

## TENDER NOTICE

SHRI SARASWATI BHUVAN EDUCATION SOCIETY, Chhatrapati Sambhajnagar invites Item Rate tenders for Proposed Construction ShriSaraswatiBhuvan high school Building (Ground Floor) Jalna.

The applying contractor must have completed similar type One Single job of minimum Rs.5.00 Crores within a time period of last three financial years. The contractor must submit the documentary proof of work experience with application.

The approximate cost of work is **Rs.2.59.Crores.**

Tender forms can be obtained from ShriSaraswatiBhuvanCentral office at the address mentioned below on payment of Rs.10,000 /- (Rs. Ten Thousand Only.) (inclusive of Service Tax) from **23<sup>rd</sup>September 2024 to 30<sup>th</sup>September 2024** between **9.30 A.M. To 5.30 P.M.** on Working Days. Tender cost is non-refundable.

Pre-bid meeting will be held at **3.30 PM** on 3<sup>rd</sup> October 2024 at ShriSaraswatiBhuvanEducation Society, Central office, Saraswati Nagar, Aurangapura, ChhatrapatiSambhajnagar.

The sealed tenders should be submitted **on or before 7<sup>th</sup> October 2024 up to 3.00 P.M.** at ShriSaraswatiBhuvanEducation Society, Central Office and shall be opened at **4.00 P.M.** on same date that is **7<sup>th</sup> October 2024** in the presence of contractors who choose to remain present. It is not binding on Owner to award the Contract to the lowest bidder. The SaraswatiBhuvan Education Society reserves the right to reject any or all tenders without assigning any reasons thereof.

General Secretary  
ShriSaraswatiBhuvanEducationSociety,  
Central Office, Saraswati Nagar,  
Aurangapura, ChhatrapatiSambhajnagar. [Interfacedesigners2015@gmail.com](mailto:Interfacedesigners2015@gmail.com)

Interface Designers  
164, Tilaknagar, Aurangabad – 431 005.  
Phone No. 0240 2331251,

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## 1. DETAILED TENDER NOTICE

1.1 Sealed **ITEM – RATE** tenders are invited from qualified Contractors for the above work as per the following details :

- |         |  |   |
|---------|--|---|
| 1.1.1.  | Name and Site of Work                  | Proposed Construction of Shri Saraswati Bhuvan high School ( Ground Floor ) Jalna. Dist Jalna.  |
| 1.1.2.  | Scope of Work                          | Civil works .   |
| 1.1.3.  | Estimated Cost                         | Rs.2.59.Crore   |
| 1.1.4.  | Date of commencement                   | Within a week from the date of agreement  |
| 1.1.5.  | Time of Completion                     | 18 months from the date of agreement.   |
| 1.1.6.  | Date and Place of Submission of Tender | On or before 7 <sup>th</sup> October 2024 up to 3.00 P.M. at office of Shri Saraswati Bhuvan Education Society, Central Office, Saraswati Nagar, Aurangpura, Chhatrapati Sambhajinagar            |
|         | Time of Opening                        | 4.00 P.M. on 7 <sup>th</sup> October 2024. at Central Office of Shri Saraswati Bhuvan Education Society.  |
| 1.1.7.  | Earnest Money                          | Equivalent to 1% of quoted cost by Demand Draft / Bank Guarantee. ( From any Nationalised Bank only. ) in favor of The General Secretary, Shri Saraswati Bhuvan Education Society.                |
| 1.1.8.  | Initial Security Deposit               | 2% of accepted tendered amount to be deposited within ten (10) days of acceptance of tender.  |
| 1.1.9.  | Total Retention Money                  | Total 5% of value of work (including Initial Security Deposit) to be refunded after expiry of defects liability period of 12 months from the date of virtual completion and its proper discharge. |
| 1.1.10. | Defects Liability Period               | 12 months from date of Virtual Completion   |
| 1.1.11. | Liquidated Damage for delay            | 0.5% per week of the accepted tendered amount subject to a ceiling of 10% of the accepted tendered amount, Saraswati Colony, Chhatrapati Sambhajinagar  |
| 1.1.12. | Date of Pre-bid meeting                | 3 <sup>rd</sup> October 2024, 3.30 PM at Central  |

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Office, ShriSaraswatiBhuvanEducation Society.

## 1.2 Qualification Criteria

1.2.1 The applying contractor must have completed similar type One Single job of min. Rs.5.00 Crores within a time period of 9 months, in last three financial years.

1.2.2 Contractor Shall have minimum 10 years of Experience in Construction Field.

1.2.3 Contractor shall have minimum average turn Over of Rs. 7Crore for last 3 financial years. Contractor shall submit the CA/Auditor's Certificate showing the proof of Turn Over along with Summarized Financial Report (Min 1 Page) of each year with Signature & Stamp of CA/ Auditor.

1.2.4 Contractor shall submit list of completed works in last three financial years duly signed by respective Clients with their seal.

1.2.5 Contractor Shall Submit Solvency Certificate of at least 20% of Cost of the Project received from any Nationalized or Scheduled Bank.

1.2.6 Contractor shall submit the list of Completed Projects, Ongoing Projects & Projects in Hand along with necessary documentary proofs from respective clients.

1.2.7 Earnest money deposit 1% of Tendered cost shall be submitted at the time of tender submission.

1.2.8 Contractor shall submit list of tools and machinery along with the staff which will be employed if the work is awarded to him.

Note – 1) As this Tender is item rate B2 type Tender i.e. it is two envelope method Tender.

2) Envelope 1 shall contain qualification criteria documents as per clause no 1.2 mentioned above & envelope 2 shall contain commercial offer.

3) If documents submitted in envelope one are not found in order or as per requirement then envelope two shall not be open.

1.3. Tender document can be obtained from the Central office of the ShriSaraswatiBhuvanEducation Society at a cost of Rs. 10,000/-

1.4 In the event of the tender being submitting by a firm, it must be signed by each partner thereof, and in the event of the absence of any partner, it shall be signed on his behalf by a person holding a Power of Attorney authorizing him to do so.

## 1.5 Earnest Money

1.5.1. The Contractor shall pay along with the tender a sum equivalent to 1% of his quotation amount as and by way of Earnest Money in a separate envelope. The Contractor shall pay the said amount by Demand Draft / Bank Guarantee drawn on any Nationalized Bank / Scheduled Bank in favor of the "General Secretary, ShriSaraswatiBhuvanEducation Society which will not carry any interest whatsoever.

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- 1.5.2. In the event of his tender being accepted, subject to the provisions of sub-clause (1.5.3) below, the said amount of Earnest Money shall be appropriated towards the amount of Security Deposit payable by him under the General Conditions of Contract or refunded if the total security deposit is furnished.
- 1.5.3. If after submitting the tender the Contractor withdraws his offer or modifies the same, or if, after the acceptance of his tender the Contractor fails or neglects to furnish the balance of Security Deposit, then, without prejudice to any other rights and powers of the Owner hereunder, or in Law, the Owner shall be entitled to forfeit the full amount of Earnest Money deposited by him.
- 1.5.4. In the event of his tender not being accepted, the amount of Earnest Money deposited by the Contractor shall, unless it is forfeited under the provisions of sub-clause (1.4.3) above, be refunded to him on his passing receipt thereof.
- 1.6. Receipts for payments made on account of any work when executed by a firm, should also be signed by all the partners except where the Contractors are described in their tender as a firm in which case the receipts shall be signed in the name of the firm by one of the partners or by some other person having authority to give effectual receipts for the firm.
- 1.7. Tender which proposes, any alteration in the works specified in the said form of invitation of tender or in the time allowed for carrying out the work or which contains any other conditions of any sort is liable to rejection.
- 1.8. The tenders shall be opened in the presence of Contractors who have submitted tenders or their representatives who may be present at that time. In the event of a tender being accepted, the Contractor shall for the purpose of identification, sign copies of the specifications and other documents and the agreement. In the event of the tender being rejected, the Owner shall refund the amount of Earnest Money deposit to the unsuccessful Contractors on their giving a receipt for the return of the money.
- 1.9. The Owner reserves the right of rejecting all or any of the tenders without assigning any reason and is not bound to accept the lowest or any other tender.
- 1.10 No receipt for any payment alleged to have been made by a Contractor in regard to any matter relating to this tender shall be valid and binding on the Owner unless it is signed by the Architect / Owners Authorized representative.
- 1.11. Tenders submitted without payment of Earnest Money Deposit will not be opened or accepted.
- 1.12. Drawings can be inspected in the Central office of the ShriSaraswatiBhuvanEducation Society during working hours.

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1.13. In case of any difference in the rates quoted in words and figures, that given in words shall prevail.

1.14. The offer of the tenderer shall remain open for a period of **45days** from date of submission. During this period no tenderer will be allowed to withdraw his tender.

1.15. The tender documents shall be submitted in a sealed inner cover and a sealed outer cover with the envelope, containing the Earnest Money placed in between. All the envelopes/covers shall be addressed to the 'The General Secretary, ShriSaraswatiBhuvan Education Society.' with the name of the Contractor given in the bottom left hand corner and super scribed Tender for Construction of Indoor Sports and Incubation Facility Center. The top most cover will be opened first. The cover containing the tender documents will only be opened if it is found that the Earnest Money submitted by the tenderer is in the appropriate form.

1.16. This is an item-rate tender. The priced schedule of quantities is appended with the tender and the tenderer shall submit his offer at the item - rates mentioned in the schedule of quantities.

1.17 Under no circumstances shall any Contractor be entitled to claim enhanced rates for items in this contract in future.

1.18. All corrections and additions or pasted slips shall be initiated.

1.19. Every tenderer shall along with the tender furnish information regarding the Income tax Circle or Ward of the District in which he is assessed to Income-tax, the reference to the number of the assessment and the assessment year, and a valid latest Income-tax Clearance Certificate.

1.20. No foreign exchange would be released by the Owner for purpose of construction materials, plants and machinery required for the execution of work contracted for.

1.21 The tenderers are requested to submit to the Architects in writing ( electronically or other way ) **before 21<sup>st</sup> September, 2024**(asking for any clarifications or any variations that they noticed in the tender documents. Thereafter a pre-tender meeting will be held in the Central office of the ShriSaraswatiBhuvanEducation Society. At this meeting all issues raised by the tenderers will be discussed. Thereafter an amendment will be issued. This amendment will form part of the contract and the tenderers will be required to quote accordingly. Any other conditions given by the tenderer except those accepted in pursuance of the pre-tender meeting, will make the tender liable for rejection.

1.22. Every page of the tender document shall have the seal of the Contractor and initialed, and full signature where specifically indicated.

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1.23. No loss / compensation / damages shall be payable by the Employer / Owner to the Contractor / any one if the work stopped by the order of any judicial / Higher Administrative authority.

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## 2. DECLARATION OF THE CONTRACTOR

To,

The General Secretary,  
ShriSaraswatiBhuvanEducation Society,  
SarswatiNagar,Aurangpura,  
ChhatrapatiSambhajinagar - 431001

### Name of Work:

Dear Sir,

Having inspected the site of the work and examined the tender documents including conditions of contract, specifications and the schedule of quantities and having studied carefully the plans/Designs prepared by the Architects, I/We do hereby offer to execute the said work as per the tender documents and authorized plans prepared by your Architects Interface Designers, Aurangabad.

In addition to the above schedule, I/We also agree to carry out variations if any, ordered in the said work during the course of its construction. Payment for such work shall be received by me/us at the item - rates filled in the schedule or at rates derived there from.

I/We herewith deposit Rs. \_\_\_\_\_ only as earnest money for the due execution of the work as stated above. I/We also undertake to pay the security deposit as laid down in the Conditions of Contract in case my/our tender is accepted.

I/We further agree to complete the work included in the said schedule in 18 months or in default pay liquidated damages at a minimum rate of 0.5% per week of the accepted tendered amount limited to a maximum of 10% of the accepted tendered amount if the work remains incomplete beyond the said date of completion as per Clause 5.3 of General Condition of Contract. I/We take time as the essence of the contract.

In case of acceptance of the tender I/We agree to enter into a contract immediately and make an agreement in the required form. In default of this I/We agree to forfeit to the Owner the sum of earnest money furnished by me/us.

I/We agree to employ only such sub-Contractors as may be approved by the Architects /Owners

I/We agree to pay Government Sales Tax (Works Contract Tax) and Gen. Taxes, service taxes all royalties etc. on items on which the same are leviable as well as to deduction of Income Tax at source as per Income Tax rules and regulations.

Yours faithfully,

Signature Of Authorized Signatory      Seal and Stamp

NAME AND ADDRESS OF THE FIRM :

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### 3. LETTER OF OFFER

To,

The General Secretary,  
ShriSaraswatiBhuvanEducation Society,  
SarswatiNagar,Aurangpura,  
ChhatrapatiSambhajinagar- 431001

Subject : Proposed Construction Of **ShriSaraswatiBhuvan High SchoolJalana.**

**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 18 months from the date of award of the 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 co-operation 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

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#### 4. ARTICLES OF AGREEMENT

Agreement made at Jalna this \_\_\_\_\_ day of 2024  
Between General Secretary, Shri Saraswati Bhuvan High School Jalna. (hereinafter referred to as the Owner which expression shall include its **successors and assigns** ) of the one part, AND, M/s. \_\_\_\_\_ (hereinafter referred to as the **Contractor** which expression shall include his heirs, Executors, Administrators & Assignees) of the other part.

WHEREAS the Owner is desirous of Constructing of Indoor Sports and Incubation Facility Center has caused drawings and specifications describing the work to be done, prepared by your Architects M/s Interface Designers (hereinafter referred to as "the Architects") AND WHEREAS the said drawings inclusive and the specifications and the priced schedule of quantities have been signed by or on behalf of the parties hereto AND WHEREAS the contractor has agreed to execute upon and subject to the conditions set forth herein (hereinafter referred to as "the said conditions") the work shown upon "the said drawings" and described in "the said specifications" and "the said priced schedule of quantities at the respective rates mentioned in the priced schedule of quantities for the

**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

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said Architects 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 term "the Architects" in the said conditions mean the said or in the event of their death or ceasing to be the Architects for that purpose of the contract, such other person shall be nominated for that purpose by the Owner, not being a person to whom the contractor shall object for reasons considered to be sufficient by the employer. Provided always that no persons subsequently appointed to be Architects under this contract priced schedule of quantities etc shall be entitled to overrule any decision or approval or direction given or expressed in writing by the Architects for the time being.

4)The Drawings, Specifications, and Priced Schedule of quantities above mentioned shall form the basis of this contract and the decision of the Architects or other Architects/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.

5)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 said Architect or the other Architects for the time being even though such works may not be shown on the drawings or described in the said specifications or the priced schedule of quantities.

6)The Owner through the Architects reserves to himself the right of altering the drawings and nature of the work and of 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.

7)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

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

8)All disputes arising out of or any connected with this agreement shall be deemed to have arisen in Aurangabad and only the Hon'ble Court in Aurangabad shall have jurisdiction to determine the same.

9)The several parts of this contract have been read to us and fully understood by us.

As witness our hands this \_\_\_\_\_ day of 2024.

SIGNED BY THE SAID

**OWNER**

IN THE PRESENCE OF

1.

2.

SIGNED BY THE SAID

**CONTRACTOR**

IN THE PRESENCE OF

1.

2.

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**5. GENERAL CONDITIONS OF CONTRACT**

**I N D E X**

- 5.1 Definitions
- 5.2 Security Deposit and Retention Money
- 5.3 Compensation for delay
- 5.4 Action when whole of Security Deposit is forfeited
- 5.5 Action when the progress of any particular portion of the work is unsatisfactory
- 5.6 Contractor remains liable to pay compensation
- 5.7 Extension of time
- 5.8 Final Certificate
- 5.9 Payment on Intermediate Certificates to be regarded as advances
- 5.10 Payment at reduced rates
- 5.11 Submission of bills
- 5.12 Work to be executed in accordance with specifications, drawings etc.
- 5.13 Alterations in specifications and designs not to invalidate contract ( extra items )
- 5.14 Extension of time
- 5.15 Supply of Materials
- 5.16 Time limit for unforeseen claims
- 5.17 Action and Compensation payable in case of bad work
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- 5.19 Works to be open to inspection
- 5.20 Notice to be given before work is covered up
- 5.21 Contractor liable for damage for 12 months after completion
- 5.22 Contractor to supply materials, labour, tools etc.
- 5.23 Liability of the Contractor for damage
- 5.24 Employment of female labour
- 5.25 Work on Public Holidays
- 5.26 Work not to be sublet
- 5.27 Sum payable by way of compensation
- 5.28 Changes in constitution of firm to be notified
- 5.29 Works to be executed under directions of Architects/Owner
- 5.30 Decision of Owner/Architects to be final

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- 5.31 Payment of quarry fees, royalties
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- 5.33 Claims for quantities in tender
- 5.34 Claims for compensation for delay in starting work
- 5.35 Minimum age of persons employed
- 5.36 Method of Payment
- 5.37 Employment of scarcity/famine labour
- 5.38 Quoted rates to include all taxes
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- 5.40 Amount payable by Contractor
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- 5.42 Contract Documents
- 5.43 Type of Contract
- 5.44 Schedule of Quantities
- 5.45 Contract sum
- 5.46 Scope and Intent
- 5.47 Architects Instructions
- 5.48 Facilities and Co-operation
- 5.49 Danger to works
- 5.50 Termination of contract by Contractor
- 5.51 Jurisdiction
- 5.52 Disputes to be solved by Owner's Executive Committee
- 5.53 Arbitration
- 5.54 Maintenance and Cleanliness
- 5.55 Workmanship
- 5.56 Leads and Lifts
- 5.57 Compensation for stoppage of the work
- 5.58 Possession by owner before virtual completion
- 5.59 Protection of poles and underground cables, pipes
- 5.60 Printed format for bill submission

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## 5.GENERAL CONDITIONS OF CONTRACT

### 5.1 Definitions :

5.1.1. The personnel and agencies involved in this project are as follows with functions as such in the agreement and shall include their heirs executors and administrators and assignees. They are treated throughout the contract document as if each were of the singular number and masculine gender.

The Employer/Owner	ShriSaraswatiBhuvanEducation Society.
The Contractor	M/s.
The Architect(s)	Interface Designers, Aurangabad
The Structural Consultant	M/s .K.R. Pandit
Estate Manager	Owner's Estate Manager
Clerk of Works	Employee of the Owner, employed for constant supervision at site, and acting under the instructions of the Architects and Estate Manager.

5.1.2 "The Site" shall mean the site of the contract work including any building and erections thereon and any other land allotted by the Owner for Contractor's use.

5.1.3 The term "Sub-Contractor" shall mean those agencies having a direct contract with the Contractor and includes one who furnishes material worked to a special design according to the plans or specifications of this work but does not include one who merely furnishes material not so worked. Any one doing work on a piece rate basis shall be deemed a "sub-Contractor".

5.1.4 Written notice shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an office of the corporation for whom it is intended, or if delivered at or sent by registered mail to the last business address known to him who gives the notice.

5.1.5 The term "Virtual Completion", of a project or specified area of a project shall mean that the work is sufficiently completed, in accordance with the contract documents as modified by any change or variation orders agreed to by the parties, so that the Owner can occupy the project for the use it was intended.

5.1.6 The term "construction", "project", "works", or "work" where used in these conditions, shall unless there be something in the subject or context repugnant to such construction, be constructed to mean the work or works contracted to be

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executed by Contractor or sub Contractor under or in virtue of the contract, whether temporary or permanent and whether original, altered, substituted or additional, and shall include labour or materials or both.

## 5.2. Security Deposit And Retention Money.

5.2.1 The Contractor shall deposit with the Owner within ten Days of acceptance of tender, a sum sufficient which will up the full security deposit as mentioned below

In addition to the Earnest Money, the Contractor shall deposit such further amount i.e. by Demand Draft drawn in favour of the "The General Secretary, ShriSaraswatiBhuvanEducation Society, so that in all 2% of the accepted tendered amount is deposited by the Contractor with the Owner by way of security deposit before the commencement of the work. Balance 3% amount will be recovered from the running bills of the Contractor at the rate of 3% till the total retention amount reaches 5% of the value of work.

If the amount of the security deposit is not paid within the period specified above, the tender / contract already accepted shall be considered as canceled and legal steps taken against the Contractor for recovery of the amount.

## 5.2.2 Refund of Retention Money

The total Retention amount will be refundable at the end of defect liability period of 12 months after virtual completion of the work subject to the condition that any defects which may appear during the defect liability period are rectified by the Contractor without any delay, at his risk and cost and within the period noticed to him. In the event of his failure to do so, the employer may get the work rectified through other agency or departmentally at the risk and cost in all respects of the Contractor, and any expenses incurred will be recovered from the retention money or any other sum that may be due or may become due to the Contractor.

The balance remaining retention money, if any, will be refunded after completion of 12 months period from the date of rectification of the defects that the Contractor has to attend to at his own risk and cost. Unless the rectification accounts are finalized the remaining retention money will not be refunded.

## 5.3. Compensation for delay :

The time allowed for carrying out the work as entered in the tender shall be strictly observed by the Contractor. This shall be reckoned from the date on which the order to commence work is given to the Contractor. Time being deemed to be the essence of this contract on the part of the Contractor, the work shall, during the stipulated period of the contract, proceeded with, all due diligence and executed as follows :

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at ¼ th work in 3/8<sup>th</sup> time

at ½ the work in 1/2 time

at ¾ th work in 3/4<sup>th</sup> time

and completion in the stipulated time.

If the Contractor fails to adhere to the program or to complete the works by the date specified in the contract or within any extended time fixed under clause 5.7 of these conditions and the Owner's Architects certify in writing that in their opinion the same ought to have been completed, the Contractor shall pay to the Owner a sum calculated at the rate stipulated in the appendix, liquidated damages for the period during which the said work was in slow progress or has remained incomplete; Provided always that total amount of compensation to be paid under the provision of this clause shall NOT exceed 10 % of the accepted tender amount. The Owner may deduct such damages from any moneys payable to the Contractor.

#### 5.4. Action when whole of security deposit is forfeited

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 his security deposit (whether paid in one sum or deducted by installments) or in the case of abandonment of the work owing to serious illness or death of the Contractor or any other cause, the Owner shall have power to adopt any of the following courses, as it may deem best suited in the interest of the work.

5.4.1. To rescind the contract (for which rescission notice in writing to the Contractor under the hand of the "The General Secretary, ShriSaraswatiBhuvanEducation Society.", is given, and in that case the Security Deposit of the Contractor shall stand forfeited and be absolutely at the disposal of the Owner.

5.4.2 To carry out the work or any part of the work departmentally, debiting the Contractor with the cost of work, expenditure incurred on tools and plant and charges on additional supervisory staff including the cost of work charged establishment employed for getting un-executed part of the work completed and crediting him with the value of the work done departmentally in all respects 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 Architects as to the costs and other allied expenses so incurred and as to the value of work so done departmentally shall be final and conclusive against the Contractor.

5.4.3 i) To order that the work of the Contractor be measured up and to take such work thereof as shall remain un-executed, 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 work executed by the new contract agency will be debited to the Contractor and the value of 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.

ii) The certificate of the Architect as to all the cost of the work and other expenses incurred as aforesaid for or in getting the un-executed work done by the new Contractor and as to the value of the work so done shall be final and conclusive against the Contractor.

5.4.4. i) In case the contract shall be rescinded under clause 5.4.1 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 Architect with the express authority of the Owner shall have certified in writing the performance of such work and the amount payable to him in respect thereof and he shall be entitled to be paid only the amount so certified.

ii) In the event of either of the courses referred to in clause 5.4.2 or 5.4.1 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 any money due to the Contractor by the Owner 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 the Owner 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 5.4.1, 5.4.2, 5.4.3 as adopted by the Owner, the Contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased, or procured any materials, or entered into any agreements, or made any advances on account, or with a view of the execution of the work or the performance of the contract.

5.5. Action when the progress of any particular portion of the work is unsatisfactory in the opinion of the Owner / Architect.

5.5.1 If the progress of any particular portion of the work is unsatisfactory, the Owner / Architects shall notwithstanding that the general progress of the work is in accordance with the conditions mentioned in clause 5.3, be entitled to take action under clause 5.4.2 after giving the Contractor 10 days notice in writing. The

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Contractor will have no claim for compensation, for any loss sustained by him owing to such action.

5.6. Contractor remains liable to pay compensation if action not taken under clauses 5.4 Power to take possession of or require removal of or sell Contractors plant :

5.6.1. In any case in which any of the powers conferred upon the Owner by clause 5.4 and 5.5 hereof shall have become exercisable and the same shall not have been exercised, the non-exercise thereof shall not constitute a waiver 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 clauses hereof he is declared liable to pay compensation amounting to the whole of his security deposit and the liability of the Contractor for the past and future compensation shall remain unaffected.

5.6.2 In the event of the Owner taking action under sub-clause 5.4.1 or 5.4.3, he may, if so desired, take possession of all or any tools, plant, materials and stores, in or upon the works or 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 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 Architects whose certificate thereof shall be final.

5.6.3 Alternatively the Owner may after giving notice in writing to the Contractor or his authorized agent, require him to remove such tools plant, 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 Owner may remove them at the Contractor's expense or sell them by auction or private sale on account of the Contractor and at his risk in all respects, and the certificate of the Architects as to the expenses of any such removal and the amount of the proceeds and expense of any such sale shall be final and conclusive against the Contractor.

5.7. Extension of time

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 any other ground, he shall apply in writing to the Owner and before the expiry of the period stipulated in the tender or before the expiration of the period 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 Owner on the recommendation of the Architects, if in their opinion, there were reasonable grounds for granting an extension, grant such extension as they think necessary or proper. The decision of the Owner in this matter shall be final.

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5.8. Final Certificate

On the completion of the work the Contractor shall be furnished with a certificate by the Architects of such completion, but no such certificate shall be given nor shall the work be considered to be complete 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 woodwork, doors, windows, walls, floor or other parts of any building in or upon which the work has been executed or of which he may have had possession for the purpose of executing the work, nor until the work shall have been measured by the Clerk of works or where the measurement have been taken by his subordinates until they have received approval of the Architects with the express authority of Owner, the said measurements being binding and conclusive against the Contractor.

If the Contractor fails to comply with the requirements of this clause as to the removal of scaffolding, surplus materials and rubbish and cleaning of dirt on or before the date fixed for the completion of the work, the Owner may at the expenses of the Contractor, remove such scaffolding, surplus, materials and rubbish, and dispose off the same as he thinks fit and clean off such dirt as aforesaid and the Contractor shall forthwith pay the amount of all expenses so incurred, but shall have no claim in respect of any such scaffolding or surplus materials as aforesaid except for any sum actually realized by its sale.

5.9. Payment on intermediate certificate to be regarded as advance.

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 Architects, 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 Architects from requiring any bad, unsound, imperfect or unskillful work to be removed or taken away and re-constructed, or re-erected 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 accruing of any claim, nor shall it conclude, determine, or affect in any other way the powers of the Architects as to the final settlement and adjustment of the accounts or otherwise, or in any other way vary or affect the contract. The final bill shall be submitted by the Contractor within one month of the date of 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 parties.

5.10. Payment at reduced rates on account of items of work not acceptable or not completed to be at the discretion of the Architects.

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The rates for several items of works shall be valid only when the item concerned is accepted as having been completed fully in accordance with the sanctioned specifications. In case where the items of work are not accepted as so completed, the Architects 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.

#### 5.11 Submission of Bills :

5.11.1 The Contractor will prepare R.A. Bills in a printed form and submit it to the Owner & Architect and only after the certification of the Architect, the same shall be presented in the Owner's office for further processing. Essential reports shall be attached with every bill such as

- Steel testing reports for every batch of steel brought at site from Manufacturer and as well as done at site at approved labs..
- Compaction test reports (proctor density)
- Cement Test reports from Manufacturer and as well as done at site(initial & final setting, compressive strength for 7 & 28 days etc.)
- Bricks - Compressive strength, water absorption, soundness test etc.
- Aggregates – Sieve analysis / fineness modules, silt percentage etc.

And as that may be suggested from Clerk of Works from time to time

5.11.2 The period for honoring the payment against R.A.bills shall be 30 working days maximum after the date of presentation of the bill to the Architect's office, through ShriSaraswatiBhuvanEducation Society. The charges to be made in the bills shall always be entered at the rates specified in the tender. The bills regarding the work will be submitted by the Contractor every month or as directed by the Architects.

5.11.3 The final bill with all measurements shall be submitted within two months of Virtual Completion of building.

#### 5.12. Works To be executed in accordance with specifications, drawings, instructions etc.

The Contractor shall execute the whole and every part of the work in the most substantial and workman like manner and both as regards materials, and every other respect in strict accordance with specifications. The Contractor shall also conform exactly, fully and faithfully to the designs, drawings and instructions in writing relating to the work signed by the Architects and lodged in his office and to which the Contractor shall be

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entitled to have access for the purpose of inspection at such office, or on the site of the work during office hours.

5.13 Alterations in specifications and designs not to invalidate contract. (Extra Items)

The Architects shall have power to make any alterations 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 Architects 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, the same conditions in all respects on which he agreed to do the main work will be valid and at the same rates as are specified in the tender for the 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 current schedule of rates of the Aurangabad Region.

5.14 Extension of time in consequence of additions or alterations.

5.14.1 No claim to any payment or compensation for alteration in or restriction of work shall be admissible. 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 Architects as to such proportion shall be final and conclusive.

5.14.2 i) If at any time after the execution of the contract documents, the Architects shall for any reason whatsoever (other than default on the part of the Contractor for which the department 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 Architects 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 to any payment or compensation whatsoever by reason of or in pursuance of any notice as aforesaid, on account of any suspension, stoppage or curtailment except to the extent specified hereinafter.

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ii) Where the total suspension of 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 un-executed part of the work by giving a 30 days prior notice in writing to the Architects and requiring the Architects to record the final measurements of the work already done and to pay final bill.

On receipt of such notice, the Architects shall scrutinize the bill as may be finally due to the Contractor within a period of 90 days from the receipt of such notice in respect of work already done by the Contractor. Such payment shall not in any manner prejudice the right of the Contractor to any further compensation under the remaining provisions of this Clause.

iii) Where the Architect required the Contractor to suspend the work for period in excess of 30 days at any time or 60 days in the aggregate, the Contractor shall be entitled to apply to the Architects, within 30 days of the resumption of work after such suspension, for payment of compensation to the extent of pecuniary loss suffered by him in respect of working machinery rendered idle on the site or on the account of his having 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 of such suspension or in respect of any suspension whatsoever occasioned by unsatisfactory work or any other default on his part. The decision of the Owner in this regard shall be final and conclusive against the Contractor.

5.14.3 In the event of :

i) Any total stoppage of work or its curtailment on notice from the Architects under clause 5.14.2 (I).

ii) Withdrawal by the Contractor from the contractual obligation to complete the remaining un-executed work under sub-clause 5.14.2 (ii) on account of continued suspension of work for a period exceeding 90 days. It shall be open to the Contractor, within 90 days from the service of (i) the notice of stoppage or curtailment of work or (ii) the notice of withdrawal from the contractual obligations under the contract on account of the continued suspension of work, to produce to the Architects, 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 Owner to take over on payment such material at the rates determined by the Architect, provided however, such rates shall in no case exceed the rates at which the same is acquired by the Contractor.

The Owner shall thereafter take over the material so offered, provided the quantities offered, are not in excess of the requirements of the un-executed work as specified in the accepted tender and are of quality/ specifications approved by the Owner's Architects.

5.15. Supply of materials :

No materials will be supplied by the Owner to the Contractor. It will be the total responsibility of the Contractor to procure all materials required for the work.

5.16. Time limit for unforeseen claims

Under no circumstances whatever shall the Contractor be entitled to any compensation from Owner on any account unless the Contractor shall have submitted a claim in writing to the Architects within one month of the cause of such claim occurring.

5.17 Action and compensation payable in case of bad work

If at any time before the security deposit is refunded to the Contractor, it shall appear to the Architects or his representative in charge of the work, that any work has been executed 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 Architects to intimate this fact in writing to the Contractor and then notwithstanding the fact that the work, materials or articles complained of may 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 provide 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 Architects in the written intimation aforesaid, the Contractor shall be liable to pay compensation at the rate decided for every day not exceeding ten days during which the failure continues to take place, in which case the Architects 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 Architects consider that may 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 fix therefor.

5.18 Contractor's Supervision

The Contractor shall maintain and be represented on the site at all times by an, authorized responsible qualified experienced and efficient English, Marathi and/or Hindi speaking Engineer approved by the Owner who thoroughly understands all trades. In addition to the above Engineer, the Contractor shall engage sufficient number of qualified supervisors so that the work can be properly supervised. The Architects and the Owner

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reserve the right to ask for removal of the Engineer, supervisors and any workmen who, in their opinion, are not sufficiently skilled or who neglect, or refuse to obey instructions. All such persons shall be immediately removed from the site and shall not again be employed and shall be replaced within 48 hours. All instructions and orders given to the duly authorized agent of the Contractor shall be considered to have the same force and effect as if they had been given to the Contractor himself. The owner shall have full power to suspended the execution of work until such date a suitable Engineer is appointed and the Contractor shall be responsible for the delay so caused to the works and the contractor shall not be entitled for any compensation on this behalf.

5.19. Works to be open to inspection and Contractor or responsible agent to be present at all times during the period of the Contract.

All works under or in course of execution or executed in pursuance of the contract shall at all times be open to inspection and supervision of the Architects and their representatives 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 Architects and their representatives to visit the work shall have been given to the Contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing present for that purpose.

The contractor shall inform the Owner in writing when any portion of the work is ready for inspection giving him sufficient notice to enable him to inspect the same without affecting the further progress of the work. The work shall not be considered to have been completed in accordance with the terms of contract until the Owner shall have certified in writing to that effect.

Approval of materials or workmanship or approval of part of the work during the progress of execution shall not bind the Owner or in any way affect him even to reject the work which is alleged to be completed and to suspended the issue of his certificate of completion until such alterations and modifications or reconstruction have been affected at the cost of the contractor as shall unable him to certify that the work has been completed to his satisfaction.

The contractor shall provide at his cost necessary ladders and such arrangements as to provide necessary facilities and assistance for proper inspection of all parts of the work at his own cost.

5.20 Notice to be given before work is covered up.

The Contractor shall give not less than ten day's notice in writing to the Architects, 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

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same is so covered up 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 Architects/Estate Manager, and if any shall be covered up or placed beyond the reach of measurement, without such notice having been given or consent obtained the same shall be uncovered at the Contractor's expense, and in default thereof, no payment or allowance shall be made for such work or for the materials with which the same was executed.

5.21 Contractor liable for damage done, and for imperfections for twelve months after certificate of completion.

If during the period of 12 months from the date of completion as certified by the Architects pursuant to clause 5.8 of the contract or after commissioning the work, which ever is earlier in the opinion of the Architects/Estate Manager, the said work is defective in any manner whatsoever, the Contractor shall forthwith on receipt of notice in that behalf from the Architects /Estate Manager, 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 there in strictly in accordance with and in the manner prescribed and under the supervision of the Architects / Estate Manager. In the event of the Contractor failing or neglecting to commence execution of the said rectification work within the period prescribed there for in the said notice and/or to complete the same as aforesaid as required by the said notice, Owner/Estate Manager shall get the same executed and carried out departmentally or by any other agency at the risk and account and at the cost of the Contractor.

The Contractor shall forthwith, on demand, pay to the Owner the amount of such costs, charges and expenses sustained or incurred by the Owner of which the certificate of the Architects 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 the Owner, the same may be recovered from the Contractor as arrears of land revenue. The Owner shall also be entitled, to deduct the same from any amount which may then be payable or which may, thereafter become payable by the Owner to the Contractor either in respect of the work or any other work whatsoever from the amount of the security deposit.

5.22. Contractor to supply materials, persons, plant, ladders, scaffoldings, fencing lights, barriers, signals etc.

5.22.1 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 Owner 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

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specification 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 Architect as to any matter as to which under these conditions they are entitled to be satisfied.

5.22.2. The Contractor shall also supply without charge the requisite number of persons with the means and materials necessary for the purpose of counting, weighing and assisting in the measurement or examination at any time or from time to time of the work or the materials, failing which the same maybe provided by the Owner at the expense of the Contractor and such expenses may be deducted from any money due to the Contractor under the contract or from his security deposit or from the proceeds of sale thereof, or of a sufficient portion thereof.

5.22.3 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 costs which may be awarded in any such suit, action or proceedings to any such person, or which may with the consent of the Contractor be paid for compromising any claim by any such person. By this Agreement, the Contractor shall be deemed to fully indemnify the Owner and the Architects from liability for any loss, damage injury or death on the project site or in any connection with the execution of this contract.

5.22.4. The Contractor shall provide necessary barriers while digging earth sections, etc. wherever required to avoid accidents.

#### 5.23 Liability of Contractor for any damage done in or outside work area

Compensation for all damages caused intentionally or unintentionally by Contractor's layout whether in or beyond the limits of Owner property including any damage caused by the spreading of fire shall be estimated by the Architects or such other officer as he may appoint and the estimates of the Architects subject to the decision of the Owner 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 clause 5.4 or deducted by the Architects from any sums that may be due or become due from Owner to Contractor under this contract or otherwise.

The Contractor shall bear the responsibility, liability and all expenses of defending any action or other legal proceeding that may be instituted against any party to this contract as well as the sub-Contractors and consultants engaged by any party including the Architects, Structural Engineering Consultants and nominated sub-Contractors, by any

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person or persons for injury or loss sustained owing to neglect of precautions to prevent the spread of the fire and the shall pay any damages and cost that may be awarded by the court in consequence.

#### 5.24 Employment of female labour

The employment of female labour and children on the works in hazardous locations or positions or for any work carried out at night between sunset and dawn should be avoided, and no children should be permitted in the vicinity of the construction at any time. The Contractor shall bear full responsibility for the safety and security of female labour and children on site. He shall provide crèches as required under the law.

#### 5.25 Work on Public Holidays

No work shall be done on National holidays without the sanction in writing of the local civic Authority / Labour Commissioner or Owner's Architect.

#### 5.26 Work not to be sublet

Contract may be rescinded and security deposit forfeited for subletting the work or any part thereof without explicit approval or for bribing a public officer or if Contractor becomes insolvent. The contract shall not be assigned or sublet without the written approval of the Architects. If the Contractor shall assign or sublet his contract or attempt so to do, or become insolvent or commence any proceeding to get himself adjudicated and insolvent or make any composition with his creditors, or attempt so to do 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 employ of Owner 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 Architects there-upon by notice in writing may rescind the contract, and the security deposit of the Contractor shall thereupon stand forfeited and be absolutely at the disposal of Owner and the same consequences shall ensure as if the contract had been rescinded under clause 5.4 hereof and in addition the Contractor shall not be entitled to recover or be paid for any work thereof actually performed under the contract.

5.27. Sum payable by way of compensation to be considered as reasonable compensation without reference to actual loss.

All sums payable by the Contractor by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of Owner without reference to the actual loss or damage sustained, and whether any damage has or has not been sustained.

5.28. Changes in the constitution of firm to be notified

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In the case of tender by partners, any change in the constitution of a firm shall be forthwith notified by the Contractor to the Owner and the Architects.

5.29. Works to be executed under direction of Architects / Owner

All works to be executed under the contract shall be executed under the direction of the Architects for the time being who, subject to the approval in all respects of the Owner shall be entitled to direct at what points and in what manner they are to be commenced, and from time to time carried on.

5.30. Decision of Owner / Architects to be final

Except where otherwise specified in the contract and subject to the power delegated to him by Owner under rules then in force, the decision of the Architects for the time being shall be final, conclusive, and binding on all parties of the contract upon all questions relating to the meaning of the specification, designs, drawings and instructions herein before mentioned and as to the quality of workmanship, materials used on the work, or as to any other question, claim, right, matter, or thing whatsoever in any way arising out of, or relating to the contract designs, drawings, specifications, estimates, instructions, orders, or these conditions or otherwise concerning the works, or the executions, or failure to execute the same, whether arising, during the progress of the work, or after the completion or abandonment thereof.

5.31. Payment of quarry fees, royalties

All quarry fees, royalties and ground rent for stacking materials, if any, shall be paid by the Contractor and to be taken in to account while quoting for the rates. No such payment will be compensated or reimbursed by the Owner.

5.32 Compensation under Workmen's Compensation Act

5.32.1 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 and paid by Owner as principal under sub-section (1) of Section 12 of the said act on behalf of the Contractor, it shall be recoverable by Owner from the Contractor under sub-section 2 of the said section. Such compensation shall be recovered in the manner laid down in Clause 5.2 above.

5.32.2 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 Owner, the same shall be recoverable

from the Contractor forthwith and be deducted without prejudice to any other remedy of Owner from any amount due or that may become due to the Contractor.

5.32.3 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 and shall comply with the following regulations in connection therewith.

- i) 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.
- ii) 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 steps shall be taken for the prompt rescue of any person in danger.
- iii) Adequate provision shall be made for prompt first-aid treatment of all injuries likely to be sustained during the course of the work.

#### 5.33. Claim for quantities entered in the tender or estimate

Quantities shown in the tender are approximate and no claim shall be entertained for quantities of work executed being either more or less than those entered in the tender or estimate and NO revision in the tendered rate shall be permitted in respect of any of the items. The Contractor shall, if ordered in writing by the Architect with the express authority of the Owner so do, also carry out any quantities in excess of the estimated quantities put to tender, at the same tender rate and conditions and in accordance with the specifications.

#### 5.34. Claim for compensation for delay in starting the work

No compensation shall be allowed for any delay in the starting of the work on account of water standing in borrows 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.

#### 5.35 Minimum age of persons employed, the employment of donkeys and / or other animals and the payment of fair wages.

- 5.35.1 i) Contractor shall NOT employ any person who is under the age of 16 years
- ii) Contractor shall NOT 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 (Nawar).
- iii) No animal suffering from sores, lameness or emaciation or which is immature shall be employed on the work.

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iv) The Architects or their agent are 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 Owner 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 Architects /Estate Manager who shall decide the same. The decision of the Owner's Architects /Estate Manager shall be conclusive and binding on the Contractor, but such decision shall not in any way affect the conditions of the contract regarding the payment to be made by Owner at the percentage above or below the specified tender rates.

vi) Contractor shall provide drinking water facilities to the workers.

#### 5.36. Method of Payment

Payment to Contractor shall be made by Account Payee Cheques drawn on any Bank at Jalna at the sole discretion of the Owner. No commission shall be payable in the event of any charge by any Bank for outstation cheques.

#### 5.37. Employment of scarcity / famine labour

If Government 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 Architects / Estate Manager, or be any person to whom the Owner / Estate Manager 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 Government may have fixed in this behalf. Any disputes which may arise in connection with implementation of this clause shall be decided by the Architects/Estate Manager whose decision shall be final and binding on the Contractor.

#### 5.38. Quoted Rates to include all taxes, Octroi etc.

The Item Rates to be quoted by the Contractor shall be inclusive of Sales Tax, Turnover tax, Income Tax, Works Contract Tax, VAT, Service Tax etc. as applicable as well as all Octroi, Levies, transportation, and Municipal Taxes etc. No extra payment on this account will be made to the Contractor and such levies and charges should be included in the quotation.

#### 5.39. Wages for skilled and unskilled labour engaged by the Contractor.

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

5.40. Amount payable by Contractor

All amounts whatsoever which the Contractor is liable to pay to the Owner in connection with the execution of the work including the amount payable in respect of materials and/or stores supplied/issued hereunder by the Owner to the Contractor and/or on which advances have been given by the Owner to the Contractor shall be deemed to be arrears of Land Revenue and the Owner may without prejudice to any other rights and remedies of the Owner recover the same from the Contractor as arrears of land revenue.

5.41. Contractor to produce license under Contract Labour Act.

Before starting the work, successful tenderer shall produce on demand to the satisfaction of the specified concerned authority a valid and consequent license issued in his favour under the provisions of the Contract Labour (Regulation and Abolition), Act 1970. On failure to do so, the acceptance of the tender is liable to be withdrawn and also earnest money forfeited.

5.42. Contract Documents :

5.42.1 The following documents shall constitute the contract documents :

- i) Conditions of tender, Articles of Agreement and General Conditions of Contract
- ii) Special Conditions of Contract
- iii) Specifications ( General, Particular )
- iv) Priced Schedule of Quantities (Estimate)
- v) All other documents relevant to the contract as decided by the Architects .

5.42.2 The contract document shall remain in the custody of the Owner so as to be available at all reasonable times for the inspection of the Architects or the Contractor.

5.42.3 Immediately after the execution of the contract, one copy of the contract document and two copies of the contract drawings shall be supplied by the Architects to the Contractor and one copy of the contract document to the Owner.

5.42.4 After award of the contract, the Contractor shall without charge be supplied with all such further drawings and details as may be prepared by the Architect and

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his Consultants from time to time as the work proceeds as are reasonably necessary either to explain or amplify the contract drawings or to enable the Contractor to carry out and complete the work in accordance with these conditions, provided all such drawings shall be a reasonable development of the work described in the contract document.

5.42.5 The Contractor shall keep one copy of the specifications, descriptive schedule or other like document referred to this clause and one copy of the contract drawings and such other drawings and details supplied to him from time to time and referred to in this clause, upon the site so as to be available to the Architects or their representative at all reasonable times.

5.42.6 None of the documents here before mentioned shall be used by the Contractor for any purpose other than this contract and neither the Owner nor the Architects shall divulge or use except for the purpose of this contract any of the prices in the Schedule of Quantities.

5.42.7 Upon final payment, the Contractor shall if so requested by the Architect forthwith return to the Architects all drawings, details, specifications, descriptive schedule and other document of like nature which bears their name or that of the Consultant.

#### 5.43. Type of Contract

The contract will be a Item-rate contract. (Type B-2)

The Contractor shall be paid for the actual quantity of work done as measured at site, at the item - rates quoted by him.

#### 5.44. Schedule of Quantities

5.44.1 The quantities given in the Schedule of Quantities are provisional and are meant to indicate the intent of the work and to provide a uniform basis for tendering. The Owner reserves the right to increase or decrease any of the quantities or to totally omit any item of work and the Contractor shall not claim any extras or damages on these grounds.

5.44.2 Any error, or discrepancy in specification or in quantity or omission of items from the Schedule of Quantities shall not vitiate this contract but shall be treated as a variation required by the Architects. No variation shall also be construed out of any mis-interpretation.

#### 5.44.3 Contract Drawings

i) In general, the drawings shall indicate dimensions, position and type of construction; the specifications shall indicate the qualities and the methods; and the Schedule of Quantities shall indicate the quantum and the rate of

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each item of work. Any work indicated in the drawings and not mentioned in the specifications or vice versa shall be furnished as though fully set forth in both. Work not specially detailed, called for, marked or specified shall be the same as similar parts that are detailed, marked or specified.

ii) The Contractor's work shall not deviate from the drawings and the specifications. The Architect's interpretation of these documents shall be final and without appeal.

iii) Errors or inconsistency discovered in the drawings and specifications shall be promptly brought to the attention of the Architects for interpretation or correction. Local conditions which may effect the work shall likewise be brought to the Architect's attention. If at any time, it is discovered that work is being done which is not in accordance with the contract drawings and specifications, the Contractor shall correct the work immediately. Corrections of defective work shall not be a basis for any claim for extension of time. The Contractor shall not carry out any work except with the knowledge of the Owner and the Architects.

iv) Figured dimensions on the scale drawings and large size details shall govern. Large size details shall take precedence over small scale drawings.

Any work done before receipt of such details, if not in accordance with the same, shall be removed and replaced or adjusted, as directed by the Architect with the express authority of the Owner without expense to the Owner. The general conditions apply with equal force to all the work including authorized extra work. In case of any discrepancy, the Contractor is to ask for clarification from the Architects/Owner before proceeding

5.45 Contract sum : The contract sum shall not be adjusted or altered in any way whatsoever otherwise than in accordance with the express provisions of these conditions and any error whether of Arithmetic or in the computation of the contract sum, shall be deemed to have been accepted by the parties hereto.

5.46 Scope and Intent.

5.46.1 Scope :- The general character and the scope of work is illustrated and defined by the specifications and Schedule of quantities herewith attached and by the signed drawings. If the Contractor shall find any discrepancy in or divergence between the contract drawings and/or the Schedule of Quantities, he shall immediately give to the Architects a written notice specifying the discrepancy or divergence and the Architect shall issue instructions in regard thereto.

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5.46.2 Extent : The Contractor shall carry out and complete the work in every respect in accordance with this contract and with the directions of and to the reasonable satisfaction of the Architects. The Architects may in their absolute discretion and from time to time issue further drawings, details and/or written instructions, written directions and written explanations all of which are collectively referred to as Architect 's instructions shall be consistent with contract documents, true developments thereof and reasonably inferable there from.

5.46.3 Intent : The intention of the document is to include all labour and materials, equipment and transportation necessary for the proper execution of the work. All such drawings and instructions shall be consistent with the contract document, true developments thereof and reasonably inferable there from. Materials of work described in words which so applied have a well known technical or trade meaning shall be held to refer to such recognized standard.

#### 5.47. Architects Instructions

5.47.1 The Contractor shall forthwith comply with and duly execute any works comprised in such instructions issued to him by the Architects in regard to any matter in respect of which Architects are expressly empowered by these conditions to issue instructions provided always that verbal instructions, directions and explanations given to the Contractor or his work representative by the Architects shall if involving a variation be confirmed in writing. If, within seven days after receipt of a written notice from the Architects requiring compliance with an instruction, the Contractor does not comply with it, then the Owner may employ and pay other persons to execute any work whatsoever which may be necessary to give effect to such instructions and all cost incurred with such employment shall be recoverable by him from any money due or to become due to the Contractor under this contract.

5.47.2 All instructions issued by the Architects shall be in writing. Any instruction issued orally shall be of immediate effect, but shall be confirmed in writing by the Contractor to the Architects within seven days, and if not dissented from in writing by the Architects to the Contractor within seven days from receipt of the Contractor's confirmation shall take effect as from the expiration of the latter said seven days.

5.47.3 If the Architects within seven days of giving such an oral instruction shall himself confirm the same in writing, then the Contractor shall not be obliged to confirm the aforesaid, and the said instruction shall take effect as from the date of the Architect confirmation.

5.47.4 That if neither the Contractor nor the Architects shall confirm such an oral instruction in the manner and at the time aforesaid but the Contractor shall nevertheless comply with the same, then the Architects may confirm the same in

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writing at any time prior to the issue of the final certificate and the said instruction shall thereupon be deemed to have been taken effect on the date on which it was issued.

#### 5.48. Facilities and Co-operation

In the case of works indicated on the drawings but not included in the contract, the Contractor shall provide necessary facilities and co-operation for any sub-Contractor or supplier who may be approved by the Owner. The Contractor shall do all cutting, filling and patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of other Contractors shown upon or reasonably implied by the drawings and specifications for the completed structure, and he shall make good after them as the Architects may direct. Any cost caused by the defective or ill-timed work shall be borne by the party responsible

#### 5.49. Danger to Work

The Contractor shall not endanger any work by cutting, excavating or otherwise altering the work and shall not cut or alter the work of any other Contractor save with the consent of the Architects.

#### 5.50. Termination of contract by the Contractor

If payment of the amount payable by the Owner under any certificate of the Architects as provided for hereinafter shall be in arrears and unpaid for Forty five days after notice in writing requiring payment of the amount as aforesaid shall have been given by the Contractor to the Owner, or if the works be stopped for three months under the order of the Architects or by any injunction or other order of any Court of Law, then the Contractor shall be at liberty to determine the contract by notice in writing to the Owner through the Architects and he shall be entitled to recover from the Owner payment for all works executed and for any loss he may sustain upon any plant or material supplied or purchased or prepared for the purpose of the contract.

In arriving at the amount of such payment, the net rates contained in the Contractor's original tender shall be followed, or where the same may not apply, valuation shall be made by the Architects as per the established procedure.

#### 5.51 Jurisdiction

This contract shall be under jurisdiction of the Hon'ble Court at Aurangabad.

#### 5.52 Disputes to be solved by Owner's Executive Committee.

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All the disputes and differences of any kind whatever arising 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 Architects to the Chairman of the Executive Committee for settling the issue. The decision taken by the Executive Committee will be final and binding on the Contractor / Architects.

#### 5.53. Arbitration

5.53.1 In case the dispute is not resolved by operation of Clause 5.52 stipulated above, the matter may be referred to arbitration as stated below :

i) All disputes and differences of any kind arising 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 and settled by the Architects who shall state their decision in writing. Such decision may be in the form of Final Certificate or otherwise. The decision of the Architects with respect to any of the matters on which this contract confers the sole right to the Architects to finally decide, shall be final and without appeal.

ii) But if either the Owner or the Contractor be dissatisfied with the decision of the Architect on any matter, question or dispute of any kind (except those matters on which Architects decision is final) or as to the withholding by the Architects of any certificate to which the Contractor may claim to be entitled, then in any such case, either party (the Owner or the Contractor) may within 28 days after receiving the notice of such decision give a written notice to the other party through the Architects requiring that such matters in dispute be Arbitrated upon. Such written notice shall specify the matters which are in dispute and such dispute and difference of which such written notice has been given to other shall be and is hereby referred to the Arbitration and final decision of a single Arbitrator being a Fellow of Indian Institute of Architects/Fellow of Institute of Engineers (India) to be agreed upon and appointed by both the parties or in case of disagreement as to the appointment of a single Arbitrator, to the Arbitration of two Arbitrators, both being Fellows of the Indian Institute of Architects/Fellow of Institute of Engineers (India) one to be appointed by each party who shall before taking upon themselves the burden of reference, appoint an Umpire.

iii) The Arbitrator or the Arbitrators or the Umpire shall have power to open up, review and revise any certificate, opinion, decision, requisition or notice and to determine all matters in dispute which shall be submitted to him or them and of which notice shall have been given as aforesaid Upon every or any such reference, the cost and incidental to the reference and Award respectively shall be at the

direction of the Arbitrator or Arbitrators or the Umpire who may determine the amount thereof or

direct the same to be taken as between the Attorneys and clients or as between party and party and shall direct by whom to whom and in what manner the same shall be borne and paid. This submission shall be deemed to be a submission to the Arbitration within the meaning of the Indian Arbitration and Conciliation Act, 1996 or any statutory modification thereof. The Award of the Arbitrator or Arbitrators or the Umpire shall be final and binding on the parties.

iv) Such reference, except as to the withholding by the Architect of any certificate to which the Contractor claims to be entitled, shall not be opened or entered upon until after the practical cessation of the works arising from any cause unless with the written consent of the Owner and the Contractor. Provided always that the Owner shall not withhold the payment of an Interim Certificate nor the Contractor, except with the consent in writing of the Architects, in any way delay the carrying out of the works by reason of any such matters, question or dispute being referred to Arbitration but shall proceed with works with all due diligence and shall, until the decision of the Arbitrator or Arbitrators or the Umpire shall relieve the Contractor of his obligations to adhere strictly to the Architect's instruction with regard to actual carrying out of works. The Owner and the Contractor hereby also agree that Arbitration under this clause shall be a condition precedent to any right of action under the contract.

#### 5.54. Maintenance and cleanliness

5.54.1 The Contractor shall protect and preserve the work from all damage or accident providing any temporary roof, window and door coverings, boxing or other construction as required by the Architects. This protection shall be provided for all property adjacent to the site as well as on the site.

5.54.2 The Contractor shall properly clean the work as it progresses and shall remove all rubbish and debris from the site from time to time as is necessary and as directed. On completion, the Contractor shall ensure that the premises and/or site are cleaned, surplus materials, debris, sheds etc. removed, areas under floors cleared of rubbish, gutters and drains cleared, doors and sashes eased, locks and fastenings oiled, keys clearly labeled and handed to the Clerk of Works so that the whole is left fit for immediate occupation or use and to the satisfaction of the Architects.

#### 5.55. Workmanship

5.55.1 The Contractor shall exercise every care to ensure that all structural members are sufficiently plumb and true to dimensions called for on the drawings to receive

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finishing elements such as doors, windows, cabinet work, ceramic work, concrete, tiles etc. Any variations that may require rectification in the structural members or may involve remaking or replacing the finishing elements, fabricated to fit into the openings or spaces, as called for on the drawings shall be carried out by the Contractor in an approved manner without extra charge.

5.55.2 In case of separate contract, the Contractor whose work does not conform to the dimensions called for, shall be liable for all the expenses which may have to be incurred for rectification or replacement as may be required by the Architects with the express authority of the Owner for the proper installation of the finishing elements. The Architect's decision in this respect shall be final and binding on the parties concerned.

#### 5.56. Leads and Lifts

The rates of the items are deemed to include the costs on account of all lead and lift and absolve the Owner of any liability on account of any claim arising out of above. The Contractor should visit the site and verify the leads and lifts and include probable expenses in the quotation.

#### 5.57 Compensation for stoppage of the work

No loss / compensation / damages shall be payable by the Employer / Owner to the Contractor / any one if the work stopped by the order of any judicial / Higher Administrative authority.

#### 5.58 Possession by owner before virtual completion

If at any time before virtual completion of the work the Owner shall take possession of any part or parts of the same for handing over to the finishing contractor or other agency, then notwithstanding anything expressed or implied elsewhere in this contract

5.58.1 Such part or parts shall not be deemed to be virtually complete.

5.58.2 Virtual completion of such part or parts would occur the completion of the last part of the structure under this contract.

5.58.3 The contractor shall not claim that such part or parts are complete and request refund of payment in lieu there of.

#### 5.59 Protection of underground / overhead electrical cables and telephone cables, poles

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During the execution of the work it is likely that the contractor may meet with telephone or electrical cables, water supply lines etc. it will therefore be the responsibility of the contractor to protect them carefully. Any damages whatsoever done to these cables or pipe lines shall be made good by the contractor at his own cost.

5.60 Bills to be submitted in following printed format.

Sr No	Item No	Description	Previous bill Qty.	This bill Qty.	Total Qty.	Unit	Rate	Amount
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General Secretary

SIGNATURE OF CONTRACTOR

For ShriSaraswatiBhuvan High schoolJalna.

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**APPENDIX TO CONDITIONS OF CONTRACT**

1	Date of Commencement	. . . 0.0
2.	Time for completion of work	18 Calendar months from the date of work order including monsoon
3	Minimum Value of Interim payment	Rs. (Rs. Lakh Only.) for R. A. bills or less at discretion of Architects.
4	Period of honoring payment ( 5.11 )	Maximum 30 working days after submission of the R.A. Bills to the Architects. 50% of the bill amount will be paid within seven working days from the date of submission of the bill.
5	Total Retention Percentage (5.2)	5.00 % of the final cost of work.  2 % Initial Security Deposit made before commencement of the work and 3 % to be recovered from R.A. bills in 6 equal installments from 2ed R. A. bill.
6	Refund of retention money (5.2)	50% after virtual completion of work and 50% after successful completion of Defects Liability period of 12 months.
7	Advance on Materials (6.10)	75% of cost of Cement and Steel only, brought on site. (To be deducted from R. A. bills)
8.	Period of Final Bill (5.11)	2 (Two) months after Virtual completion of the work
9	Liquidated Damages for delay in completion of work (5.3)	0.5 % per week of delay subject to a maximum of  10 % of the accepted tendered amount
10	Defects Liability Period (5.21)	12 months after virtual completion of work

[Figures in brackets refer to corresponding clauses of Conditions of Contract]

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**SPECIAL CONDITIONS OF CONTRACT - INDEX**

- 6.1 Co-ordination with other Contractor
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## **6. SPECIAL CONDITIONS OF CONTRACT**

### **6.1. Co-ordination with other Contractors**

THE SCOPE OF WORK CONSIST OF VARIOUS RCC GRADE CONCRETE AS PER DRAWING AND DESIGN FOR SLAB AND BEAMS. & OTHER CIVIL WORKS. THE MAIN CONTRACTOR HAS TO PROVIDE AND CAST GIVEN GRADE CONCRETE INCLUDING NECESSARY CENTRING, FORM WORK, SCAFFOLDING, PROVIDING AND FIXING REINFORCEMENT STEEL, POURING CONCRETE, VIBRATING AND FINISHING AS USUAL.

The Contractor shall have to work in co-ordination and co-operation with any other contracting agency appointed by Owner to work simultaneously in the same or adjoining area. In case of any dispute, disagreement between the contractors the Owners decision regarding the co-ordination, co-operation and facilities to be provided by any of the contractors shall be final and binding on the contractors concerned and such a decision or decisions shall not vitiate any contract nor absolve the contractor(s) of his/their obligations under the contract nor consider for the grant for any claim or compensation.

### **6.2 Work to be related to drawings**

The work to be carried out is related to the drawings and Specifications which the Contractor is presumed to have studied and includes work at all levels and positions and shapes. Nothing extra will be paid for any item on account of its shape, size, location and other difficult circumstances even if the Schedule of Quantities makes no distinction, as long as the item is shown on the drawings.

### **6.3. Temporary office and stores on site**

6.3.1 The Contractor shall provide furnish and maintain a suitable office (covered area approximately 25 sq.m.) on the work site for use of the Clerk of works, Architects, Estate Manager, which shall have proper ventilation, locking arrangement and sufficient lighting. He shall also provide a suitable latrine with plumbing arrangement. These shall be daily maintained by cleaning and sweeping. The office will be furnished with one table approximately 8' X 4' in size, 10 chairs, 2 steel/wood cabinets, two fans, one 5 amp socket outlet and one display board 8' X 4'. This shall be removed from the site on completion of work. The cost of the above shall be deemed to be included in the rates quoted by the Contractor and no separate payment shall be made. On removal the material and furniture shall become the property of the Contractor.

6.3.2 The Contractor shall also construct for his own use adequate office rooms and requisite stores for storing the various materials without damage. These will be the property of the Contractor and are to be removed on completion of the work.

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6.3.3. The location of the above offices and stores on the site will be got approved from the Architects before construction.

#### 6.4 Income-tax deduction

Income Tax at the rate as per rules in force from time to time shall be recovered from the gross amount of every R.A. bill of the Contractor, whether of measured work or advance payment, unless the Contractor is exempted from such deduction at source by the Income Tax department for which the Contractor shall have to produce documentary proof.

#### 6.5 . Water and Electricity

The Contractor shall make all necessary arrangement for procuring water and electricity required by him for the execution of the work and for his labour and staff at his own cost and pay deposit and other charges in accord with the rules of the concerned departments (Municipal Council/M.S.E.B. and other concerned Authorities.) The Owner will help the Contractor to obtain the necessary water/electric connection by the way of recommendation only. All charges required for obtaining and using the water and electricity shall be borne by the Contractor.

#### 6.6. Sewage and Drainage disposal

The Contractor should also make necessary drainage/sewerage disposal arrangements in authorized discharge points & pay necessary sewerage charges etc. to concerned Authorities.

#### 6.7 Extra Items

If the rates for extra items/non-tendered items can not be derived from rates of similar items in the tender, then the rate shall be derived on the basis of actual costs of material, labour, carriage etc. plus 20% for overheads, profits, hire charges of Plant and machinery, supervision etc. and VAT .

#### 6.8. Contractor's attendance

The Contractor personally or a responsible qualified person having full authority shall meet the Owner, Estate Manager and the Architects at their office, whenever required.

#### 6.9. Specifications

All work shall be carried out as per standard specifications of Maharashtra P.W.D. and where the specifications for any work/material are not available in Maharashtra P.W.D. then relevant I.S. specifications shall be applicable. However the Particular Specifications contained herein shall also have to be complied with and will have precedence over the above in case of any variance. The Architect's decision shall be final and binding in this matter.

#### 6.10. Advance on Materials

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Advance to the extent of 75% of the cost of cement and steel only brought on site will be paid to the Contractor after production of certificate from the Architects and the same will be adjusted against running account bills of the Contractor. The above is subject to the provision that the material are properly stored and protected from damage and depends upon fully discretion of the Owner.

#### 6.11. Labour Camp

Contractor will not be allowed to set up any labour camps within the campus of the Owner, unless explicitly permitted in writing by the Owner.

#### 6.12. Medical Aid to Workmen

The Contractor shall be responsible for and shall pay the expenses of providing medical aid to any workmen who may suffer a bodily injury as a result of an accident. If such expenses are incurred by Owner, the same shall be recoverable from the Contractor forthwith and be deducted without prejudice to any other remedy of Owner from any amount due or that may become due to the Contractor.

#### 6.13. Theoretical Consumption of Cement

After completion of the work the theoretical quantity of cement to be used on the work shall be calculated on the basis of standard constants that may be in use, in the Maharashtra Public Works Department, Over the quantities of cement theoretically calculated a variation of 2 % will be allowed for wastage, making of cement platforms, water tanks etc.

6.14. For R.C.C. work, M.S. Reinforcement & cement concreting work shall be paid separately.

#### 6.15. Work Program And Progress Reports

6.15.1 The Contractor will have to submit to Architects / Owner, detailed program for executing the contract within 15 days of acceptance of tender in the form of a bar/pert chart listing the items of work and their anticipated dates of completion.

6.15.2 Upon commencement of the construction work. It shall also be compulsory for the Contractor to maintain on the construction site the following books, open for inspection by the Architects and the Owner.

i) A work order book in triplicate with machine numbered pages in which instructions given by Owner, Clerk of Works, Architects may be recorded. The Contractor shall promptly sign such instructions and subsequent compliance noted. The book shall remain in the office of the Clerk of Works. One copy will be given to the Contractor and one to the Architects.

ii) A log book recording the daily progress of the work on site.

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iii) A separate log book for the record of material received on site.

6.15.3 The contractor will have to submit to the Architects and the Owner weekly, Fortnightly and Monthly progress report of work carried out in that month. This report will be submitted on the last day of every week, fortnight and month until the final completion of the project.

#### 6.16. Insurance

The contractor to whom the work is assigned is expected to ensure all materials and labour from all damages, accidents and injury to persons and pay an appropriate premium for the purpose. No separate consideration shall be paid to the contractor on account of such insurance; Quotations should such amounts in rates.

#### 6.17. Testing Facilities

The Contractor shall provide a room of adequate size for establishing a testing laboratory at site especially for testing concrete, which shall have the following equipment :

- i) Cube testing machine of adequate capacity, duly calibrated.
- ii) Steel molds (150 mm) - 18 Nos.
- iii) Complete set of sieves
- iv) Slump cones
- v) Physical balance
  - a) Capacity 200 grams (accuracy 0.5 gm)
  - b) Counter scale - 20 kg with weights
- vi) Electric/Kerosene heater
- vii) Pans as required
- viii) Measuring cylinders
- ix) Litter measures (1/2 liters to 10 liters)
- x) Trowels, tamping bars etc.
- xi) Any other equipment as required by Structural Consultant / Architects .

#### 6.18. Display Board

The Contractor shall put up a board of approved design at the designated location which shall give the following information :

- 1) Description of Project

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- 2) Name and Address of Owner
- 3) Names and Addresses of Architects and Consultants. These shall be in letters not exceeding 50 mm in height.
- 4) Name and Address of Contractor.

#### 6.19 Safety and Security Measures

The Contractor shall comply with all the relevant rules, regulations and laws in force relating to the safety and security of material and personnel on the project site and shall be held responsible for any damage or injury caused by his negligence. He shall inter alia provide helmets and safety belts, install barriers, fencing gangways, covers, lighting etc. over open trenches, pits, openings in building and such like, and take all other safety measures as may be required under law.

#### 6.20 Labour Regulations

The Contractor shall be fully responsible for complying with all the relevant rules, regulations and laws in force relating to the employment of Labour by him. He shall inter alia maintain all required registers and records, provide drinking water, first aid, crèches, suitable bathing places and latrines, canteen and other facilities as required under law.

#### 6.21 ESI and Provident Fund Obligations :

The Contractor shall include in his rates all expenses towards meeting the obligations under the Employees State Insurance Act and the Provident Fund Act. He shall follow all rules and regulations required under the above act as maybe in force from time to time. The Contractor shall cover all his workmen including at the site under the ESI and PF schemes, and directly deposit the requisite amounts with the concerned authorities.

All records in connection with the above shall be properly maintained by the Contractor and produced for scrutiny by the Owner whenever called for. The Contractor shall keep the Owner indemnified against all violations of the above acts. If any demand is made by the authorities under the above acts, this will be paid by the Owner and recovered from the Contractor from his pending due / retention amounts etc.

#### 6.22 Municipal Approvals and No Objection Certificates ( N.O.C.'s )

The Contractor shall, at his own cost obtain the following N.O.C.'s from the Jalna Municipal Corporation : -

- 6.22.1. Drainage Department approval for sanitation and plumbing provisions BEFORE execution, and No - Objection at Completion stage (If Applicable)

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6.22.2. Water Supply Department approval for water storage and distribution systems BEFORE execution, and No-Objection at Completion stage. (If Applicable)

6.22.3 No Objection Certificate from the Encroachment Department (Rada-Roda NOC) (If Applicable)

6.22.4 No Objection Certificate from the Road Department (Road NOC ) (If Applicable)

6.22.5 No Objection Certificate from Superintendent Of Parks and Gardens for cutting of any trees, if required, and No Objection Certificate at Completion stage (Garden NOC) (If Applicable)

6.22.6 Certified copies of approved plans required for above NOC's and approvals shall be supplied by the Architects.

6.22.7 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.

6.22.8 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.

6.22.8 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.

#### 6.23 Compensation for stoppage of the work

No loss / compensation / damages shall be payable by the Employer / Owner to the Contractor / any one if the work stopped by the order of any judicial / Higher Administrative authority.

#### 6.24 **BASIC RATES OF CEMENT AND REINFORCEMENT STEEL.**

FOR THE PURPOSE OF QUOTATION THE BASIC RATES OF CEMENT SHALL BE Rs. /- (Rs. 340 ONLY.) PER BAG, FOR REINFORCEMENT STEEL SHALL BE Rs.55000/- PER METRIC TONNE AND FOR STRUCTURAL STEELRs. 65000/- INCLUDING ALL TAXES, OCTRIO, TRANSPORTATION, LOADING AND UNLOADING AT WORK SITE. THE VARIATION IN BASIC RATES WITH ACTUAL PURCHASED SHALL BE REIMBURSED OR DEDUCTED ON SUBMISSION OF RELEVANTDOCUMENTARY EVIDENCE LIKE DELIVERY CHALLAN, BILLS, INVOICES, WEIGHT SLIPS, ETC.

### . PARTICULAR SPECIFICATIONS

#### 7 A. GENERAL

##### 7.1. Clearance of Site

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The site shall be cleared of all debris, shrubs, bushes, trees etc. at commencement of work. However no tree of any size whatsoever shall be cut without approval of Architects.

## 7.2. Drawings

7.2.1 One complete set of drawings with index shall be compiled in portfolio form and maintained at site so that these are available to the Owner, Estate Manager, Architects and Consultants whenever they visit the site.

7.2.2 The Contractor shall maintain exclusively one set of drawings for record purposes in which all deviations made at site or otherwise shall be marked in red. The Clerk of Works shall ensure compliance.

7.2.3 Drawings which are superseded or canceled shall be withdrawn from the site and not referred to thereafter by Contractor or his staff. All defects arising out of use of such drawings will have to be rectified by the Contractor without extra charge.

7.2.4 All drawings are the property of the Architects and shall be returned on completion of work. No drawing shall be given to any person not connected with the work.

## 7.3. Dimensions

Figured dimension are in all cases to be followed in preference to scaled sizes. Large scale details take precedence over small scale drawings. In case of any discrepancy the Contractor must ask for clarification or from the Architects before proceeding.

## 7.4. Setting Out

7.4.1 The Contractor is to execute the work in accordance with the drawings. The Contractor shall carry out precisely the center line layout on the site as per the center line plan and he will be responsible for the correctness of the above and any inaccuracies are to be rectified at his own expenses.

7.4.2 The Contractor shall take levels of the site before setting out and put them on record without extra charge.

7.4.3 The Contractor shall layout (outer lines only) all the buildings to be constructed in the site to check that they fit within the site as per layout plan.

## 7.4.4 Benches :

The Contractor is to construct and maintain proper benches at the intersection of all main walls in order that the lines and levels may be accurately checked at any time.

## 7.5. Gatekeeper and Watchman:

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The Contractor shall provide and pay at his own expense the wages of all the above for the effective protection of the works, all materials to be used upon the works, workmen, and the public. In case of any loss or damage he will be called upon to make good the same at his own expense.

#### 7.6. Workers Toilets

The Contractor is to provide at his own expense for the use of the workmen temporary latrines to the satisfaction of the local authorities, keep them clean, empty, disinfected and do all that is required to keep them in perfect sanitary condition. The location of such sanitary facilities to be approved by the Architects.

#### 7.7. Mechanical Plant

In addition to requirements demanded of the general Contractor under paragraphs in the conditions of contract, Contractor must provide and maintain entirely at his own expense, all machinery set up required for building construction work on the site. Under NO circumstances, any reason for non-availability of machinery will be entertained.

All the above plant will be of pattern approved by the Architects located in such positions, and erected in such a manner as may be indicated and approved by them.

#### 7.8. Electric Lighting and Power

The Contractor will install and maintain at his own expense such good and efficient electric light and power installations, as shall be deemed necessary by the Architects for the performance of his contract and that of all sub-Contractors, and he will provide lighting and signals as may be required by the local authorities.

#### 7.9. Keeping Foundations and Works free of water

The Contractor will provide and maintain at his own expense electrically driven pumps and/or other plant to the satisfaction of the Architects and the Estate Manager for the above purpose, until the buildings are handed over. The Contractor will arrange for the disposal of any accumulated water to the satisfaction of Architects and of the local authorities.

#### 7.10. Inclement Weather :

The Contractor shall take the necessary steps at his own expense to protect all building work, labour colony and personnel and material from the effects of inclement weather.

#### 7.11. Restriction on Storage and Working on the site :

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All parts of the site and buildings must at all times be kept clear as possible to facilitate transport of materials and rapid progress of the work. No employees of the Contractor, other than those authorized by the Architects, will be allowed to live on the site.

#### 7.12. Night Work-Overtime Work

The Contractor will carry on the works night and day without intermission and without extra charge, if the Architects so direct, or in order to complete his contract within the period stipulated in the conditions of contract, except that NO concreting shall be done at night without the permission of the Architects. All illumination and power installations required for night work shall be at the Contractors expense and risk.

#### 7.13. Samples of Materials

7.13.1 Only materials given in the list of approved make of materials shall be used in the works. In special cases such as non-availability etc., the Architects may allow the use of equivalent materials in which case the Contractor shall produce all documentation such as catalogs, test certificates etc. relating to the equivalent material for approval.

7.13.2 The Owner/Architects shall have the right to call for samples of all materials. Any material supplied which is not according to approved samples shall not be used or be allowed to remain on the site.

#### 7.14. Unsatisfactory Materials etc.

The Contractor shall at all times during the execution of the work immediately pull down and remove at his own cost and risk any work not to the satisfaction of the Architects. He shall also remove from the site any materials condemned by the Architects as being of inferior quality. The decision of the Architects in respect of quality shall be absolute and final.

#### 7.15. Procurement of Material

The Contractor is to make his own arrangements for procuring all materials including cement and steel.

#### 7.16. Tests

If and when the Architects shall require samples of any materials to be tested, the cost of the such test shall be defrayed by the Contractor.

Also, if any structure or part of structure is to be tested, the cost of such tests shall be defrayed by the Contractor.

#### 7.17. Water

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The water used for construction shall be got tested from an approved laboratory as to its acceptability for construction purposes, as per IS specifications. The tests shall be carried out monthly and for every change in the source of supply.

#### 7.18. Slopes

Requisite slopes shall be provided in toilets, baths, balconies, terraces, over chajjas etc. so that there is no stagnation of water.

#### 7.19. Progress Photographs

At his own expense the Contractor is to supply the Architects with triplicate copies of large photographs not less than 10" X 8" of the works taken from two approved positions, at intervals of not more than two months during the progress of work.

#### 7.20 Removal of surplus soil and rubbish

The Contractor will undertake the above at his own expense and keep the site clear to the satisfaction of the Architects and other public authorities. The Contractor shall procure and submit the official NOC from the concerned Departments, certifying that all surplus soil and rubbish has been satisfactorily removed. All the area around the building about 10 M in width shall be leveled and kept clean before handing over.

#### 7.21. Earth Filling

Only approved excavated material from excavation or the approved quality of murum brought by the Contractor shall be used for filling. This filling work shall be done in 150mm to 250mm layers, thoroughly watered and well compacted with mechanical and manual rollers and compactors. Surplus or Extra Earth (Soil) shall be disposed on the site as directed.

#### 7.22 Cement

7.22.1 Cement shall comply with IS specifications 8112-1989 (53 grade) and 12269-1988 (53 grade). Only 53 grade Ordinary Portland cement shall be used for concrete (Plain and Reinforced). For mortar for plastering and brickwork, tile bedding etc. Ordinary Portland Cement Grade 53 (OPC) or Ordinary Portland Cement (Ultra tech) shall be used. However great care is to be taken that the two kinds of cement are not mixed up.

7.22.2 Cement shall be obtained from authorized distributors of Cement Company manufacturing the approved brand. As far as possible the same brands of cement shall be used throughout.

7.22.3 Storage

Cement required for use shall be as fresh as possible and stored on planks raised 15 to 20 cm (about 6" to 8") above the floor and stacked 30 cm (about 12") away from the walls in suitable closed weather-proof buildings at the work site or at the selected approved site, in such a manner as to prevent deterioration by dampness or moist atmosphere or intrusion of foreign matter. Cement of different grades shall be stored in separate storages. Further, cement from different brands and different batches shall be stored in separate stacks. Cement of different grades or different brands or different batches shall not be mixed.

7.22.4 Cement stored for over two months from date of issue from the factory shall be subjected to testing and used only if found satisfactory.

7.22.5 Cement shall be kept in a store under double locking arrangement so that it can be taken out or fresh stock admitted with the knowledge of supervising staff of the Owner.. A Board indicating stock and daily transactions of cement shall be kept in each room of the cement store. Daily account of receipt and use of cement bags shall be maintained by the Contractor in a register in approved performa and the copies of the records shall be supplied regularly to the Clerk of Works/Architects.

7.22.6 Architect / Owner will have right to ask for rate analysis for any or every item.

## **7 B. CIVIL WORKS**

### **7.23 Cement Concrete (Plain and Reinforced)**

7.23.1 All work shall be carried out as per specifications of Maharashtra PWD and also conform to relevant B.I.S. Specifications, and specifications contained herein and shall be to the entire satisfaction of the Architects / R.C.C. Consultants.

#### **7.23.2 Cement**

i) Only Portland Cement Grade 43/53 will be used

7.23.3 i) All Reinforced Cement Concrete designated by strength shall be treated as design mix concrete of grade as specified.

ii) Before start of work, mix design for required grade of concrete shall be obtained from an approved laboratory.

iii) Only weigh batching shall be allowed for R.C.C. work.

iv) For Plain Cement Concrete, nominal mixes as given in Schedule of Quantities may be used.

v) All concrete shall be mixed in a mechanical mixer and mechanically vibrated. Concrete will be mixed for at least two minutes in the mixer.

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vi) Water, cement ratio will be carefully controlled throughout. Moisture content of sand and aggregate and bulkage shall be taken into account. Graduated liter cans shall be used for this purpose.

vii) Slump shall be minimum 50 mm

viii) Curing shall be carried out as follows :

For 7 days : Extensive

For 14 days : General

#### 7.23.4 FREQUENCY OF SAMPLING :

The minimum frequency of sampling of concrete of each grade shall be in accordance with the following :

Quantity of Concrete in the work m <sup>3</sup>	No. of Samples
1 – 5	1
6-15	2
16-30	4
31-50	4
51 and above	4 plus one additional sample for each additional 50 Cum or part thereof

7.23.5 Compression strength tests may be carried out at 7 days to get a quicker idea of the quality of concrete, but 28 days strength only shall be the criteria for acceptance or rejection of concrete.

7.23.6 Before providing any construction/expansion joints, the Contractor must obtain approval of the Architects/R.C.C Consultant as regards location and design.

7.23.7 Before concreting the foundation strata, steel reinforcement and shuttering shall be inspected and approval taken from Clerk of Works, R.C.C. Consultant and a proper system of pour cards in required format established.

7.23.8 All form work shall be strong enough to withstand the loads coming thereon. Shuttering shall be carried out with plywood sheets or steel plates having clean and level surfaces. It shall be the Contractors responsibility to ensure the safety of centering / shuttering during erection and after concreting.

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7.23.9 Stripping period of form work shall be as follows :

Walls, Columns, Beam-sides	-	48 hours
Slabs, spanning up to 4.5 m	-	7 days
Slabs spanning more than 4.5 m	-	14 days
Beams spanning 6 m	-	14 days
Beams spanning more than 6 m	-	21-28 days

7.23.10 Minimum cover using plastic/precast cover blocks shall be provided as shown on the structural drawings.

Footing - 50 mm

Columns - 40 mm ( form main reinforcement )

Beams - 25 mm

Slabs - 15 mm

7.23.11 Steel Reinforcement

i) This shall conform to the following :

a) Mild Steel - Shall be Grade I tested quality conforming to IS 432 - Part I

b) High Yield Strength deformed steel bars - shall be of tested quality conforming to IS 1786. It shall be Tor 415/500, TMT 415/500 or, Tiscon 415/500 or as Specified by the RCC Consultant.

c) Binding wire - black annealed steel wire conforming to IS 280 - minimum 16 gauge

ii) Test certificates shall be furnished for all steel reinforcement brought to site.

iii) Samples from each batch received on site shall be taken as instructed and tested for tensile strength and malleability from an approved Laboratory.

iv) Measurements for steel shall be recorded before concreting is commenced and signed by Contractor and Clerk of work.

v) Steel reinforcement shall be cleaned of all rust, oil or other deleterious substance before placing in position.

7.23.12 Laps. These shall be as shown on structural drawings or as instructed by Structural Consultant.

7.23.13 The Contractor shall prepare bar bending schedules well in time and have them approved from the Clerk of Works/RCC Consultant. Steel shall be fabricated on the basis of the approved schedules.

7.23.14 Immediately on stripping of form work the concrete shall be carefully inspected. Under no circumstances shall the concrete surface be patched or covered up or damaged concrete rectified or replaced until the Clerk of Works/Architects have inspected the works and issued instructions for its rectification or replacement.

7.23.15 All concrete shall be hacked to make the surface sufficiently rough to provide a key for plaster.

7.23.16 Date of concreting shall be marked on all columns, beams, slabs etc. after stripping of forms.

7.23.17 Embedment of hooks, hangers, boxes or any other inserts, for hanging fans, lights, false ceiling etc. and making of openings as required, shall be carried out without extra charge.

7.23.18 Cover blocks shall be made in concrete using small size grit and shall have same strength as the specified mix of the concrete. These will also be frequently tested as instructed.

## **8. MODE OF MEASUREMENT**

NOTE : Mode of measurement shall be as per standard specifications of the Government of Maharashtra (commonly known as Red Book). However the mode of measurement given hereunder will supersede that given in the standard specifications wherever it is at variance.

### **8.1. EXCAVATION :**

8.1.1 Footings : Area of excavation for footing shall be measured equal to area of lowest concrete course as shown on drawing. Depth shall be measured vertically from ground level to bottom of concrete course or dry rubble packing as the case may be.

8.1.2 Plinth beams : Depth of excavation for plinth beam shall be measured from ground level up to bottom of beam and width equal to width of beam.

8.1.3 Where excavation is made, in trenches, measurements for cutting depth shall be taken by means of tape and staff and the width of lowest concrete or rubble packing shall be considered as the width of excavation. When excavation is made for leveling the site, levels shall be taken before start and after completion of work and the total quantity of excavation in cutting computed from these levels.

8.1.4 Where soil including decomposed or soft rock and hard rock are mixed, hard rock after excavation shall be stacked separately. Measurements of the entire

excavation shall be taken as indicated above. Excavation of hard rock shall be measured from stacks of excavated hard rock and reduced by 50% to allow for bulkage and voids. The quantity so arrived at, shall be paid under hard rock. The difference between the quantity of entire excavation and quantity payable for hard rock shall be paid as soil. (including decomposed or soft rock)

8.1.5 Extra width of excavation may be allowed by Clerk of Works / Architects if required as working space due to site conditions such as deep foundations, loose soil etc.

8.1.6 The unit of measure in all the above cases shall be in cubic meters or as specified in the Bill of Quantities.

## 8.2. EARTH FILLING :

Measurement for filling when it has been stipulated to be separately paid for, shall be, unless otherwise specified, as follows:-

8.2.1 In open spaces : Filling shall be measured from cross sections of embankments, before start of work and after completion of work by means of level taken at suitable places. When it is not possible to measure filling from cross section, it may be measured in loose stacks or lorry measurements with previous written permission of Clerk-of-Works and 20% deduction shall be made from measured quantity to arrive at payable quantity.

8.2.2 In plinth : Consolidated filling shall be measured without any deduction of voids.

The unit of measure in above cases shall be in cubic meters or as specified in the Bill of Quantities.

## 8.3. BRICK MASONRY :

8.3.1 Walls exceeding one brick thick shall be measured in unit of one cubic meter.

Deductions for all openings, lintels, recesses shall be made except for the following :

- i) When openings are less than 45 cm in both the directions or less than 45 cm dia on the surfaces.
- ii) When beams & wall plates do not have bearing over entire thickness of wall.
- iii) No extra will be paid for providing such openings, recesses etc..

8.3.2 Half brick walls : Net area over one surface shall be measured. Deductions for all openings, lintels, recesses shall be made as in 8.3.1.

## 8.4. CEMENT CONCRETE ( Plain and reinforced ) :

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8.4.1 Cement concrete items shall be measured exclusive of the steel reinforcement and plaster thickness but shall include necessary cost of shuttering, centering and curing. Items like R.C.C. precast jalis, R.C.pipes and other such articles which are normally manufactured in factories as well as those items which have been so specifically mentioned in schedule of quantities shall be measured inclusive of reinforcement. No deductions will be made when openings are less than 45 cm in both directions or 45 cm in diameter and no extra will be paid for providing such openings.

8.4.2 Foundation concrete : Will be measured in the unit of one cubic meter and to exact dimensions as shown on drawing or as actually laid as per instructions.

8.4.3 Footings, columns, beams, lintels, sills and bed blocks : Shall be measured in cubic meters. Portions of beams and columns embedded in slab shall be paid at the rate of slab. Only projecting rib of beam shall be paid for at the rate of beam. In case of junctions of columns and beams and/or lintels, columns shall be measured between slabs. In case of junction of columns and footings, the footing will be measured in full and the column above the footing.

8.4.4 Slabs and Chajjas : Shall be measured in cubic meters. Slab shall be measured full throughout. Where slabs of different thickness meet, the highest thickness will be taken into account. For chajja only projected portion shall be measured.

8.4.5 Parapet wall, apron wall and drop wall from chajja having drop exceeding 5 cm. Actual cubic contents for portion projecting over slab or beam shall be measured. If drop from chajja is 5 cm or less, the same shall be measured under chajja item.

8.4.6 Projected bands : Projection of 15 cm or less in breadth and thickness shall only be considered as band. The band shall be measured in cubic meters. Deductions will not be made on account of grooves, patties, bands, molds etc. nor will any extra be paid for forming such grooves or features.

8.4.7 Staircase : Measurements shall be per cubic meter comprising of step and soffit slab. All landings, and landing beams shall be paid separately under slab and beam measurements. In the case of soffit slab resting on beams, the portion of beam projecting below landing slab shall be measured and paid as beam. Side parapet walls, railings, finishing of risers and treads and plastering etc. shall be paid separately.

8.4.8 Reinforcement : Shall be measured on standard weight basis for the length and size of bars as shown in drawing. Wastage, rolling margin, spacers, chairs etc. required for construction purpose, and binding wire will not be measured. Lapping of bars shall be provided only as per instructions of the RCC Consultant, and the same shall be paid for. The rate will be inclusive of labour involved in cleaning, cutting, bending & erecting.

The rate will be inclusive of labour involved in cleaning, cutting, bending and erecting in position. The unit of measure shall be in metric tons up to 0.10 kg.

8.5. STRUCTURAL STEEL WORK :

8.5.1 Weight of bolts, nuts, rivets, washers etc. used will not be considered for payment. Only the weight of the main members calculated on length basis at standard weight will be paid to nearest cm. No deduction shall be made for holes, bolts or rivets and wastage involved in cutting, for notching ends of sections or intermediate points for making connections. No additional payment shall be made for welding, riveting and bolting. The units of measure shall be in Kg. or MT as per Schedule of Quantities. Gusset plates shall be actually weighed and paid accordingly.

8.6. DOORS, WINDOWS, ROLLING SHUTTERS AND GATES:

8.6.1 These shall be measured in the unit of Square Meters.

i) Teak wood doors, windows and ventilators : Clear area over one face excluding frame shall be measured. Hold fasts and portions embedded in masonry or flooring shall not be measured.

ii) Steel doors, windows and louvers : Clear area over one face inclusive of frame shall be measured. Hold fasts or portions embedded in masonry or flooring shall not be measured.

iii) Steel rolling shutters and rolling grills; Dimensions shall be the clear width between side jambs and clear height between floor and bottom of lintel or beam. Cover will not be measured separately.

8.7. FLOORING, SKIRTING AND DADO :

The net area covered shall be measured in sq. mts.

8.8. PLASTER :

Net area of surface plastered shall be measured in Sq. Mts. No deduction will be made for openings each less than half Sq.Mt. in area. No extras will be payable for any grooves, patties, bands, molds, ( including drip molds ) which are deemed to be included in the internal and external plastering items.

8.9. PAINTING AND COLOUR OR LIME WASH :

NOTE : All wood work and steel items given in Schedule of Quantities are generally inclusive of painting, but if these are required to be measured separately, then the following procedure shall be adopted.

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8.9.1 Net area of surface painted shall be measured in sq.mts. No deductions shall be made for unpainted surfaces or openings less than half sq.mts. each. The rates shall be inclusive of cleaning glasses and fittings.

a) Walls : Net area of surface painted shall be measured. Extra for moldings, recesses and the like shall not be paid.

b) WOOD WORK :

Description	How measured	Multiplying factor
i) Paneled framed ledged braced and battened	Measured flat (not girthed) including frame; edges; chocks cleats etc shall be deemed to be included in the item	1.30 (for each side)
ii) Flush	Measured flat (not girthed) including frame edges; chocks cleats etc shall be deemed to be included the item.	1.20 (for each side)
iii) Partly paneled & partly glazed / glazed	----- As above -----	1 (for each side)
iv) Fully glazed or partly glazed	----- As above -----	0.80 (for each side)
v) Guard bars balustrades gratings and railings	Measured flat over all, no deduction shall be made for opening. (Supporting members shall not be measured separately)	1 (for painting all over)

c) METAL WORK :

Description	How measured	Multiplying factor
i) Fully glazed or gauzed doors and windows / partitions	Measured flat over) frame. No deduction shall be made for openings. In case of gates supporting members like stays, guide rails, hinges shall not be measured	0.50 (for each side)

ii) Rolling Shutters	Measured flat (size of opening) overall; jamb guides, bottom rails and locking arrangements etc. shall be included in the item (top cover shall be measured separately)	1.10 (for each side)
iii) Collapsible gate	Measured flat (size of opening)	1.50 (for painting overall)
iv) R.C.C jali and Fencing	Measured flat overall No deductions shall be made for openings	1 (for each side)

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**9. APPROVED MAKES OF MATERIALS**

## 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 catalogues, 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) OPC	Ultratech, A.C.C, Vasavadatta, Koromandal, Ambuja
2.	High yield strength deformed bar	TMT, TISCON 40, TOR 40 or as Specified
3.	Glazed tiles	1 <sup>st</sup> quality Nitco/ Kajaria/Johnson or equivalent
4.	Flush doors	Anchor, National, Tower
5.	Paints	Asian/ Berger/ Nerolac/ Dulux
6.	Waterproof cement paint	Snowcem
7.	Glazing ( Float Glass )	Modi Float, Asahi
8.	Asbestos Roof sheets	Everest, Charminar
9.	Waterproofing compound	Impermo, Cico No.1
10.	Anti termite treatment	Dursban (TC) (Chlorpyifos 20% EC)
11.	Polysulphide sealant	Pidiseal, RDL 941, Tuffseal
12.	P.V.C. Water stops	Fixopan
13.	Floor dividing strips	Fixopan
14.	White cement	Birla, J.K.
15.	BWP Plywood	Anchor, Kitply,National
16.	Teakwood particle board	Novapan, National

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<b>N0</b>	<b>MATERIAL</b>	<b>APPROVED MAKE / BRAND</b>
17.	FRP Doors/ Frames	Fibro Plast/ Quality doors / equivalent
18.	Block-board	Duro, National
19.	Aluminum Sections	Jindal, Hindalco
20.	Laminates	Formica, Neoluxe, Decolam,Greenlam
21.	Putty	Birla White/ JK White
22.	Expansion bolts	Fischer / Hilti
23.	Cement ad mixtures (Plasticisers hardness, retardant etc.)	Fosroc, SikaQualcrete, Bauchemie
24.	Ceramic Tiles	Kajaria, Nitco, Johnson
25.	Vitrified tiles	Kajaria, Nitco, Johnson
26.	Door closers	Dorma, Enox, Ozone,Gaze
27.	Floor springs	Dorma, Enox, Ozone,Gaze
28.	Sanitary Ware	Hindustan
29.	Sanitary Fittings	Jaquar
30.	G. I. Pipes	TATA, Zenith or equivalent ISI make
31.	C.I. Pipes	NECO
32.	False Ceiling	India gypsum/Saint Gobin or equivalent ISI make
33.	Nahani Trap	NECO or equivalent ISI make
34.	UPVC Pipe & Fitting	Astral / Finolex / Supreme
35.	CPVC Pipe	Astral / Supreme / Prince

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**10. STANDARDS OF CEMENT CONSUMPTION**

<b>Sr. No.</b>	<b>Item</b>	<b>Unit</b>	<b>Requirement in bags</b>
<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.	150mm thick brick masonry	Sqm	0.22
<b>MASONRY</b>			
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 50mm thick in (1:2:4)	Sqm.	0.35
18.	Finishing the terrace slab 20mm thick in C.M.	Sqm	0.20

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Sr. No.	Item	Unit	Requirement in bags
	thick in 1:3 proportion		
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 6mm thick single coat in C.M. 1:4	Sqm	0.045
23.	Providing internal cement plaster 6mm thick single coat in C.M. 1:3	Sqm.	0.07
24.	Providing cement plaster 12mm thick in single coat in C.M. 1:5	Sqm.	0.08
25.	Providing cement plaster 12mm thick in single coat C.M. 1:4	Sqm	0.10
26.	Providing cement plaster 12mm thick in single coat in C.M. 1:3	Sqm	0.12
27.	Providing cement plaster 20mm thick in single coat in C.M. 1:3	Sqm.	0.19
28.	Providing cement plaster 20mm thick in single coat in C.M. 1:5	Sqm.	0.13
29.	Providing cement plaster 20mm thick in single coat in C.M. 1:5 proportion	Sqm	0.13
30.	Providing cement plaster 20mm thick in single coat in C.M. 1:4 proportion	Sqm.	0.15
31.	Providing cement plaster 20mm thick in single coat in C.M. 1:3 proportion	Sqm	0.19
32.	Providing cement plaster 25mm thick in two coats 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

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Sr. No.	Item	Unit	Requirement in bags
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 1.5mm. 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 in C.M. 1:3	Sqm.	0.150
43.	Providing and laying polished Shahabad stone flooring 25mm to 30mm thick on bed 1:6 proportion	Sqm.	0.13
44.	Providing and laying polished Tandur stone flooring 25mm to 30mm thick on bed 1:6 proportion	Sqm.	0.130
45.	Providing and laying polished Kotah stone flooring 25mm to 30mm thick on bed 1:6 proportion	Sqm.	0.130
46.	Providing and laying skirting and dado of polished Shahabad stone 25mm to 30mm with 1:4C.M.	Sqm	0.18
47.	Providing and laying skirting of polished Tandur stone 25mm to 30mm with 1:4 C.M.	Sqm.	0.18
48.	Providing & laying c.c. flooring 40mm thick with c.c. 1:1½:3.	Sqm.	0.36
49.	Providing & laying c.c. flooring 50mm thick with c.c. 1:1½:4	Sqm.	0.44
50.	Providing and laying flooring of plain cement tiles	Sqm	0.15

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Sr. No.	Item	Unit	Requirement in bags
	of 25 x 25mm on bed for flooring		
51.	Providing and laying plain cement tiles for dado and skirting 1:4 proportion.	Sqm	0.18
52.	Providing and laying coloured tiles 25 x 25mm 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 25cm	.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 in situ marble mosaic tiles 10mm thick		
	Gray cement	Sqm	0.200
	White cement	Sqm.	0.130
60.	Providing and laying in situ dado tiles 10mm 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 to 30mm thick for tread and riser	Sqm.	0.18

**General Specifications to be observed during execution of the work.**

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## **MATERIALS**

- a. All materials brought on the site of works and are meant to be used; the same shall be the best of their respective kinds and to the approval of the Consultants
- b. The Contractors shall check each fresh consignment of materials, as it is brought on to the site of the works to see that they confirm in all respects to the specifications and/or the samples approved by the Architect/Consultant.
- c. Any materials that have not been found to conform to the specification will be rejected forthwith and shall be removed from the site by the Contractors at his own cost.
- d. Materials stored at site, depending upon the individual characteristic, shall be protected from atmospheric effects due to rain, sun, wind and moisture to avoid deterioration.
- e. Materials like timber, paints etc. shall be stored in such away that there may not be any possibility of fire hazards. Inflammable materials and explosives shall be stored in accordance with the relevant rules and regulations so as to ensure desired safety during storage.
- f. The unit weights of materials unless otherwise specified shall be reckoned as given in IS : 875 (Part 1)-1987 or any revision thereof.
- g. Samples of all materials to be used on the work shall be got approved by the Contractor from Client well in advance. The approved samples duly authenticated and sealed shall be kept in the custody of Client till the completion of the work. All the materials to be provided by the Contractor shall be brand new and as per the samples approved by the Client.

### **1. FINE AGGREGATE - SAND: -**

Aggregate shall comply with the requirements of IS: 383. The sand used shall be river or pit sand, free from any clay, loam earth or vegetable matter and shall be clean and fit for use in the opinion of the Architect or his representative. The sand shall be screened or washed in clean water if necessary.

The fineness modulus of sand to be used for concrete shall be between 2.6 to 3.6. Sand should be of a sharp angular grit type and well graded.

Fine sand will not under any circumstances be used for the concrete or mortar.

Fineness modulus of the sand shall not exceed 3.0.

For 2<sup>nd</sup> coat of plastering; pointing and joints of ashlar masonry etc. shall be clean, sharp and gritty to the touch and fineness modules shall not exceed 1.6.

The sand shall not contain any trace of silt or other harmful matter. Sand containing any trace of silt will be rejected.

### **2.COARSEAGGREGATE-STONE METAL:-**

Aggregate shall comply with the requirements of IS: 383. The Aggregate for the works shall be broken from the besttrap/ granite/ quartzite gneiss stone in that order

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available in that region and from approved source.

It shall be angular and with sharp corners and well graded, and shall have granular or crystalline (not glossy) non-powdery surfaces.

The aggregate should be clean and free from all clay or loamy admixtures or any vegetable matter. If not perfectly clean, it shall be washed and screened before use. Stone shall have no deleterious reaction with cement.

The crushing strength of aggregate will be such as to allow the concrete in which it is used to built up the specified strength of concrete.

For all reinforced concrete work, the aggregate shall pass through 3/4" gauge for No.1 metal and 1" gauge for No. 2 metal. If any rounded, pebbles, flaky or decayed stone are found in the aggregate, the whole consignment is liable to rejection.

All sieves screens, etc. that may be necessary to carry out any tests as to ascertaining the suitability of the aggregate for the particular work in hand, will be provided by the Contractor at his own expenses.

The maximum size of the aggregate for general concrete may be of 40 mm size and for R.C.C. work a maximum size of 20 mm, but it should be restricted to 6 mm less than the minimum lateral distance between bars or 6 mm less than the cover, whichever is smaller.

Where there is no restriction to flow of the concrete in to sections, 40 mm or larger size may be permitted.

Coarse aggregate of a porous nature where absorption of water after 24 hour immersion in water, is more than 5% by weight, shall not be used.

The aggregates of different sizes shall be stored separately and handled in such a manner as to prevent intermixing of different sizes of aggregates required separately for grading purpose.

Coarse and fine aggregate shall be batched separately.

### 3. **BRICKS:** -

All bricks used on the works shall be Second class bricks with compressive strength not less than 35 kg/cm<sup>2</sup>, unless otherwise specified and shall be uniform in quality and size.

The bricks should have frog 10 mm deep on one side.

The size may be 229X114X70 mm for non-modular bricks.

The size of conventional brick may vary from 222.3X106.4X66.7 mm to 228.6X108.0X76.2 mm. Following tolerances are permitted in the standard conventional size adopted on a particular work:-

Length- plus or minus 3 mm

Breadth- plus or minus 1.5 mm

Depth- plus or minus 1.5 mm

When I. S. bricks are used they shall comply with latest revision of I. S. I. 1077.

They shall be from approved source, uniform in size, shape, color and without any efflorescence.

Must be well burnt so as to give a clear ringing sound when struck. They shall not

break when thrown on the ground or struck against other bricks.

They shall have sharp edges and angles and even surfaces. No under burnt or over burnt bricks shall be used.

No brick shall absorb more water than 20 per cent of its own weight when dry.

Best local quality bricks may be used with approval from Consultant.

#### 4. **STONE:** -

Stone to be used in masonry shall be trap, granite, quartzite, gneiss, laterite or any other type of good stones that may be specified in the item. In the absence of specified stone good trap, granite, quartzite or gneiss stones in that order available in the region and known to be satisfactory in use in view shall be used.

The compressive strength shall generally around 400 kg/ sq. cm. and water absorption shall generally not exceed 5%.

Stone shall be hard, sound, durable and free from weathering and decay and defects like cavities, cracks, flaws, sand holes, injurious veins, patches of loose or soft materials and other similar defects that may adversely affect its strength and appearance. As far as possible stones shall be of uniform color, quality or texture. Stones shall not contain crypts crystalline silica or chart, mica and other deleterious materials like iron-oxides, organic impurities etc.

Stones with round surface shall not be used.

The stones to be used in the face shall be tough, hard, dense, sound and durable, resistant to weathering action, reasonably fine-grained, uniform in color and texture and free from seams cracks or other defects which will adversely affect their strength, durability or appearance. They shall be free from weathered portion and skin. Size and shape of stones shall be as per the requirement of each item.

Rubble stones for hearting shall be of approved quality, sound, hard, dense and durable, free from segregation, seams, cracks weathered portions and other structural defects or imperfections tending to affect their soundness and strength. They shall be free from rounded, worn or weathered surface or skin or coating which prevents the adherence of mortar. Size and shape of stones shall be as per the requirement of each item.

Stones to be used as headers, pin-headers, quoins, copings etc. shall be of same specifications as mentioned above, and further comply with the requirement of size and shape stipulated under the relevant item.

Samples of the stones to be used in work shall be got approved by the Consultant before the work is started and such samples shall be maintain in the office.

Normally stones used should be small enough to be lifted and placed by hand. The length of stones for stone masonry shall not exceed three times the height and the breadth or base shall not be greater than three-fourth the thickness of the wall, or not less than 15 cm. The height of stone may be upto 30 cm.

Rubble for rubble packing shall be 230 mm deep and surface area about 80 cm<sup>2</sup> consisting of good hard stone.

## 5. Cement:-

Grade of cement should be as approved or as mentioned in tender.

- a) 33 grade ordinary Portland cement conforming to IS : 269
- b) 43 grade ordinary Portland cement conforming to IS : 8112
- c) 53 grade ordinary Portland cement conforming to IS : 12269

If any other type of cement is to be used it should conform respective IS codes.

Different types of cements shall not be mix together.

Cement shall be packed in jute, double hessian bituminised or woven HDPE or any other approved composite bags bearing the manufacture's name or his registered trade mark if any, and grade and type of cement.

Every delivery of cement shall be accompanied by manufacture's certificate conforming that the supplied cement conforms to relevant specifications. Manufacturer's test report should be produced. This certificates shall be endorsed to Client for his record.

Every consignment of cement must have identification marks on packages indicating date of manufacture, grade and type of cement. Cement brought to work shall not be more than 6 weeks old from the date of manufacture.

For R.C.C. only fresh cement stock is to be used. Six months older cement to be removed from site.

Compressive strength requirement of each type of cement for various grades shall be as per IS : 4031 (part 6)

Initial setting time for all type or grade of cement when tested by Vicat apparatus method shall not be less than 30 minutes.

Final setting time for all type or grade of cement when tested by Vicat apparatus method shall not be less than 600 minutes.

If asked for tests on cement they should be carried out in standard labs as per IS : 4031 or any revisions thereof at the cost of Contractor.

If Contractor wants to use mix design he should do all the required formalities well in advance and the results of mix design should be followed strictly. For change of cement batch and source of sand/aggregates mix design should be done again. Previous batch design will not be allowed.

Stacking of cement should be done on hard and raised platform to avoid in grace of moisture from bottom and in covered area. The walls and roof must be leak proof. If any settled cement bags are found they should be immediately removed from site. Cement bags shall be stacked in a manner to facilitate their removal and use in the order in which they are received.

Storage expenses and risk is Contractors responsibility. It is the liability of the Contractor to ensure that the cement is of sound and required quality.

Different kinds or brands of cement or cement of same brand from different mills should be stored separately.

Two months old cement should be subjected to test and used only if found

satisfactory.

Daily receipt and consumption registrar shall be maintained by the Contractor.

6. **NEERU:** -

Neeru shall be of the best quality hydraulic lime slaked with fresh water and sifted. The lime shall be reduced to fine powder by grinding in a mortar mill. That much quantity of neeru should be prepared which will get consumed in ten days of time. The neeru shall be kept moist until used.

7. **WATER:** -

Water to be used in work should be free from silt, traces of oil acids and injurious alkali, salts and organic material and other deleterious material which will either weaken the mortar or concrete or cause efflorescence or attack the steel in R.C.C.

Water source should be approved from Client/Consultant.

Water fit for drinking will generally found suitable for use in work.

Water for curing should not be too acidic or too alkaline. It should have a pH value between 4.5 to 8.5. Hard and bitter water containing more than 100 p. p. m. of sulphates shall not be used for curing purpose.

8. **STEEL:** -

Mild steel bar reinforcement for R.C.C. work shall conform to I. S. 432 and any revision thereof. It shall also comply with the relevant part of I. S. 456 and any revision thereof.

High strength reinforcement shall comply with I. S. : 1139 or I. S. : 1786 and any revision thereof.

All the reinforcement shall be clean and free from dirt, oil, paint, grease, mill scale or loose or thick rust at the time of placing.

All finished bars shall be well and clearly rolled to the dimensions and weights specified. Also they should be sound and free from cracks, surface flaws, laminations, roughed, jagged and imperfect edges and other defects.

All steel shall be of tested quality. No re-rolled material will be accepted. The Contractor shall submit the manufacturer's test certificate to Client

The contractor shall provide necessary steel chairs etc. or other subsidiary reinforcement which are not shown on the drawings but may be necessary to keep reinforcement firmly in its correct position. The cost of subsidiary reinforcement such as spacer bars, chairs etc. shall be deemed to be included in the price.

All M. S. reinforcement bars shall have chemical composition in accordance with I. S. : 432 or I. S. : 2062 or any revisions thereof. For high strength deformed steel it should conform to I. S. : 1786 and revision thereof.

Samples from every batch shall be taken for various tests as per to be carried out from approved labs.

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Proof stress and percentage elongation test shall be done as per IS 1608, read in conjunction with IS 226.

Re-bend test shall be done as per IS 1786.

For seismic zone III and above, steel reinforcement of Grade Fe 415 D shall be used. However, high strength deformed steel bars, produced by thermo mechanical treatment process of grade Fe 415, Fe 500 and Fe 550 having elongation more than 14.5. % and conform to other requirements of Fe 415 D, Fe 500 D and Fe 550 D respectively of IS 1786 may also be used for reinforcement. In future, latest provision of IS 456 and IS 13920 or any other relevant code as modified from time to time shall be applicable.

#### **9. STRUCTURAL STEEL: -**

All the structural steel shall be clean and free from dirt, oil, paint, grease, mill scale or loose or thick rust at the time of placing.

All finished members shall be well and clearly rolled to the dimensions and weights specified. Also they should be sound and free from cracks, surface flaws, laminations, roughed, jagged and imperfect edges rusted or non-rusted pits and other defects.

All steel shall be of tested quality. No re-rolled material will be accepted. The Contractor shall submit the manufacturer's test certificate to Client

#### **10. ADMIXTURES:-**

Admixtures in concrete may be used with approval of consultant. They should not have any adverse effect on strength of concrete. Requisite qualities of concrete and steel should not get affected by the use of admixtures.

Admixtures shall be used as per specifications of manufacturer so as to achieve best results from the product.

If admixture is in concentrated form and requires water to form a usable solution, then the water mixed in solution shall be counted in total amount of water to be used.

Admixtures shall be tested in accordance with IS : 9103 and shall be used only after approval to the results from Consultant.

#### **11. Timber: -**

Timber to be used in building works shall be from the heart of a sound tree of mature growth, the sap wood being entirely removed. It shall be uniform in substance, straight in fiber, free from large, loose dead or cluster knots, flaws, shakes, warp, cup, spring twist, bends or defects of any kind. It should be free from spongy, flaky or brushy condition, sapwood and borer holes.

All timber shall be seasoned and free from decay, rot, harmful fungi and insect attacks and from any other damage of harmful nature that will affect the strength, durability, appearance or its usefulness for the purpose for which it is required.

The colour should be uniform as far as possible.

Timber for use shall not be wrought until seen and approved by Client. Rejected and defective timber shall be immediately removed from the site of work. Any effort like plugging, painting, using any adhesive or resinous materials to hide defects shall rendered the pieces rejectable by Client. Timber presented for inspection shall be clean and free from dust, paint, mud or other material which may conceal the defects. Cut of ends for protection can be done after inspection. No timber shall be painted, tarred or oiled without the previous permission of the Client.

Timber panels shall be preferably made of timber of larger width. The minimum width and thickness of a panel shall be 150 mm and 15 mm respectively. When made from more than one piece, the pieces shall be joined with a continuous tongue and groove joint, glued together and reinforced with metal dowels. The grains of timber panels shall run along the longer dimensions of the panels. The panels shall be designed such that no single panel exceeds 0.5 square meter in area.

12. **PLY WOOD BOARDS:-**

Plywood boards shall formed by gluing and pressing three or more layers of veneers with the grains of the adjacent veneers running at right angles to each other. The veneers shall be sufficiently smooth to permit an even spread of glue. Face veneers may be either commercial or decorative on both side or one side commercial and other decorative. Plywood shall be of BWP grade or BWR grade as per IS : 303 or any revisions thereof.

The thickness of all the veneers shall be uniform, within a tolerance of plus or minus 5%. Corresponding veneers on either side of the center one shall be of the same thickness and species

Tolerance in thickness shall be plus or minus 10% for boards upto and including 5 mm; plus or minus 7% for boards from 6 mm to 9 mm and plus or minus 5% for boards above 9 mm thickness. The boards shall be of uniform thickness and the surface of the board shall be sanded to a smooth finish.

Moisture content of the plywood boards when tested in accordance with IS :1734( part 1) or any revisions thereof shall not be less than 5% and not more than 15%.

13. **GYPSUM BOARD: -**

Gypsum board is formed by enclosing and bonding together a core gypsum plaster (a calcium sulphate mineral) with or without fiber between two sheets of highly durable paper. The gypsum boards shall be non-resonant, dimensionally stable and possesses flame retardant qualities. The boards shall conform to IS : 2095 and any revisions thereof. Gypsum plaster shall conform to IS : 2547 or any revisions thereof. The surface of the board shall be true and free from imperfections that would render the board unfit for use with or without decoration.

14. **ALUMINIUM SECTIONS FOR DOORS AND WINDOWS:-**

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**LIST OF BUREAU OF INDIAN STANDARD (BIS) CODES**

<i>Sl. No.</i>	<i>IS Code</i>	<i>Subject</i>
1.	IS 733	Wrought Aluminium and Aluminium Alloys, Bars, Rods and Sections (For General Engineering Purposes) -Specification
2.	IS 737	Wrought Aluminium and Aluminium alloy sheet and strip for general engineering purposes -Specification
3.	IS 1285	Wrought Aluminium and Aluminium Alloy, Extruded Round Tube and Hollow sections (For General Engineering Purposes) - Specification
4.	IS 1868	Anodic coating on Aluminium and its Alloys-Specification
5.	IS 1948	Specification for Aluminium Doors, Windows and Ventilators
6.	IS 3908	Specification for Aluminium equal leg angles
7.	IS 3909	Specification for Aluminium unequal leg angles
8.	IS 3965	Dimensions for wrought Aluminium and Aluminium Alloys bars, rods and sections.
9.	IS 5523	Method of testing anodic coating on aluminium and its alloys.
10.	IS 6012	Measurement of coating thickness by Eddy Current Method
11.	IS 6315	Floor springs (Hydraulically regulated) for heavy doors-Specifications
12.	IS 6477	Dimensions of extruded hollow section and tolerances
13.	IS 12823	Wood products- Pre-laminated particle board –Specifications.
14.	IS 14900	Transparent Float glass- Specifications.

**14.1 Aluminum Sections**

The aluminum extruded sections shall conform to IS 733 and IS 1285 for chemical composition and mechanical properties. The stainless steel screws shall be of grade AISI 304.

The permissible dimensional tolerances of the extruded sections shall be as per IS 6477 and shall be such as not to impair the proper and smooth functioning/operation and appearance of door and windows.

The sections to be used shall be as mentioned in design and drawings. Slight variation is permissible to suit the manufacturer's production. The Contractor shall prepared fabrication and installation drawing for approval of Client. For variation in section if any due to Contractor it shall be approved by the Client. No extra shall be paid on this account.

**14.2 Anodizing** shall be done before the fabrication work by well equipped anodizing or electro coating plants to ensure uniform coating, colour and shades.

**14.3 Powder coating** material shall be Epoxy/polyester powder of approved make. Detailed schedule for powder coating shall be given in advance to Client, to facilitate the inspection. Before powder coating all sections shall be thoroughly cleaned by alkaline or acidic solutions under the conditions specified by chemical conversion coating supplier and then rinsed thoroughly as per norms of supplier. Members shall be dried at the temperature and time specified by the conversion coating chemical supplier. The detail specifications and procedure for application of conversion coating shall be approved by Client. The members surfaces after the conversion coating pretreatment and before the application of the coating shall be free from dust or any deposits. The Epoxy/polyester powder shall be applied by electrostatic powder spray method. Detailed specifications for application of

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epoxy/polyester powder shall be submitted from manufacturer for the approval of Client. The powder coating shall be applied as per the specification approved by Client. The thickness of the finished powder coating measured by micron meter shall not be less than 50 micron nor more than 120 micron at any point.

#### 14.4 Powder Coating Finish

**Surface appearance:** The finish on significant surfaces shall show no scratches when illuminated and is examined at an oblique angle, no blisters, craters; pinholes or scratches shall be visible from a distance of about 1 m. There shall not be any visible variation in the colour of finished surfaces of different sections and between the colours of different surfaces of same section.

**Adhesion:** When a coated test piece is tested using a spacing of 2 mm between each of the six parallel cuts (the cut is made through the full depth of powder coating so that metal surface is visible) and a piece of adhesive tape, approximately 25 mm x 150 mm approved by the Engineer-in-Charge is applied firmly to the cut area and then removed rapidly by pulling at right angles to the test area, no pieces of the finish other than debris from the cutting operation shall be removed from the surface of the finish.

**14.5** All aluminum members shall be protected by wrapping self adhesive non-staining tape, approved by Client.

The rate shall include the cost of all the materials, labours involved in all the operations as described in schedule of item and particular specification.

#### 14.6 Float Glass

The Float glass shall be clear and of approved brand. It shall be clear, float transparent and free from cracks subject to allowable defects. The float glass shall conform to the IS 14900.

The thickness of float glass shall depend on the size of panel. The tolerance in thickness shall be as under:

Nominal Thickness (in mm )	Tolerance (in mm )
4.0	± 0.3
5.0	± 0.3
6.0	± 0.3
8.0	± 0.6

#### 14.7 EPDM Gaskets

Gaskets to be provided shall be of size and profile as shown in drawings and as required to make the respective items for which it is used air and water tight. Samples to be approved and only approved gasket shall only be used.

Gasket shall meet the requirements as given below:

Sr. No.	Description	Standard Follow	Specification
1	Tensile strength Kg.f/cm <sup>2</sup>	ASTM-D 412	70 Min.
2	Elongation at break %	ASTM-D 412	250 Min.
3	Modulus 100% Kgf/cm <sup>2</sup>	ASTM-D 412	22 Min.

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4	Compression set % at 0o CC 22 Hrs.	ASTM-D 395	50 Max.
5	Ozone resistance	ASTM-D 1149	No visible cracks

#### **14.8 SEALANT**

Approved brand, grade and colour sealants shall only be used. Also the silicone to be used around the frame touching with RCC or masonry shall be of approved brand.

#### **14.9 Frames**

Frames for all doors, windows, ventilators and partitions shall be manufactured as per design and drawings given by Architect.

Shop drawings for each type and size shall be prepared by taking into consideration varying profiles of aluminum sections being extruded by approved manufacturers that will comply with specification and requirement.

The shop drawings shall show full size sections of various frames to be manufactured and details of fittings to be provided with it and jointing method. Every shop drawing shall be got approved before start of the work.

On site measurements shall be taken for shop drawings and each frame shall be fabricated according to it.

The frames shall be rectangular and flat with regular shape corners fabricated to right angles. The frames shall be fabricated out of section which have been cut to length, mitered and jointed mechanically using appropriate machines. Mitered joints shall be corner crimped or fixed with self-tapping stainless steel screws using extruded aluminum cleats of required length and profile.

All aluminums work shall provide for replacing damaged/broken glass panes without having to remove or damage any member of exterior finishing material.

The sizes for doors, windows and ventilators frames shall not vary by more than  $\pm 1.5$  mm.

The rate shall include the cost of all the materials, labour involved in all the operations as described in schedule of item and particular specification.

#### **15. ALUMINIUMSHUTTERS**

All aluminum shutters shall be manufactured as per approved shop drawings from standard sections complete with approved fittings as per IS 1948.

Aluminum alloy extruded sections used in the manufacture of extruded window sections shall conform to IS 733. Hollow aluminum alloy sections used shall conform to IS 1285. Dimension and weight per meter run of the extruded sections shall be as per standard weights and manufacturer's specifications.

#### **16. Glass Panes**

Glass panes shall weigh at least 7.5 kg/m<sup>2</sup> and shall be free from flaws, specks or bubbles. All panes shall have properly squared corners and straight edges.

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**17. Screws**

Screws threads of machine screws used in the fabrication of aluminum doors, windows and ventilators shall conform to IS 1362.

**18. STONE/TILES FOR FLOORING:-****LIST OF BUREAU OF INDIAN STANDARDS CODES**

S.No.	IS No.	Subject
1.	IS 269	Specification for 33 grade ordinary portland Cement
2.	IS 401	Code of practice for preservation of timber
3.	IS 451	Technical supply conditions for wood screws
4.	IS 455	Specification for portland slag cement
5.	IS 661	Code of practice for thermal insulation of cold storages
6.	IS 702	Specification for industrial bitumen
7.	IS 1124	Method of test for determination of water absorption, apparent specific gravity and porosity of natural building stones
8.	IS 1130	Specification for marble (blocks, slabs and tiles)
9.	IS 1141	Code of practice for Seasoning of timber
10.	IS 1200-(Part XI )	Method of measurement of Building and Civil Engineering work (Part 11) paving, floor finishes, dado and skirting
11.	IS 1237- Edition 2.3	Specification for cement concrete flooring tiles
12.	IS 1322	Specification for bitumen felts for water proofing and damp-proofing
13.	IS 1443	Code of practice for laying and finishing of cement concrete flooring tiles
14.	IS 1489 (Part-I)	Specification for portland pozzolana cement (Part-I) flyash based
15.	IS 1489-(Part II)	Specification for Portland pozzolana cement (Part II) calcined clay based
16.	IS 1580	Specification for bituminous compounds for water proofing and caulking purpose
17.	IS 2114	Code of practice for laying in-situ terrazzo floor finish
18.	IS 2571	Code of practice for laying in-situ cement concrete flooring
19.	IS 3622	Specification for sand stone (Slab & Tiles)
20.	IS 3670	Code of practice for construction of timber floors
21.	IS 4457	Acid and/or alkali Resistant tiles.
22.	IS 5318	Code of practice for laying of hard wood parquet and wood block floors
23.	IS 5766	Code of practice for laying of burnt clay brick floor
24.	IS 8041	Specification for rapid hardening portland cement
25.	IS 8042	Specification for white portland cement
26.	IS 8043	Specification for hydrophobic portland cement
27.	IS 8112	Specification for 43 grade ordinary portland cement
28.	IS 12330	Specification for sulphate resisting portland cement.
29.	IS: 13630 (Part-1 to 15)	Methods of Testing of ceramic tiles
30.	IS 13712	Specification for ceramic tiles; definition, classification characteristic and marking
31.	IS 15622	Specification for pressed ceramic tile

**19.1 Stone Slabs**

The stone slabs shall be of selected type, quality, color shade, hard, sound, dense and homogeneous in texture free from cracks, decay, weathering and flaws. They shall be hand or machine cut to the requisite thickness and size. Samples for each type of stone shall be got approved by contractor from Client. Top face of the stone slab shall be polished before laying.

**19.2 Dressing**

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Stone slabs shall be cut to required sizes and shapes as per drawing and instructions. All the sides of stone slabs shall be dressed in such a way that when laid they shall be in full contact. The angles of the cut slab shall be perfect and slab shall be in true shape and plane without any chippings.

The thickness of the slabs shall be as mentioned in schedule of items. Tolerance of plus or minus 2 mm in thickness shall be allowed. For length and breadth plus or minus 5 mm for hand cut slabs and plus or minus 2 mm for machine cut slabs shall be allowed.

### **19.3 Tiles:-**

The tiles shall be of approved brand and quality, shall be flat and perfect rectangle or square of required size and mentioned in the drawings, schedule of items or as decided between Client, Contractor and Consultant. Tiles shall be free from any defects such as bubbles, unevenness, or any other defect which will affect the appearance of tile. Tiles shall conform to respective IS codes.

The top surface finish of the tiles shall have the finished as approved by Client, and Consultant. The top shall be glazed with matt or glossy finish or as specified. The edges of the tiles shall be preferably free from glaze and thickness shall be specified by the manufacturer.

## **20. OIL PAINTS:-**

The paint shall be of specified colour and shade approved by Client. The paint shall comply in all respects with relevant Indian Standards. The exact reference depending upon choice of paint, specified purpose to be served such as under-coating finishing, exterior or interior painting and mode of application like spraying and brushing.

If mode of application is not mentioned it shall be with brushes.

The paint shall not show excessive settling in a freshly opened full can and shall easily be re-dispersed with a paddle to a smooth homogeneous state. The paint shall not show curdling levering caking or colour separation and shall be free from lumps and skins.

The paint as received shall brush easily, possess good leveling properties and show no running or sagging tendencies when applied to a smooth level surface.

The paint shall not skin within 48 hours in a three quarter filled closed container.

The paint shall dry to a smooth uniform finish free from roughness, grit, unevenness and other surface imperfections. The paint shall show no streaking or separation when flowed on clean glass.

**General points to be observed during execution of the work.**

**1. Excavation**

**LIST OF BUREAU OF INDIAN STANDARD CODES**

- 1 IS 632 Gamma – BHC (Lindane) emulsifiable concentrates
- 2 IS 1200 (Pt 1) Method of measurement of earth work
- 3 IS 1200 (Pt-27) Method of measurement of earth work (by Mechanical Appliances )
- 4 IS 4081 Safety code for Blasting and related drilling operation
- 5 IS 4988 (Part IV) Excavators
- 6 IS 6313 (pt-II) Anti Termite measures in buildings (pre -constructional)
- 7 IS 6313(pt.-III) Anti Termite Measures in Buildings for existing buildings
- 8 IS 6940 Methods of test for pesticides and their formulations
- 9 IS 8944 Chlorpyrifosemulsifiable concentrates
- 10 IS 8963 Chlorpyrifos – Technical specifications
- 11 IS 12138 Earth moving Equipment's

**1.1** Trenches for foundations, footings, cesspits, drains, lift well, water tanks, etc. shall be excavated to the exact width, length, and depth shown or figured on the drawings or as may be directed by the Consultant.

Excavation for foundation and plinth in all types of strata will include taking out the excavated material, clearing the site, setting out of works as per sanctioned plan,

Rate to include shoring and strutting and dewatering if required, preparing the bed for the foundation and necessary backfilling of approved stuff in layers of 150 to 200 mm, watering and ramming the backfilling, removing the excess materials up to a distance of 50 meter beyond the building area, stacking and spreading the same as directed.

Backfilling shall be done only after concrete or masonry is fully set and done in such a way as not to cause any thrust on any part of the structure. All shoring, strutting, and any other material to be removed before back filling

Original or developed ground level will be taken as 0.00 as the case may be for excavation items only.

Excavation rates are inclusive of working space. Width of P.C.C. will be taken for measurement purpose.

Blasting is not allowed. In case if blasting is required the relevant rules and by-laws shall be followed after permission from client.

All safety rules to be followed. Excavation shall not be carried out below the foundation level of the adjacent buildings.

Damages done by the contractor to any existing work shall be made good by him at his own cost. All types of existing services such as drainage lines, water supply pipes,

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underground cables, overhead wires and similar services found during the course of execution shall be protected against damage by the contractor. The contractor shall not encroach any part of the site which may hamper the operations of such services.

### **Measurements**

The length and breadth of excavations as per drawing or as per site measurements, whichever is minimum shall be taken for measurement purpose. The depth shall be difference between average reduced levels before excavation and after excavation. Same procedure shall be followed for every change of strata.

### **LIFTS**

Lifts will be in multiples of 1.50 meter. The vertical distance for removal with reference to the ground level. The excavation up to 1.5 meters depth below the ground level and depositing the excavated materials upto 1.5 meters above the ground level are included in the rate of earth work. Lifts inherent in the lead due to ground slope shall not be paid for.

### **LEAD**

All distances shall be measured over the shortest practical route and not necessarily the route actually taken. Route other than shortest practical route may be considered in cases of unavoidable circumstances and approved by Engineer-in-charge along with reasons in writing.

**Note:** Extra excavation done more than required depth will have to be filled and leveled with concrete or UCR masonry specified for foundation without extra payment.

### **FILLING IN PLINTH**

1.2 Filling in plinths and floors with approved material either from excavation or sand, soil or murum of contractor shall be done in regular horizontal layers each layer not exceeding 200 mm in depth.

All lumps and clods exceeding 80 mm in any direction shall be broken. Each layer shall be watered and consolidated with steel rammer or ½ ton roller.

Where specified every third or top most layer shall also be consolidated with power roller of minimum 8 tones.

The top and sides of the filling shall be neatly dressed.

The contractor shall make good all subsidence and shrinkage in fillings, embankments, traverses etc. during execution and till the completion of work unless otherwise specified.

### **Measurements**

The length and breadth of excavations as per drawing or as per site measurements, whichever is minimum shall be taken for measurement purpose. The depth shall be difference between average reduced levels before filling and after filling after compaction as mentioned above.

1.3 Providing and laying dry trap/granite/ quartzite/gneiss rubble stone soling as per required thickness, required size material and of required layers as mentioned in the respective schedule of items, will include filling the interstices with rubble chips and

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murumor stone dust as instructed, watering and compacting with mechanical vibrators or with 10 ton roller for 230 mm thick hard core in a single or two layers.

### **Plain and Reinforced Cement Concrete**

#### **LIST OF BUREAU OF INDIAN STANDARDS CODES**

1. IS 226 Structural Steel
2. IS 432 (Part I) Specification for mild steel and medium tensile steel bars and hard drawn steel wire for concrete reinforcement part-I mild steel and medium tensile steel bars.
3. IS 432 (Part II) Specification for mild steel and medium tensile steel bars and hard drawn steel wire for concrete reinforcement – Part-II hard drawn steel wire.
4. IS 456 Code of Practices for plain and Reinforced concrete.
5. IS 516 Method of test for strength of concrete.
6. IS 716 Specification for pentachlorophenol
7. IS 1199 Method of sampling and analysis of concrete.
8. IS 1200 (Part II) Method of measurement of building and civil engineering work – concrete work
9. IS 1200 (Part V) Method of measurement of building and civil engineering work – concrete work (Part 5- Form work)
10. IS 1566 Specification for hard drawn steel wire fabric for concrete requirement.
11. IS 1599 Method for bend test
12. IS 1343 Code of Practice for Pre stressed Concrete
13. IS 1608 Method for tensile testing of steel products
14. IS 1786 Specification for high strength deformed steel and wires for concrete reinforcement.
15. IS 1791 Specification for batch type concrete mixes
16. IS 2502 Code of practice for bending and fixing of bars for concrete reinforcement.
17. IS 2751 Recommended practice for welding of mild steel plain and deformed bars for reinforced construction.
18. IS 4925 Batch plants specification for concrete batching and mixing plant
19. IS 4926 Ready – Mixed Concrete
20. IS 6523 Specification for pre cast reinforced concrete door, window frames
21. IS 10262 Recommended guidelines for concrete mix design
22. IS 13311 (Part I) Indian standard for non-destructive testing of concrete. Method of test for ultrasonic pulse velocity
23. IS 13311 (Part II) Indian standard for non-destructive testing of concrete. Method of testing by rebound hammer.

## 2. Plain Cement Concrete

2.1 Providing and laying Plain Cement Concrete of various proportions as required for various items including shuttering if required. The thickness and other requirements will be as per the respective items as per the Bill of Quantities and site instructions.

## 3. Reinforced Cement Concrete

3.1 Providing and laying in position Reinforced Cement Concrete as per grade mentioned of trap stone metal for various R.C.C. items as per detailed drawings and design including dewatering and necessary formwork if mentioned in the schedule of item but excluding the cost of steel reinforcement with fair finish surface, hacking the exposed concrete surface etc complete including staging for double or triple heights as the case may be. Compaction should be done with the help of mechanical vibrators.

**Note:** Plinth level will be Finish floor level and will be treated as 0.00 for calculation of floor heights.

Concrete shall be mixed in mechanical batch type concrete mixers conforming to IS : 1791 having two blades and fitted with power loader (lifting hopper type). All concrete shall be produced by batching plant of required capacity. In batching concrete, the quantity of cement and aggregate shall be determined by mass; admixture in mass or volume as the case may be as per manufacturer's specification: water shall be weighed or measured by volume in a calibrated tank (see also IS 4925).

Nominal mix or Volume batching may be allowed when batching plant is not practicable for concrete grades M 20 and below. Bulking allowance shall be given in accordance with IS : 2386 (Part 3)

Hand mixing may be allowed when concrete quantity is very small with prior written permission from Consultant and adding 10% extra cement. Hand mixing shall be carried on water tight platform and shall be mixed to required consistency.

Tolerance shall be plus or minus 2% for cement and plus or minus 3% for aggregates, admixtures and water to be used.

Concrete shall be gently poured and thoroughly compacted without segregation and disturbing the formwork and reinforcement placed in position.

Construction joint shall be provided at the end of days work in large quantities of concrete work where it is not practicable to work in continuous hours. Construction joint shall be left as shown on drawing or as per instructions from Engineer. Joints shall be as straight as possible. Construction joint shall be in accordance with IS : 11817.

The joints shall be kept at places where the shear force is the minimum. These shall be straight and shall be at right angles to the direction of main reinforcement.

While resuming the work hardened surface shall be roughened. It shall then be brushed clean and thoroughly wetted. Neat cement slurry at the rate of 2 kg per sqm of required consistency shall be applied for vertical joints, before surface gets dry. 10 to 15

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mm thick mortar layer shall be applied over horizontal joints keeping the ratio same as that of cement and sand in concrete mix being used. This layer of mortar shall be freshly mixed and applied immediately before placing of the concrete.

Where in the successive concreting break is of small duration and concrete is wet, loose layers shall be removed by brushing with due care to avoid removal of metal aggregates. Before applying neat cement slurry at 2 kg of cement per sqm surface shall be thoroughly wetted and extra water shall be drained or soaked by suitable means. Over this a layer of not exceeding 150 mm thick concrete mix in use shall be placed and well rammed against the concrete done earlier with due care that corners edges don't get dislodged. Thereafter work to be continued as usual.

3.2 Pre cast blocks of proportion 1:2 of cement mortar about 35 mm square and thickness equal to the clear cover specified shall be used to keep the reinforcement bars in proper position ensuring the correct cover.

3.3 The quantity of water used for the concrete would depend upon the nature of the work for which such concrete is needed, and the degree of wetness of the coarse and the fine aggregate shall be determined from an experimental batch and shall be such as would produce a workable and plastic mix and for all successive batches the definite amounts of water as ascertained shall be added by a measure or measures of ascertained capacity to be maintained by the Contractors.

3.4 The surface of the concrete shall be kept wet by constantly watering. Curing will be done for 21 days & the concreting to be protected from direct sunrays by spreading non-conducting materials over it. For early setting cements sprinkling of water by hand should be started after initial setting of concrete to minimize hair cracks.

3.5 Providing and fixing in position Steel reinforcement of various diameters for various RCC works as per detail design and drawings including cutting, bending and binding with 18 gauge binding wire or tack welding, supporting as required with chairs at various heights. Weight of Chairs provided will not be considered for payment purpose. Steel shall be as specified. All bars shall be in full length, and no welding will be permitted. Where bars are to be joined by overlapping they shall be overlapped as directed by the R.C.C. Consultant.

Every bar is to be inspected before assembling on the work and any defective, brittle or burnt bar removed. Cracked ends of rods should be cut out.

All rods shall be carefully and accurately bent by the Contractor in accordance with the R.C.C. drawings and special care shall be taken

(a) To ensure that the depth of the crank is correct as per bar cutting and bending schedule and

(b) To see that the rods are placed in exact positions. The bars should not be bent or strengthened in any manner that will injure the material.

All reinforcement shall be placed and maintained in position as shown on the drawings and concreting shall begin only after the Consultant has inspected and approved the reinforcement.

- (c) Mild steel and medium tensile bars shall conform to IS 432 (Part I)
- (d) High strength deformed steel bars shall conform to IS 1786
- (e) Welding of reinforcement if required shall be done in accordance with the requirements of IS 2751.

**Samples**

3.6 Providing and fixing shuttering formwork for various R.C.C. items (if it is to be paid separately) as per detailed drawings and design and with required finish mentioned in the respective items, including all necessary supports, clamps, applying oil to surface as required with staging double / triple or as required. Form work should be in line and level as mentioned in the drawing and should be strong enough to take the live load of labors, load of concrete and vibrators in running conditions.

3.7 De shuttering

<b>Slab</b>	<b>10 days</b>
Underside of beams & lintels	21 days
Sides of columns, beams, lintels, walls, copings etc.	2 days

3.8 Concrete cubes should be taken for 7 and 28 days testing three nos. each and to be tested in approved testing labs and results to be submitted to Client and Consultant.

No masonry work shall be started before 48 hours over foundation concrete but curing shall be continued as per norms. Similarly base concrete of flooring shall be cured along with flooring.

Before start of concrete mixer drum shall be cleaned with fresh water. Coarse aggregates shall be placed first in hopper on which fine aggregates to be placed followed by cement. If the fine aggregates are wet place half the quantity of coarse aggregate on which fine aggregates shall be placed, then cement followed by balance quantity of coarse aggregate.

The mix discharged from hopper to drum shall be rotated for four turns of the drum. Water then shall be added gradually as per specified water cement ratio to this mix to obtain a uniform mix. After addition of water mixing shall be continued for at least for two minutes. If segregation is observed after unloading concrete should be remixed.

**Cross Sections Area and Mass of Steel Bar**

<i>Nominal Size mm</i>	<i>Cross sectional Area Sq.mm</i>	<i>Mass per meter Run Kg.</i>
6	28.3	0.222
8	50.3	0.395
10	78.6	0.617
12	113.1	0.888
16	201.2	1.58
20	314.3	2.47
25	491.1	3.85
28	615.8	4.83

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32	804.6	6.31
36	1018.3	7.99
40	1257.2	9.86

**Note:** These are as per clause 6.2 of IS 1786.

#### **4. Stone Masonry**

4.1 Providing and constructing various types of rubble masonry as given in respective items in given proportion of cement mortar including headers, key stones dewatering when necessary, striking out joints on exposed faces, watering and curing etc complete.

#### **5. BRICK WORK**

5.1 Bricks to be used shall be as approved by Architect. All subsequent deliveries of bricks shall conform to the standard of the approved samples.

5.2 Ordinarily, there should be four courses per foot of height or in other words, the horizontal bed joints shall be on average 10 to 12 mm thick, and the vertical joints 6 to 10 mm wide. No bats or broken bricks are to be used otherwise than as closures.

5.3 The mortar shall be worked up into all joints and no hollow space shall be left in any portion of the work. The joints in brickwork shall be regular and in level and truly vertical the work shall be checked with levels, plumb bob or square and shall be truly in plumb.

5.4 All bricks shall be thoroughly soaked for 12 hours before use; the practice of dipping the bricks in water just before use will not be allowed.

5.5 Raking of joints to be carried for brick masonry, unless otherwise directed and when new work is to be jointed to it the surface of the unfinished work shall be cleaned and thoroughly wetted.

The finished work shall be true in line and level. All uneven, irregular and disturbed brickwork shall be pulled down and rebuilt with fresh brickwork at the Contractor's expense.

Where brickwork is to be bonded with stone work great care shall be taken in gauging the courses of the brickwork so that a full number of brick courses including mortar joints are exactly the same height as the corresponding stone courses.

Brick noggin or half brick interior partition walls shall be provided with 3" R.C.C. Patli (1:2:4) with 2 Nos. 8 mm Ø Tor bars as reinforcement at every 1.0 meter height or as directed.

Underside of beams and top of brick walls on which the beams bear should be in close compact union without voids.

#### **6. PLASTERING**

6.1 The surface to be plastered shall be suitably prepared by hacking in case of concrete

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work or raking out the joints in the brick work as directed by the Architect and washed well with clean water free from all dust particles before any plaster is applied. The brick work shall be kept wet, at least for six hours before the plastering is commenced.

6.2 For double coat plaster the first coat of mortar to be 12 mm over and above the filling of joints as rough coat and the surface be roughened as much as possible to receive next coat. The second coat of mortar properly gauged to be then applied as even uniform coat of not less than 6 mm. The surface is to be finished as directed

6.3 All moldings to be worked true to a template and drawn neat, clean and level. All exposed angles and junction with doors, frames etc. to be carefully finished. Nothing extra will be allowed for splays and rounding of angles nor for plaster projected to the extent of 1½" beyond the general surface of the work to form beams, architrave etc. nor will any extra be allowed for giving concave round corners inside rooms or returns of wall and partition.

6.4 The thickness of the plaster and the proportions of cement and sand for any other items shall be as defined in the relevant item in the Schedule.

6.5 Plastering of an entire and unobstructed area shall be done at one stretch, and on occasions, when owing to the extent of the area being too large or for some other reason, the work is to be left over for completion on the next working day, the joint between the two days work shall be rubbed down with carborundum stone or the work carried out in such a manner as to have no marks left in the finished work.

6.6 The application of neeru shall be done on the first coat after it is partly set.

## **7. FLOORING**

7.1 The rates quoted by the Contractor shall include for preparing the surfaces of R.C. slabs on which the paving material is to be laid.

7.2 The surface over which the flooring is to be laid shall be leveled up and closely picked so as to form a good key hold for the mortar bedding or rendering and shall be thoroughly saturated with water.

7.3 Mortar bedding made up of cement mortar 1:4 shall be gauged and spread not exceeding 20 mm in thickness and at no place less than 10 mm in thickness as bedding to receive the flooring as per respective items. Bedding shall be laid and tamped with wooden mallets in proper level and slope and shall be allowed to set for a day.

7.4 Tiles shall be fixed on this bed with neat cement slurry using 4.4 kg of cement per square meter. Each tile to be tapped with wooden mallet so as to fix and embed it properly along with adjacent tiles. Joint shall be 1 mm for ceramic tiles and 2 mm for terrazzo tiles. For stone slabs joint shall be as minimum as possible but not exceeding 1 mm. Thick cement paste shall be applied to the edges of stone slabs. All joints shall be in straight line. Joints to be cleaned properly and to be filled with matching colour cement grout.

Polishing to stone slabs shall be carried out as per schedule of items and as directed by Architect.

7.5 The entire flooring pattern shall be as per Architect's design.

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7.6 On completion of works, the whole surface shall be cleaned of all dirt, mortar and cement and shall be thoroughly and cleanly washed.

## **8. DOORS**

8.1 Door frames should be of seasoned wood teak or as specified in the item.

8.2 Shape and size of the door frame to be as per design and drawing. Horns 75mm long to be provided on both the sides.

8.3 Frame members should be free from any defects such as knots and warping.

8.4 Door frames to have 230mm long, 35X5 M.S. flat, three nos. fixed with screws on each side and embedded in 1:2:4 concrete of size 300X150 and width as per adjacent brick masonry.

8.5 The thickness of teakwood paneled door shutters should be as specified in the drawing.

8.6 All joints should be tongue and grooved joints. Bamboo or wooden pins to be used for joints, nailing is not allowed.

8.7 Flush doors thickness and brand should be as approved.

8.8 All the fittings should be as per samples approved and to be fixed as mentioned in drawings or as instructed.

8.9 All joints to be metered.

## **9. WINDOWS**

9.1 Aluminum windows should have two or three track, as mentioned in drawing or as mentioned in schedule.

9.2 All the aluminum sections should be of approved quality and brand. Anodizing if mentioned in schedule item it should be as per instruction. Anodizing should not be damage while fabricating the windows.

9.3 For openable aluminum windows stays, handles and hinges should be of approved quality and brand.

9.4 Glass should be clear float or opaque as mentioned in schedule of items.

9.5 Rubber gaskets should be of approved quality

9.6 All joints to be metered.

## **10. PAINTING**

10.1 All kinds of paints to be used in work to be of approved brand, quality and shade.

10.2 Walls or surfaces to be painted should be scrubbed with sand papers on which one coat of putty to be applied evenly.

10.3 On this prepared surface coats of primer and putty to be given as mentioned in schedule of item.

10.4 Final painting to be done after approval to basic coats.

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- 10.5 Finish of the final coat should be as per instructions given.
- 10.6 All stains on floor, door and windows and walls to be removed simultaneously. Area to be cleaned after completion of the work.
- 10.7 The rate to include curing required for cement based paints and scaffolding to complete the work.
- 10.8 Paint to be applied by brush smoothly without any bristles mark on painted surface.
- 10.9 Thinners if to be used should be of approved quality.
- 10.10

## 11. **STRUCTURAL STEEL WORK**

- 11.1 All the structural sections to be used should bear ISI mark and conform to standard weight per unit length or area.
- 11.2 All structural members should be uniform in section, without any cuts, flakiness and rust free.
- 11.3 Before erection all the structural members should be applied with one coat of zinc based primer of approved brand and quality.
- 11.4 Before painting members should be made rust and stain free.
- 11.5 All the inaccessible sides after fabrication should be painted before fabrication.
- 11.6 Welding rods should be of approved quality and brand.
- 11.6 Welding should be 6 mm butt welding unless and otherwise mentioned. Blow holes to be rectified by re-welding. All flux is to be removed before painting
- 11.7 Paint should be of approved shade and finish as mentioned in respective schedule of items and as per instructions.
- 11.8 Before start of painting approval of Consultant should be taken.
- 11.9 Preparation of fabrication drawings from the drawings and information supplied by Consultant and get it approved is Contractor's responsibility.

## 12. **PLUMBING & SANITATION**

- 12.1 All G. I. pipes to be used should be of approved class.
- 12.2 All G. I. fittings to be used should be of approved quality and true in size and shape.
- 12.3 Internal G. I. piping should be of concealed type. Quoted rates to include chasing, making it good with cement mortar and clamping the pipe with the help of G. I. clamps and screws on wooden gattus.
- 12.4 All pipes on external faces should be truly in vertical and horizontal plane, inclined pipe lines will be rejected.
- 12.5 All joints should be water tight. Before concealing the pipe lines pressure test to be carried out for leakages and if found to be rectified to the satisfaction of the Architect.
- 12.6 G. I. fittings used for fitting fixtures will not be taken counted in measurements.
- 12.7 All sanitary fixtures and fittings to be used should be got approved well in advance.
- 12.8 All fixtures to be fixed as marked and given on the drawings.

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12.9 All types of down take pipes should be fixed in vertical plane. Out lets from nahani traps and W. C. pans should be properly sloped and joined to main down take pipes.

12.10 All waste water and rain water down takes to be tested for leakages before measurements.

### 13. **WATERPROOFING**

13.1 Average thickness of the Brick Bat Coba waterproofing should be 115 mm thick.

13.2 Brickbats to be used should be from well burnt bricks and of size between half to three fourth brick size.

13.3 Slopes for waterproofing surface should be as per drawing or as instructed. At no point opening of outlet of rain water down take should cover by waterproofing thickness.

13.4 For sunken portion waterproofing, waterproofing dado on walls should be taken up to 300 mm above respective finished floor level.

13.5 For terrace waterproofing plan dimensions on drawings will be taken for measurements. Rate to include side wattas, groves and edges as per instructions.

13.6 Test for leakages to be given by filling the terrace or sunk portions by filling the water and keeping it filled continuously for three days for inspection of leakage.

13.7 Ten years guarantee for water proofing work done to be given on bond paper.

### **WORKMANSHIP**

All works shall be true to level, plumb and square and the corners, edges in all cases shall be unbroken and finished neat.

Any workmanship not to the satisfaction of the Consultant or his representative will be rejected and the same shall be removed and replaced with works of the required standard of workmanship at no extra cost.

Skilled mistry for the respective trades shall be employed by the Contractor to check the work of the bricklayers, plasterers, joiners or any other tradesmen, as the work is in progress and to instruct and extract the right kind of workmanship from the men employed on the works. Instructions given to such mistry by the Consultant or his representative shall be carried out with a view to get the works executed in a neat and workmanlike manner, according to the Specifications.

### **LABOUR**

The Contractor shall comply with existing labor laws. If female labor is engaged the Contractor shall make necessary provision for safeguarding small children and keeping them clear of the site of operations. No labour shall reside within the compound except authorized guards.

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**SHRI SARASWATI BHUVAN EDUCATION SOCIETY,  
CHHATRAPATI SAMBAJINAGAR**

Proposed Construction ShriSaraswatiBhuvan high school Building (Ground Floor) Jalna.

**SUMMARY SHEET**

<b>Sr. No.</b>	<b>Head</b>	<b>Estimated Cost Rs.</b>
<b>1</b>	<b>Civil Work</b>	
<b>2</b>	<b>Internal Plumbing</b>	
<b>3</b>	<b>External Plumbing</b>	
<b>4</b>	<b>Fire</b>	
	<b>Total Estimated Cost:-</b>	

Interface Designers

S.B.E.S.

Seal & Signature Of Contractor .