer of sand. The cables shall be laid over this levelled layer of sand. The cable shall be covered up to 150 mm over the largest diameter cable in the trench. A protective Layer of 75 mm thick second class red bricks shall be laid on this sand cover. The remainder of the trench shall be filled with soil, rammed & levelled. Insulation test shall be conducted on each cable before back filling. Cable markers as specified shall also be installed along the route of the directly buried cable for easy identification of the cable route. Excavation for the trench, supply and laying of sand and brick and back filling shall be the responsibility of the Bidder.
- All cables shall be identified close to their termination point by cable numbers as per cable schedule. Cable numbers shall be punched on 2 mm thick aluminium strip of adequate size securely fastened to the cable and wrapped around it. Identification tags shall also be provided at every 15 m along the straight run and at every change in direction.
- Cables in racks & trays shall be tied by 3 mm Nylon cord, or Aluminium clamp to the tray after carefully dressing the cables. Cables shall be

clamped along with wall, column, ceiling, structures etc. on emerging out of trenches before they are connected to the equipment.

- Control & Power cables shall be clamped separately. When power cables are laid alongside communication cables, minimum separations distance shall be 300 mm. The power & communication cables, minimum separation distance shall be 300 mm. The power & communication cables shall as far as possible cross each other at right angles. Distance between adjacent clamps shall be 450 mm.
- Cables shall be carefully pulled through conduits, hume pipes and steel pipes to prevent damage to the cables. If required, approved cable lubricant shall be used where a cable enters conduit, the cable shall be bent in larger radius.

Following guide of the pipe fill shall be used for sizing pipe size.

1. One cable in pipe 50 percent
2. Two cables in pipe 45 percent
3. Three cables in pipe 43 percent
4. More than three cables 40 percent

After the cables are installed and all the testing is complete, conduit ends above grade shall be plugged with suitable weather proof plastic compound or PUTTI Alternatively, PVC or wooden bushes shall be used.

- Cables directly laid on supporting angles in cable trenches (HT cables & larger size LT cables) shall be suitably clamped by means of G.I. Saddles or clamps. The supporting angles shall be painted before laying the cables.
- **Cable Termination**
- All PVC cables up to 1.1 KV grade shall be terminated at the equipments by means of compression type cable glands. All cable entries shall be through bottom only. Top entry termination shall be made only after approval from Owner.
- The termination shall be made in a neat & work man like approved manner by men specialised in this work.
- Power cables where colour coding is not available shall be identified with Red, Yellow, blue & black PVC tapes. For control cables PVC ferrules duly numbered shall be used. For trip circuit identification, additional red ferrule shall be used only in those cores.
- All the cores of Control cables shall be identified at both ends by their terminal numbers by PVC ferrules. Wire numbers shall be as per schematic, wiring and interconnection diagrams made available to the Contractor. All unused spare cores of control cables shall be neatly bunched and ferruled at both ends.
- When control cable cores are to be fanned out & bunched together with cord the Contractor shall make connections to terminal blocks & test equipments for proper operation before cables are corded together. After



correct connections are established through operating equipment, cable cores shall be cut to correct lengths, connected to terminal connectors in the specified manner & corded together.

- Most of the switchgear & control panels will be received with undrilled gland plates. Contractor shall drill the gland plate as required at no extra cost. Some extra holes shall be drilled & plugged for any future requirement. No. & size of extra holes shall be given by the Owner.
- Cable leads shall be terminated in the equipment terminals by means of crimped type solder less lugs of approved make. Cable cores up to 4 Sq.mm may be directly connected in to the terminals. All other cable sizes shall be crimped as specified. Crimping shall be done by hand crimping or by hydraulically operated crimping tool and conducting jelly shall be applied on the conductor.

- **Installation of Cables Accessories**

- Cable trays

The cable trays shall either run in concrete trenches or run overhead, along wall, column below slab etc.

The trays shall be GI ladder type or perforated as specified. The trays shall be laid in single, two & multi tier formation.

Vertical raceways & risers shall be fixed such that it gives a clear appearance.

Change in the line or elevation or addition of an offset shall be done by cutting standard length of available tray. Care shall be taken to eliminate any sharp bends in tray work to avoid any damage to the cable while pulling the cables.

No cables shall be laid until all the route is cleared and all tray work is complete.

- Conduits and Pipes

The Bidder shall install conduits & pipes as specified & shown in the construction drawings. All accessories & fillings required for completing the installation. Such as inspection fees, elbows, check nuts, brass end caps, pull boxes, saddles spacers, shall be in Bidder's scope of supply conduit fittings shall be of same material as the conduit.

- **Supply of Cable accessories**

Various accessories required for completion of cable installation work shall be as per the specification's furnished below.

- Cable glands

- a) The cable glands shall be made from solid drawn brass rods, machined for smooth finish, cadmium - Nickel plated and passivated to protect against corrosion. The gland shall be suitable for the specified cable sizes. The neoprene compression rings shall have

wide range of compression to suit varying sizes & types of cables. Cable size shall be marked on the gland for easy identification.

b) Wherever specified in the schedule, the glands used shall be of following types.

- Double seal cone grip compression gland comprising of:  
Nipple with neoprene compression ring with groove for inner sheath of cable. Check nut with rubber washer to ensure dust tight joint between the enclosure and the gland. Cone and clamping ring for clamping the armour.
- The design of cone shall be suitable for any type of armouring i.e. wire or strip. gland body to accommodate various parts of gland with minimum clearance between walls. Neoprene compression ring with groove for the outer sheath of cable. Brass washer for proper positioning of the ring when compressed shall be provided. Compression nut to ensure perfect hold of cable by the gland.
- Single seal cone grip compression gland shall comprise of Nipple with neoprene compression ring with groove for inner sheath of cable. Check nut with rubber washer to ensure dust tight joint between the enclosure and the gland. Cone and clamping ring for clamping the armour. The design of cone shall be suitable for any type of armouring i.e. wire or strip. gland body to accommodate various parts of gland with minimum clearance between walls. Compression nut to ensure perfect hold of cable by the gland.
- Single seal compression gland for unarmoured cable shall comprise of :Nipple with neoprene compression ring with groove for inner sheath of cable. Check nut with rubber washer to ensure dust tight joint between the enclosure and the gland. Gland body to accommodate various parts of gland with minimum clearance between walls. Compression nut to ensure perfect hold of cable by the gland.

➤ Cable lugs

Compression type cable lugs for Aluminium / Copper cables conductors shall be tinned copper to suit the specified conductor size. The current rating of the lugs shall be same as that of the cable conductor.

➤ Cable Tags

Cable tags shall be fabricated from 2 mm thick 20 mm wide aluminium strap of required Length to contain cable number, cable size etc.

➤ Ferrules

Ferrules shall be of approved type, size to suit core size mentioned and shall be employed to designate the various cores of control cables by terminal numbers to which the cores are connected.

- **TESTS**

The insulation resistance of every cable laid shall be measured between phases & phase to ground before termination is made.

- **INSPECTION**

- The cables shall be checked for any physical damage during laying.
- The terminations shall be checked for phase sequence & changed if required.
- The connections shall be cross - checked with the interconnection diagrams for their correctness.
- Cable tag no. shall be checked for its correctness as per the cable schedule.

#### **4 WIRING**

- Branch circuit conductor sizes shall be as shown in the schedule of quantities and or drawings.
- Final branch circuits shall preferably be kept in a separate conduit upto the Distribution Board. No other wiring shall be bunched in the same conduit except those belonging to the same DB.
- Looping system of wiring shall be used. Wires shall not be jointed. Where joints are unavoidable, they shall be made through approved mechanical connectors. No such joints shall be made unless the length of the sub circuit, sub main or main is more than the length of the standard coil.
- Power wiring shall be distinctly separate from lighting wiring.
- Every conductor shall be provided with identification ferrules at both ends matching the drawings.
- MAINS / SUB-MAINS WIRES

Conduit wiring from lighting distribution board up to switch board and looping the phase conductor from one switch board to other as mentioned in the single line diagram shall be treated as mains / sub-mains wiring respectively. This shall be run in a conduit separate from that of point wiring. The estimated length of the conduits for the circuit wiring has been given in the schedule of quantities. This includes the length of conduits with different number of wires viz. 2, 4, 6, 8, etc.

- POINT WIRING

Point wiring shall include all work necessary to complete wiring of any length from the tapping point of distribution circuit to the following via switch

- Junction box / ceiling rose for light / fan points
- Plug points
- The following shall be deemed to be include in the point wiring –
- Switch and switch box (for switch, fan regulator, bell push etc.)

- Conduit and accessories such as bends, inspection bends, tees, junction boxes etc.
- All fixing accessories for conduits and conduit accessories such as clamps, spacers, rowel plugs, G.I. screws etc.
- Wiring between switch and junction box / ceiling rose / plug point and wiring necessary between switch boards other than mains wiring shown in the drawing.

- POINT WIRING

Where the one lighting fixture is controlled from one switch, wiring will be from switch to fixture in case of group control, No of points will be control by one switch, wiring from switch to all fixtures controlled by that specific switch and in case of group control no of points will be controlled by one MCB, wiring will be from MCB to all fixtures controlled by that specific MCB.

- CONDUIT WIRING

- The scope of work shall cover supply, installation, testing and commissioning of all conduit wiring.

- RIGID AND FLEXIBLE CONDUITS

- PVC conduits and accessories shall be heavy gauge with wall thickness not less than 2 mm and as per IS Specifications IS – 9537.
- Flexible conduits shall be formed from a continuous length of spirally wound interlocked strip steel with a fused zinc coating on both sides. The conduit shall be terminated in brass or PVC adopters.

- ACCESSORIES

- Conduit fittings such as bends, elbows, reducers, chase nipples, split couplings, plugs etc. shall be specifically designed and manufactured for their particular application. All conduit fittings shall conform to IS:2667-1964 and IS:3887-1966. Wherever galvanised conduits are specified in the schedule of work, the fittings also shall be galvanised.

- WIRES

- All wires shall be single core multi-strand copper or single strand Aluminium, PVC insulated to IS:694 and shall be 660 V grade.
- All wires shall be colour coded as follows:

Phase	Colour of wire
R	Red

Y	Yellow
B	Blue
N	Black
Earth	Green (insulated)
Control	(If any) Grey

- SWITCHES AND SOCKETS

- Switches shall be plate type of design with silver-plated contacts. Sockets shall be of 3 pin type. All switch and socket mounting on the modular plates and concealed PVC boxes. Combination of multiple switch units and sockets should be used in appropriate manner to minimise the switch boxes.
- Weather and waterproof switches/sockets of appropriate enclosure class shall be used as specified in the schedule of work.
- For heavy duty, metal clad sockets with M.C.B. isolator mounted in a galvanised steel box shall be provided.

- INSTALLATION

- The size of conduit shall be selected in accordance with the number of wires permitted under table given below. The minimum size of the conduit shall be 20 mm dia unless otherwise indicated or approved. Size of wires shall be not less than 1.5 sq.mm copper.

Nominal dia. Of wires (mm)	Nominal Cross sec area (mm)	20 mm		25 mm		32 mm		38 mm	
		S	B	S	B	S	B	S	B
1/2.40	1.50	4	3	8	6	15	9	-	-
1/1.80	2.50	4	2	6	4	10	8	-	-
1/2.24	4.00	2	2	4	3	8	6	-	-
1/2.80	6.00	1	-	4	3	6	6	-	-
1/3.55	10.00	1	-	3	2	5	4	6	5

S - runs of conduits which have distance not exceeding 4.25 m between draw boxes and which do not deflect from the straight by an angle more than 15 degree.

B - runs of conduits which deflect from the straight by more than 15 degree.

- Conduits shall be kept at a minimum of 100 mm from the pipes of other non-electrical services.
- SEPERATE CONDUITS / RECEWAYS SHALL BE USED FOR

- Normal lights and 5A 3 pin sockets on lighting circuit.
- Power outlets - 15A 3 pin 20A/30A 2 pin + scraping earth metal clad sockets
- Emergency lighting
- Telephones
- Fire alarm system
- Public address system
- CC TV System for security
- Computer and data wiring
- UPS wiring.
- Wiring for short extensions to outlets in hung ceiling or to vibrating equipment's, motors etc., shall be installed in flexible conduits. No flexible extension shall exceed 1.25 m. Otherwise rigid conduits shall be used.
- Conduits embedded into the walls be fixed by means of staples at not more than 500 mm intervals. Chases in the walls shall be neatly made with brick cutter and refilled after laying the conduit and brought to the finish of the wall but final finish will be done by the building Bidder.
- Conduits buried in concrete structure shall be put in position and securely fastened to the reinforcement and got approved by the Engineer, before the concrete is poured. Proper care shall be taken to ensure that the conduits are neither dislocated nor choked at the time of pouring the concrete. Suitable fish wires shall be drawn in all conduits before they are embedded. Where conduit passes through expansion joints in the building, adequate expansion fittings shall be used to take care of any relative movement.
- Inspection boxes shall be provided for periodical inspection to facilitate withdrawal and removal of wires. Such inspection boxes shall be flush with the wall or ceiling in the case of concealed conduits. Inspection boxes shall be spaced at not more than 12 meters apart or two 90 degree solid bends or equal. All junction and switch boxes shall be covered by 6 mm clear Perspex plate truly cut and fixed with cadmium plated brass screws. These junction boxes shall form part of point wiring or conduit wiring as the case may be including the cost of removing the Perspex cover for painting and refixing. No separate charges shall be allowed except where specially mentioned.
- Conduits shall be free from sharp edges and burrs and the threading free from grease or oil. The entire system of conduits must be completely installed and rendered electrically continuous before the conductors are pulled in. Conduits should terminate in junction boxes of not less than 32 mm deep. All metallic conducts shall be earthed.
- An insulated earth wire of not less than 1.6 sq.mm copper shall be run in each conduit.
- TELEPHONE DISTRIBUTION SYSTEM

➤ SCOPE

The scope of work shall cover supply, installation, testing and commissioning of the telephone distribution system.

➤ DISTRIBUTION SYSTEM

Telephone cabling shall be used 0.5mm. diameter electrolytic tinned copper conductors duly colour coded twisted pairs with rip cord. Cabling shall be multipair, PVC insulated, sheathed and armoured and twin pair PVC insulated wires drawn in heavy gauge PVC conduits. Cables shall confirm to I.T.D. specification.

➤ TAG BOX

Telephone tag box shall have two terminal blocks cross connect type and shall be suitable for multipair cables. All incoming and outgoing cables shall be terminated on separate terminal blocks and all terminations shall be silver soldered. The cross connecting jumpers shall be insulates wires of the same diameter and screw connected. Tag blocks shall be mounted inside fabricated sheet steel boxes with removable hinged covers and shall be fully accessible. The enclosure shall be painted with two coats of red oxide and stove enamelled.

➤ INSTALLATION

The installation of conduit shall be generally as specified under section "Conduit Wiring".

The connections at the tag blocks shall be silver soldered so as to achieve minimum contact resistance.

• INSPECTION AND TESTING

- The Bidder shall offer each part of work for inspection after completion of the job.
- The sample for materials, to be provided by the Bidder, shall be got inspected and approved from the Engineering in charge before procurement of these items.
- Any faulty or defective work shall be rectifies by the Bidder without any extra cost.
- The Bidder shall provide required test certificates and other documents for obtaining power supply to individual unit.

**5 CABLE TRAYS AND STRUCTURAL STEEL**

• **Scope**

This specification covers manufacturing, supply and installation of G.I. perforated cable trays of various sizes required for laying of control and power cables in EHV substation.

➤ **Standards**

The recommended practice of hot dip galvanizing of iron and steel and method of testing and inspection shall conform to the requirements of the latest Indian standards. Some of these standards are listed below:

<b>Sr. No.</b>	<b>Standard No.</b>	<b>T I T L E</b>
1	IRC:82/1982	Practice for Maintenance of Bituminous surfaces of Highways

➤ **General Technical Requirement**

- The hot dip galvanized perforated metal trays shall be made out of 16 SWG (1.6MM ) M.S. sheet. The sheet shall be CRCA.
- Each tray section shall not be more than 2.5 M. and shall be provided with side coupler plate and associated hardware.
- Side coupler shall be fabricated out of 3 mm M. S. galvanized plate with four circular and four elliptical holes.
- The trays shall be hot dip galvanized after fabrication and punching. The coating of zinc shall not be less than 340 gm / sq. M.

➤ **Tests**

The cable trays shall be subjected to galvanizing test.

➤ **M. S. Painted steel structure**

Providing fabricating, installing M.S. Painted supports in trenches, on floor, on columns, etc as per requirement for fixing of trays, panels, marshalling boxes, including painting with two coats red oxide and two coats of paint of approved shade complete as per detail technical specification.

➤ **Technical Specification**

M. S. fabricated supporting structures shall be provided for supporting cable trays, panels, distribution boards, lighting panels etc. as well as rail poles to be provided on the transformer foundation for installing Power transformers.

- The fabricated supporting steel shall be painted with one coat of red oxide primer and two coats of paint of approved colour.

**6 INDOOR AND OUT DOOR LIGHT FIXTURES**

- SCOPE

This specification covers the requirement of lighting fixtures for lamps, Metal Halide lamps and the associated accessories.

- CODES & STANDARDS

- The design manufacture and performance of equipment shall comply with all currently applicable status, regulations and safety codes in the locality where the fittings will be installed. Nothing in this specification shall be construed to relieve vendor of this responsibility.



- Unless otherwise specified the fittings shall conform to the latest applicable Indian Standards, British Standards or IEC Standards. Some of which are below :

i)	IRC:82/1982	Practice for Maintenance of Bituminous surfaces of Highways
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- DESIGN REQUIREMENTS

- Fixtures (General)

Fixtures in general shall be designed for minimum glare. All light reflecting surfaces shall have optimum light rejecting co-efficient so as to ensure Q maximum overall light output. (They shall be designed for continuous operation under atmospheric conditions specified in enclosed Project information - General' without reduction in lamp life or without deterioration of materials & internal wiring. Fixtures shall be complete with all accessories like ballast power factor improvement capacitors etc. If control gear is to be provided separately details shall be furnished.

- Reflectors

Reflectors shall be POT shaped deep drawn made out of high purity aluminium which electrochemically brightened and anodised. High transparency cover made out of clear acrylic and in single piece construction is fixed on to the housing by means of toggle clips. They shall be readily removable from the housing for cleaning and maintenance without disturbing the lamps & without use of tools. They shall be securely fixed to the housing by means of positive fastening device of captive type.

- Lamp holders & Starter Holders

Lamp holders shall be of low contact resistance, resistant to wear and suitable for operation at the specified temperature without deterioration in insulation value, contact resistance or retention of the lamp. Those shall hold the lamp in position under normal condition of vibration. Live parts of the lamp holder shall not exposed during insertion of removable of the lamp or after the lamp or after the lamp has been taken out.

- Ballast

The ballasts shall be of inductive, heavy duty type, filled with thermosetting, insulating, moisture repellent compound filled under pressure or vacuum. Ballast shall be provided with tapings to set the voltage within the range specified for Metal Halide lamps. End connections and taps shall be brought out in a suitable terminal block, rigidly fixed to the ballast enclosure. Separate ballast for each lamp shall be provided in case of multi lamp fixtures.

- Starters

Starters shall have bimetal electrodes and high mechanical strength, starters shall be replaceable without disturbing the reflector or lamp and without the use of any tool. Starters shall have brass contacts and radio interference capacitors.

➤ Capacitors

The capacitors shall be hermetically sealed preferably in a metal enclosure to prevent seepage of impregnate and ingress of moisture.

➤ Mounting

The mounting arrangement shall be side entry on bracket arms of 50 mm OD

➤ Earthing

All metal or metal enclosed parts of the housing shall be bended and connected to the earthing terminal so as to ensure satisfactory earthing continuity throughout the fixture. 2 Nos. earthing terminations with 2 plain and one spring washers, shall be provided.

➤ Painting

All the surfaces shall be thoroughly cleaned and digressed. The fixture shall be free from scale, rust, sharp edges and burrs. The housing shall be single piece die-cast aluminium which is painted grey finish.

➤ SPARE PARTS

Whether included in the manufacturer's recommendation or not, unit prices of the following items shall be quoted together, with the

suggested quantities and catalogue numbers.

➤ each type of lamp

➤ each type of control boxes.

➤ Each type of reflector

➤ Ballast for Metal Halide lamps

➤ Power factor improvement capacitors

➤ Starters

➤ Lamp Holders

- The unit prices shall not, however, be limited to the above items. Manufacturer may recommend additional spare items and quote the unit prices of the respective items.

- TESTS & TEST REPORTS

➤ Type tests, acceptance tests and routine tests for the lighting fixtures and accessories covered by this specification shall be carried out as per the relevant Standards for the respective fixtures and their accessories.

➤ Manufacturer's type and routine test certificates shall be submitted for tests conducted as per relevant IS / BS for the fixtures and accessories.

- DRAWINGS AND DATA

- As part of the proposal, the Bidder shall furnish relevant descriptive and illustrative literature on lighting fixtures and accessories and following drawings / data from the respective lighting fixtures :
- Dimensional drawings
- Mounting details, cable entry facility and weights
- Light distribution diagrams (zonal&Isocandela)
- Light absorption and utilization factors.
- Lamp output Vs Temperature curve.

- GENERAL REQUIREMENTS

- Fixtures shall be installed at mounting heights as detailed on the drawings or instructed on site by the Architects/Consultants.
- Fixtures and/or fixture outlet boxes shall be provided with hangers to adequately support the complete weight of the fixture. Design of hangers
- and method of fastening other than shown on the drawings or herein specified shall be submitted to the Architect / Consultant's instructions.
- Flush mounted and recessed fixtures shall be installed so as to completely eliminate light leakage within the fixture and between the fixture and adjacent finished surface.
- Fixture mounted on outlet boxes shall be tightly secured to a fixture stud in the outlet box. Extension pieces shall be installed where required to facilitate proper installation.
- Fixture shall be completely wired and constructed to comply with the regulations and standards for Electric Lighting Fixtures, unless otherwise specified. Fixtures shall bear manufacturer's name and the factory inspection label unless otherwise approved.
- Wire insulation shall suit the temperature conditions inside the fixture and wires bypassing the choke shall be heat protected with a heat resistant sleeve.

## **7 EARTHING**

The scope of work of present contract includes all the necessary materials required for carrying out the earthing as per statutory requirements without any extra cost.

- **3.0 M long G.I. Earthing**

- Earthing shall be provided at the locations shown on the enclosed earthing layout drawing.
- Each earthing shall comprise of a 40 mm diameter (nominal) Gal. iron pipe of standard length of 3 meters. The G.I. Pipe shall be provided with clamping arrangement as shown in the enclosed indicative drawing.

- Two Hot dip galvanised M.S. Strips 50 x 6 mm shall be bent into two half rings around the socket of the C.I. Pipe extending on either side for clamping & bolting to the earth grid.
- The half rings shall be bolted rigidly to the C.I. Pipe at 4 locations with 16 mm bolts & nuts.
- The two strips shall then be bolted together on either side of pipe with 16 mm dia bolts & nuts.
- Two pairs of holes shall be provided on either side of the flats at 65 mm spacing for bolting the earth grid conductor with 12 mm dia bolts.
- The MS half rings shall be hot dip galvanised after shaping, drilling is completed. All bolts & nuts shall be provided with spring washers. All the hardware shall be hot dip galvanised.
- Bore Type Earthing for hard soil and rocky terrain
  - Bore type earthing shall be provided in the area where soil is not normal or with Hard Murum or Rocky.
  - To prepare the Earth pit in Hard Murum or Rocky area bore shall be drilled of dia 4.5" with the help of compressor and up to a minimum depth of 10 Mtrs.
  - A 65 MM dia GI pipe 10 mtr long shall be in the base with a clamp as shown in the drawing. It should be connected to the pipe with the help of GI Nut & Bolts.
  - The bentonite compound should be filled in the bore after lowering of GI pipe electrode.
- The BB masonry chamber with plastering shall be constructed for each earthing. A 600 x 300 mm CI cover with frame shall be fixed on the chamber.
- The earthing station shall be generally as per IS 3034 and enclosed drawings.

## **8 EARTHING CONNECTION**

- On equipment to a main earthing ring. The earthing ring will be connected Via links to several earth electrodes. The cable armour will be earthed Through the cable glands.
- The following shall be earthed.
  - a) Transformer neutrals
  - b) Transformer Housing
  - c) All Switchgear and their earth buses
  - d) All fences/enclosures housing Electrical Equipment.
- System shall be earthed by two distinct conductors directly connected

To independent earth electrodes which in turn, shall be connected to the earth loop. The earth connection shall be properly made. A small flexible aluminum cable loops to bridge the top cover of the transformer and the tank shall be provided to avoid earth fault current passing through fastening bolts when there is a lightning surge, high voltage surge or failure of the bushings.

- `All hardware used for earthing installation shall be hot dip galvanised for zinc passivated. Spring washers shall be used for all earthing connections of equipment having moving parts and for all the connections subject to vibrations etc.

<b>Material Specifications</b>	
1	415 V LT Cables
	: 1.1 KV grade Copper armoured PVC sheathed as per IS : 1554.
2	Household Wires
	: 650/1100 V grade, Copper conductor, multistrand, FR type as per IS : 694
3	PVC Conduit
	: Rigid, HMS/MMS, 20/25 mm Dia as per IS: 9537, 2 KV dielectric strength with
	R > 100 MW
4	Conduit Accessories
	: Same as above as per IS: 2667 & 3887. Only deep JB to be used in slab &
	regular JB in wall work.
5	Switches & Accessories
	: Switches shall be plate type of design with silver-plated contacts. Sockets
	shall be of 5pin type. All switch and socket mounting on the modular plates and
	concealed metal boxes.
6	Tel / TV Sockets
	: Same as above but switch type.
7	Fan Regulators
	: Electronic type, 5 step, 200 w with compensating R.
8	DB's
	: Double/Single door, Powder coated, Front door lockable, IP40 degree, Earth
	terminals, concealed mounting, suitable for SPN /TPN with neutral link.
9	MCB's / ELCB's
	: MCB shall be of 3/6/10 KA rating, IP20, Thermo set DMC material, flame
	retardant, 25 sq. mm. Terminal capacity, insulated shutters, DIN rail mounting.
	ELCB shall be 30/100/300 mA, as per IS:8828 / 13947.

## **APPROVED MAKES OF MATERIALS - ELECTRICAL**

<b>Sr. No.</b>	<b>Materials</b>	<b>Manufacturers</b>
1	Rigid PVC conduit with accessories	Precision, Presto Plast
2	Multistrand FR copper conductor house wires of 650v grade	Polycab, Finolex
3	Switches/Sockets/Lan, Tel Sockets/Fan Regulator/Modular Plates and Boxes	Anchor Roma, Legrand Mylink
4	Double/ Single Door IP40 Distribution Boards	Legrand, Hager
5	1.1 kV grade Power and Control Cables	Vishal, Polycab
6	3/6/10KA MCB's and 30/100/300mA ELCB's/RCBO	Legrand, Hager
7	Multipair and coaxial Tel and TV Cable	Brimson, Polycab

## LETTER OF OFFER

To,

**The Registrar**

SNDT Women's University  
1, NathibaiThackersey Road,  
Churchgate,  
Mumbai 400 020

**Subject: E-Tender for Repair work in campus area at SNDT Women's University at Churchgate campus, Mumbai.**

**Dear Sir,**

With reference to the tender invited by you for the above mentioned work, I/we do hereby offer to perform, provide, execute, complete and maintain the work/s in conformity with the drawings, Conditions of Tender, Articles of Agreement, Conditions of Contract, Specifications and Bill of Quantities for the sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) at the rates quoted in the Bill of Quantities.

I/We have satisfied myself/ourselves as to the location of site, examined the drawings and read the Articles of Agreement, Conditions of Tender, Conditions of Contract and the Specifications etc. **I/We agree to finish the whole of the work/s within ---- months from the date of commencement** of ht work, fully understanding that time will be the essence of the Contract and we will pay the agreed liquidated damages in case of any delay on our part. We also agree to carry out the work with the best of workmanship and maintain a very high degree of accuracy and quality, using the best of specified construction materials. In the event of any defects occurring within one year from the date of actual completion, we agree to repair and rectify the same to the complete satisfaction of the Owner, in lieu of which, we agree to keep with the Owner the amount of Security Deposit and Retention Percentage, as per Conditions of Contract.

I/We further agree to abide with all requirements of the Owner in respect of any other agency involved in any other aspect of the present proposed construction work and to extend our complete cooperation to any such agency in the interest of the timely and successful completion of the project.

I/We understand that you are not bound to accept the lowest or any tender you may receive.

Yours faithfully,

**Signature of the Contractor**

Date:

Address:

Note: \* Insertion to be made by the Tenderer



**Name of Work: E-Tender for Repair work in campus area at SNTD Women's University in Churchgate campus.**

<b>Sr. No.</b>	<b>Description of work</b>	<b>Qty</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount</b>
1	Providing and erecting 'Y' shape wire fencing with seven rows of barbed wire supported on mild steel angles (50mm x 50mm x 6mm) at 2.5 meter centre to centre including fixing post with anchor fastners (thickness 12mm) & P.M.S. plate (thickness 6mm). Painting the mild steel angles with one coat of red lead primer & 2 coats of painting etc complete.	727.50	Rmt.	260.00	189150.00
2	Providing and fixing 45cm wide steel ladder of 40mm x 6mm mild steel flat stringers and steps of 18mm diameter mild steel bar including fixing of 18mm diameter mild steel bar including fixing it in 1:2:4 cement concrete block 60cm x 30cm x 30cm and painting the ladder.	6.71	Rmt.	2105.27	14126.36
3	Providing and fixing collapsible steel gates in two leaves with channel pickets, pivoted flat bars including top and bottom guide rollers, stoppers, handles, all fittings and accessories, locking arrangement and applying one coat of red lead primer complete.	3.53	Sqm.	2482.00	8761.46
4	Providing and fixing mild steel grill work for window, ventilator weighting 15kg per sqm. As per drawing including necessary welding and painting with one coat of Red Oxide Zinc Chromate primer and two coat synthetic enamel paint etc complete.	21.86	Sqm.	1410.00	30822.60
5	Repairing work of two gates & three ladders to make it functional by welding & necessary fitting etc complete.	1.00	Job	13000.00	13000.00
6	Providing and fixing container sheet/ profile sheet (0.55 gauge) shed of approved colour with vertical C channel (size 3" x 11/2 ") & frame work with C channel (size 3" x 11/2"). Vertical C channel should be fixed on 10" x 10 x 10mm M. S. Plate & distribution truss of square pipe & size 2" x 2" (12 gauge). Container sheet fixed in proper position with painting sealant & necessary gastener etc complete.	99.16	Sqm.	1208.78	119862.62
7	Excavation for foundation in earth, soil of all types, sand, gravel and soft murum including removing the excavated materials up to a distance of 50 metres beyond the building area and lift up to 1.50 metres, stacking and spreading as directed including dewatering unless provided elsewhere, preparing the bed for the foundation and necessary backfilling ramming, watering complete excluding shoring and strutting.	56.11	Cmt.	239.00	13410.29
8	Providing dry trap/ rubble stone soiling 15cm to 20cm thick including hand packing and compacting etc complete.	18.80	Cmt.	915.00	17202.00

9	Providing and laying in position in situ plain cement concrete M-15 with minimum cement content of 320 Kg./Cum as per IS 456-2000 for foundation and bedding including admixtures to accelerate, retard setting of concrete improve workability without impairing strength and durability. The rates shall includes bailing out water manually cantering, shuttering, compacting by vibrator and curing (Excluding reinforcement) etc complete.	18.80	Cmt.	6753.00	126956.40
10	Providing and fixing in the carriageway interlocking concrete pavers unshaped (monolithic single layer precast concrete blocks) of gray cement and of approved colour as per technical specification, 60mm thick having average crushing strength of 35 N/mm <sup>2</sup> placed on average thickness of 65mm uniformly graded river sand cushioning with properly compacted with mechanical compactor with required level grade and camber etc complete as directed (for carriageway only) (as directed by Engineer in charge)	92.00	Sqm.	875.00	80500.00
11	Providing Second Class Burnt Brick masonry with conventional/I.S. type bricks in cement mortar 1:5 in foundations and of inner walls/in plinth of external walls including bailing out water manually, striking joints on unexposed faces, racking out joints on exposed faces and watering etc complete.	5.00	Cmt.	7592.00	37960.00
12	Providing rough cast cement plaster externally in two coats to concrete/brick/stone masonry in all positions including preparing the base, watering and applying base coat of 12 to 15 mm thick in cement mortar 1:4 using water proofing compound at the rate of 1kg per 50 kg of cement and rough cast treatment 12 mm thick in proportion 1:1 1/2 :3 including scaffolding and 14 days curing etc complete.	45.00	Sqm.	494.00	22230.00
13	Providing and applying one coat of exterior primer for Acrylic latex paint of approved manufacturer including preparing the surface etc complete as per manufacturers specification. (As directed by Engineer in charge) Providing and applying two coats of exterior Acrylic latex paint of approved colour and shade to the plastered surface as per manufacturer's specification including scaffolding preparing the surface etc complete (Including primer coat).	80.00	Sqm.	131.00	10480.00
14	Removing any kind of debris including loading in truck and conveying to dumping point approved by BMC, unloading, spreading etc. complete. With all leads and lifts. (As directed by Engineer in Charge)	56.11	Cmt.	690.00	38715.90
	<b>Total Amount</b>				<b>723,177.64</b>