

# Tender Document

**KRISHNA CHANDRA COLLEGE**

**Hetampur**

**Birbhum, West Bengal**



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## **Construction of Second Floor of New Humanities Building of Krishna Chandra College**

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ISSUED TO: \_\_\_\_\_ ON: \_\_\_\_\_

*(Signature of Issuer with seal)*

This tender document contains **27** pages including cover.

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**1 NOTICE INVITING TENDER****NIT No:** 148/ Adv/ NHB(2<sup>nd</sup>)/ 2015-16**Dated:** 21.09.2015

Sealed Tenders are invited from experienced Contractors of PWD, CPWD, BZP, PHE, MES, Railways and other public and statutory bodies for the work as mentioned below:

SI No	Name of Work	Estimated Amount	Earnest Money	Tender Fee	Time of Completion
1	Construction of Second Floor of New Humanities Buildings	₹ 24,25,000.00	₹ 48,500.00	₹ 2,000.00	6 (six) months

The intending tenderers are requested to apply along with all the documents mentioned below:

- 1 Valid experienced Certificate of Contractors of PWD, CPWD, BZP, PHE, MES, Railways and other public and statutory bodies
- 2 Credential (Completion Certificate & Work Order) in a single job of 60% of tender value i.e. **₹ 14.55 Lacs** within the last 3 (three) years for building or bridge works
- 3 Valid Trade Licence Certificate of Organisation
- 4 List of present Directors / Owners/ Executives Council Members / Trustees / Board Members as applicable.
- 5 Income Tax Permanent Account Number (PAN) card
- 6 Income Tax Returns filed in last three years
- 7 Audited Balance Sheet and Income statement for the preceding three years
- 8 Value Added Tax (VAT) Registration certificate with latest VAT Return
- 9 Profession Tax Registration certificate with latest PT Challan paid
- 10 Copy of Service Tax Registration certificate with latest ST Return
- 11 General Power of Attorney / Board of Directors resolution / Deed of Authority executed in favour of person(s) authorised to sign the Tender Document and the Contract and all correspondences / document thereof
- 12 Credentials and general information / profile on the Bidder's company.
- 13 Any other Documentary evidences providing that bidder fulfils the eligibility criteria

Certified copies of documents to be submitted, as above, must be signed in ink and carry the seal of the signatory.

- **Availability of Tender Document:**

The Tender Document shall be downloaded from the College's website [www.krishnachandracollege.in](http://www.krishnachandracollege.in) from **21.09.2015 to 05.10.2015**.

- **Date & Place of Submission of Tender:**

From **23.09.2015 to 07.10.2015** upto 5.00 PM in the Tender Box kept at the office of the Teacher-in-Charge.

- **Mode of Submission of Tender:**

The tender should be submitted complete with all required documents as prescribed herein and credentials as under in the following order:

- a) In **First Sealed Cover** superscribed with **PART- I (Pre-Qualification Documents)** comprising Covering Letter, Cost of Tender Fee (**₹2,000.00**) (non-refundable), Credentials and Certificates as mentioned in **Serial Number 1 to 13**,
- b) In **Second Sealed Cover** superscribed with **PART- II (Bid Documents)** comprising Earnest Money (**₹ 48,500.00**) and downloaded Tender document duly filled.
- c) In **Third Sealed Cover** superscribed with Name of work, NIT No, Name & Address of the Bidder comprising both First Sealed cover (**PART- I**) and Second Sealed Cover (**PART- II**).

- **Opening of Tender:**

**PART- I (Pre-Qualification Documents)** will be opened on **08.10.2015** at **12.00 PM** at the office of the Teacher-in-Charge. Those full filling the qualification criteria of Part-I will be allowed to participate in Part-II Bidding process.

**Part – II (Bid Documents)** will be opened in a later date to be published in the notice board after proper evaluation of Part- I.

Tenderers should enclose the cost of **Tender Fee of ₹ 2,000.00** (Non-refundable) & **Earnest Money ₹ 48,500.00** in form of demand draft / pay order from any nationalised / schedule banks drawn in favour of the "**KRISHNA CHANDRA COLLEGE**", payable at Birbhum, West Bengal.

Tenderers shall quote their rate in figure as well as words at an over all percentage i.e. **AT PER/ ABOVE/ BELOW** the rate in the specified items. **No conditional rate is acceptable**. In case of absence of any one above conditions the Tender will be treated as "Informal". The completed tender documents along with all the necessary documents, Tender Fee and Earnest Money shall have to be submitted in 3 (Three) sealed envelop as mentioned order superscribed as "**Construction of Second Floor of New Humanities Buildings**".

The sealed envelop shall be addressed to:

**The Teacher-in-Charge**  
**Krishna Chandra College**  
**Hetampur, Birbhum**

The tender inviting authority reserves the right to accept or reject any or all the tender documents without assigning any reasons whatsoever. The College Authority doesn't bind itself to accept the lowest tender.

**2 GENERAL INSTRUCTION**

- 1 The completed Tender Documents should be submitted to Krishna Chandra College, Hetampur at the address given in the Tender Notice.
  - 2 The Tender Document should be sealed in an envelope superscripted as:  
**“Construction of Second Floor of New Humanities Buildings”**
  - 3 The Tender Document should be addressed to:  
**The Teacher-in-Charge**  
**Krishna Chandra College**  
Hetampur, Birbhum
  - 4 The Bidder's name and address should also be put on the envelope.
  - 5 The Bidder should ensure that their tenders are received within the date and time specified in the tender notice sent to them.
  - 6 Should the Bidder be in doubt about the precise meaning of any item or any provision or if he wants any clarification, he must inform the Employer before submission.
  - 7 No claim shall be allowed in respect of errors in the Bidder's tender due to any mistake in the Tender Document, which should have been put to the notice of the Krishna Chandra College, Hetampur but was not rectified in the manner described above.
  - 8 The Bidder is requested to put his firm's endorsement on each page of the Tender Documents as a token of acceptance.
  - 9 The Bidder should fill in all the relevant blanks spaces and put their signature in the relevant places indicated in the documents.
  - 10 In the Form of Tender, the Quoted Amount in Figures as well as in Words shall be written clearly.
  - 11 The figures or writing have to be distinct, without any overwriting.
  - 12 All corrections shall be initialised.
  - 13 The Bidder should take care of all incidental costs namely scaffolding and de-scaffolding etc, while quoting their rate. No separate payment will be entertained on this account.
  - 14 Sales tax, value added tax or any other taxes will not be paid separately. The tenderer must include these charges in the rates quoted, if applicable. No separate claim on this account will be entertained under any circumstances.
  - 15 The unsealed Tender Documents, tenders not superscribed as the prescribed Tender Documents, conditional and unsigned tenders, tenders containing absurd rates and amounts, tenders that are incomplete or otherwise considered defective are liable to be rejected.
  - 16 After opening the sealed Tender Documents, no unsolicited correspondence / revised offer whatsoever may be in nature, shall be entertained by the Krishna Chandra College, Hetampur.
  - 17 In the event of arithmetical error / errors or discrepancies being discovered in the Bidder's Tender Document the rates mentioned in words will be taken as bonafide.
  - 18 Rate in words will be taken in precedence over rate in figures.
  - 19 Applicants should note that their tenders should remain open for consideration for a minimum period of **60 (sixty) days** from the date of the opening of tenders.
  - 20 Krishna Chandra College, Hetampur reserves the right to accept any tender or accept tenders in part or to reject any or all tenders without assigning any reasons thereof and will not be liable to offer any explanation whatsoever.
  - 21 Bidder is requested to note that non-compliance of the above instructions is liable to render their Tender non-bonafide.
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### 3 TERMS & CONDITIONS

- 1 EMPLOYER: The term "Employer" shall mean Krishna Chandra College, Hetampur.
- 2 CONSULTANT: The term "Consultant" shall mean M/s Srijani, appointed by the Employer for designing and / or supervising the Work on behalf of the Employer.
- 3 WORK: The term "Work" shall mean the job for which the tender have been floated, inclusive but not limited to the Scope of Work, Drawings, Specifications and Bill of Quantities and other technical details and instructions issued by the Employer and / or Consultant on behalf of the Employer.
- 4 SCOPE OF WORK: The Scope of Work consists, as described in the Specifications and Bill of Quantities, Drawings and any further instructions, which may be issued from time to time by the Employer / Consultant.
- 5 TIME OF COMPLETION: Maximum time of completion is 6 (six) months from the date of issuance of work order.
- 6 WORKING HOURS: Working hour is from sunrise and sunset without disturbing the normal functioning of the Institute in any manner. No extra payment will be entertained due to loss of man-days of the Contractor under any circumstances and the Employer shall not be liable for such loss.
- 7 PRICE BASIS: All works will be carried out as per the item description indicates, also as per the instructions by the Employer / Consultant. The final value of the work will depend upon the actual quantities of works executed and certified by the Consultant.
- 8 CONTRACTOR NOT TO SUB-LET: The Contractor shall not, without written consent of the Employer, assign or sub-let any portion of the work to any other Contractors(s).
- 9 CONTRACTOR TO PROVIDE: The Contractor shall provide at his own cost all materials and labour of every description and tools, tackles etc, including transport for proper carrying and executing and completion of the work to the satisfaction of the Employer and the Consultant, including, but not limited to providing facilities for inspection of the works by the Employer and the Consultant.
- 10 SUPPLY OF MATERIALS: The Contractor shall supply all materials as required for the completion of the job. The specification / quality of materials should confirm to Indian or equivalent standards as per specifications. The selection of the make / brand shall be made by the Employer / Consultant and the Contractor will be required to use / supply only the selected brands. If any inferior / unspecified / different materials are found at the site, those may be rejected forthwith by the Employer / Consultant. The Contractor at their own cost should remove rejected materials from the site. The Contractor may be called upon to submit necessary proof of purchase of branded materials from respective company's authorised dealers.
- 11 UNSPECIFIED ITEMS: The Employer reserves the right of ordering any other works not included in the Bill of Quantities but are required for proper completion of work. The rates of such works will be worked out adding 15% (fifteen percent) as profit including overhead charges to prime cost (actual cost) for labour and material. The Consultant will finalise the extra item rates, if any. Total amount for extra work will not exceed 15% (fifteen percent) of total tendered value. Moreover, the Employer reserves the right to cancel certain items in part / full from the Bill of Quantities.
- 12 GUARANTEE OF SPECIFICATION: The Contractor shall provide guarantee of specification of materials for all items, components / parts that cannot be checked at site.
- 13 STORAGE OF TOOLS AND MATERIALS: The Contractor shall make his own arrangement for storage of tools and materials, within the site after getting prior permission of the Employer and the Contractor shall be fully responsible for his materials and tools at site.
- 14 SUPERVISOR / ENGINEER: The Contractor shall keep a competent qualified supervisor constantly on the site who will be responsible for carrying out of the work to the true meaning of the drawings and specifications and to the satisfaction of the Employer / Consultant. Any direction and instruction, given to him, in writing shall be considered to have been given to the Contractor.
- 15 CONTRACTOR TO DISMISS PERSONS(S) FROM THE WORKS: The Contractor shall on instructions of the Employer, immediately dismiss from the works any persons(s) employed thereon by him, who may, in the opinion the Employer is incompetent.
- 16 LABOUR RULES AND LAWS: The Contractor shall abide by all existing government labour rules and laws as may be applicable for the said work. In the event on any default on the part of the Contractor in settling the dues to the labourers, payment shall be made by the Employer to them on their demand after proper verification and the same will be recovered from the Contractor's bills.
- 17 DAMAGE TO PROPERTY: The Contractor shall be responsible for all damages to the property and for any injury or loss caused to the work, to persons, animals or things. He shall effect any insurance necessary and hold the Employer entirely free from any responsibility in this respect. The insurance must be effected jointly in the name of the Contractor and the Employer.
- 18 INSURANCE: The Contractor shall take necessary insurance policies like fire, workmen compensation and public liability if required, during the period of construction.
- 19 CORRECTION OF INCORRECT WORK: The Contractor shall execute the work and be responsible for the same, amend at his own cost and to the satisfaction of the Employer / Consultant any error, which may arise through inaccurate execution.
- 20 TERMS OF PAYMENT: The Contractor will be paid one intermediate payment in form of RA bill after completion of 50% (fifty percent) of work after due certification by the Consultant, subject to satisfactory progress / completion of work and the final bill for the total work shall be paid subject to satisfactory completion of the entire work and certificate issued by the Consultant to that effect. Under no circumstances, the Contractor shall

- suspend the ongoing work on account of non-disbursement of payment by the Employer.
- 21 ESCALATION OF COST: No escalation of cost will be allowed, for any of the items of work under any circumstances.
  - 22 SECURITY MONEY DEPOSIT: The security money deposit shall be deducted by the Employer from the running account (RA) bills and final bill @ 10% (ten percent) of the billed amounts and retained till the end of the defect liability period as mentioned below. The security money deposit shall be released after this period without any interest, provided that the Contractor rectifies / replaces all damaged / defective items, parts, components, if any, in the opinion of the Employer / Consultant, at his own cost and expenses.
  - 23 CLEANING OF SITE: The Contractor shall remove all rubbish and superfluous materials from his own work and leave the premises clean on completion of his work to the satisfaction of the Employer / Consultant every day, and finally on full completion of the work. Storage and clearance of waste materials and rubbish from the site to the outside shall be done in accordance to the municipal rules in force, for which no extra payment shall be made to Contractor.
  - 24 LIQUIDATED DAMAGES: Liquidated damages for non-completion of work within stipulated completion time will be charged @ 1% (one percent) per day or part thereof, subject to a maximum of 10% (ten percent) of tendered value.
  - 25 VIRTUAL COMPLETION OF WORK: On completion of all works, the Contractor shall inform in writing to the Employer and Consultant. The date of receipt of such letter from the Contractor by the Employer shall be taken as the date of virtual completion of work, provided that the work is actually found to have been finished as per the Specifications and Drawings and certified by the Consultant.
  - 26 DEFECT LIABILITY PERIOD: The Contractor shall make good at his own cost and to the satisfaction of the Employer / Consultant, all defects or any other faults arising in the opinion of the Employer / Consultant, from the work or the materials not in accordance with the drawings / specifications or the instructions of the Employer / Consultant, which may appear within 12 (twelve) months from the date of completion of the work.
  - 27 TERMINATION OF CONTRACT: The Employer reserves the right of cancelling the work order and to terminate the contract if at any stage it is found that the works have been done unsatisfactory and are not carried out as per the Specifications, Bill of Quantities, Drawings and / or instructions issued by the Employer / Consultant and / or the works are defective and / or substandard and / or the materials are not rectified / replaced immediately after receiving instructions to the effect from the Employer / Consultant. And in such case, the Employer shall have the full liberty to get the balance work completed by any other agencies at the cost of the Contractor by giving a notice of 3 (three) days.
  - 28 ARBITRATION: In the event of any dispute or difference between the Contractor and the Employer during the work, the Employer shall appoint a single arbitrator of his choice and the decision given by the arbitrator shall be binding on all parties.
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**4 FORM OF TENDER****The Teacher-in-Charge****Krishna Chandra College**

Hetampur, Birbhum, West Bengal- 731124

**Sub: Construction of Second Floor of New Humanities Buildings**

Dear Sir,

Having examined the Drawings, Specifications, Conditions, Terms, Bill of Quantities relating to the above work and having visited and examined the site of the proposed works and having acquired the requisite information relating thereto as affecting the tender invited by you on behalf of the Krishna Chandra College, Hetampur,

- 1 I / We refer to the tender notice issued by you for general civil works in connection with the above-mentioned project.
- 2 I / We hereby offer to perform, provide, execute, complete and maintain the works in conformity with the Drawings, Terms and Conditions, Specifications, Bill of Quantities for the sum as follows:

SL NO	TYPES OF WORKS	ESTIMATED AMOUNT (₹)	OFFER PERCENTAGE AS PER PRICED SCHEDULE OF QUANTITIES			QUOTED AMOUNT IN FIGURE (₹)	QUOTED AMOUNT IN WORD
			ABOVE	BELOW	AT PAR		
1	Civil Works	24,25,000.00					

as per rate as quoted by me / us above.

- 3 I / We affirm that the above quoted rates shall be valid for a minimum period of 60 (sixty) days from the date of the opening of the Tender Document.
- 4 I / We have satisfied myself/ourselves as to the site conditions, examined the drawings and all respects of the tender conditions, subject to above, I / we do hereby agree, should this tender be accepted in whole or in part, to:
  - 4.1 abide by and fulfil all the terms and provisions of the said conditions annexed hereto
  - 4.2 complete the works within 6 (six) months
- 5 I / We understand that the Contract may be terminated after issuance of work order,
  - 5.1 if my / our offer is withdrawn within the validity period of acceptance, or
  - 5.2 if the contract is not executed within 15 (fifteen) days from the date of receipt of the letter of acceptance, or
  - 5.3 if the work is not commenced within 7 (seven) days after issue of work order / handing over to site whichever is later.
- 6 I / We understand that you are not bound to accept the lowest or any tender you receive.
- 7 In the event of the tender being accepted, I / we further agree to the deduction of 10 % of the value on RA bills / final bill as stated in the said Appendix as security money deposit after adjustment of the earnest money deposit.

Yours faithfully,

Signature:

Designation:

Address:

Name of the Partners / Directors of our Firm / Company

Witness:

**5 APPENDIX**

(a)	(b)	(c)
1	Earnest Money Deposit	₹ <b>48,500.00</b> (Rupees Forty eight thousand Five hundred only)
2	Security Deposit	<b>10%</b> (ten percent) of billed amount adjusted with EMD
3	Date of Commencement	Within <b>7</b> (seven) days from issue of Work Order
4	Period of Completion	<b>6</b> (six) months from the date of issue of Work Order
5	Rate of Liquidated Damage	<b>1 %</b> (one per cent) of the tendered value per week, subject to a maximum limit of <b>10 %</b> (ten percent) of the tendered value
6	Period of Final Measurement	Within <b>15</b> (fifteen) days from the date of submission of Final Bill
7	Period of honouring of Final Bill	<b>1</b> (one) month from the date of acceptance of Final Bill after successful completion of all the works and duly certified by the Consultant
8	Rate of tax deducted at source (TDS) from the Contractor's Bills	As per prevailing rate
9	Rate of work contract tax (WCT) from the Contractor's Bills	As per prevailing rate
10	Defect Liability Period	<b>12</b> (twelve) months from the date of successful completion of all the works



## 6 TECHNICAL SPECIFICATIONS

### 6.1 Civil Works

#### 6.1.1 General:

1. All materials to be used in works shall conform to Indian Standard (IS) Specifications as published by Bureau of Indian Standards (BIS) from time to time and in absence thereof those shall be done as per the approval of the Employer / Architect. In general the mode of measurements of the civil works shall be guided by IS: 1200 – 1964 (revised) for Indian Standard Methods of Measurement of Building Works.
2. The Contractor shall set out the building or other involved works after clearing the site and get the same approved by Employer / Architect. It shall be the responsibility of the Contractor to install substantial reference marks, bench marks etc and to maintain them as long as required by the Employer / Architect. The Contractor shall assume full responsibility for proper setting out, alignment, elevation and dimension of each and all parts of the work.
3. Before commencement of excavation spot levels on an approved grid covering the entire plot shall be taken by the Contractor in consultation with the Employer / Architect and a proper record of these levels shall be kept jointly signed by the Contractor and the Employer / Architect. A block level plan showing all ground levels of the plot shall be prepared by Contractor and shall also be jointly signed by the Contractor and the Employer / Architect.

#### 6.1.2 Water:

- 1 Water used for mixing and curing shall be clean and free from injurious quantities of alkalis, acids, oils, salts, sugar, organic materials, vegetable growth or other substance that may be deleterious to bricks, stone, concrete or steel. potable water is generally considered satisfactory for mixing. The ph value of water shall be not less than 6.
- 2 Maximum permissible limits of solids when tested in accordance with IS: 3025 shall be as under:
  - 2.1 Organic: 200 mg/l
  - 2.2 Inorganic: 3000 mg/l
  - 2.3 Sulphates 400 mg/l
  - 2.4 Chlorides 2000 mg/l (for concrete not containing embedded steel) and 500 mg/l (for reinforced concrete work)
  - 2.5 Suspended matter: 2000 mg/l

#### 6.1.3 Bricks:

1. Bricks shall in general adhere to IS: 1077 – 1992 (5th revision). All bricks shall be of approved quality of standard specifications, made of good earth, uniform deep red, cherry or copper coloured, thoroughly burnt in kiln, without being vitrified, regular in shape and size, sound, hard, homogeneous in texture, true to shape and of standard dimension and shall be free from cracks, chips, flaws, stones or humps of any kind and shall not show appreciable signs of efflorescence either in dry state or when soaked in water.
2. The size of the bricks shall be 9¾ inch x 4¾ inch x 2¾ inch for conventional bricks or 190 mm x 90 mm x 90 mm for modular bricks.
3. The bricks shall emit a clear ringing sound on being struck and have minimum crushing strength of 105 kg/cm<sup>2</sup>. All bricks, which absorb water more than 20% of their own dry weight after 24 hours of immersion in cold water, shall be rejected.

#### 6.1.4 Cement:

- 1 Only ordinary Portland cement (OPC), of the grades given below and conforming to respective IS standards, shall be used in all works.
  - 1.1 53 grade OPC conforming to IS: 12269
  - 1.2 White cement conforming to IS: 8042
- 2 Different types of cement shall not be mixed together. In case more than one type of cement is used in any work, a record shall be kept showing the location and the types of cement used.
- 3 Table showing compressive strength requirement of each type of cement for 53 grade when tested in accordance with IS: 4031 (Part VI):

SAMPLE	STRENGTH IN N/MM <sup>2</sup> NOT LESS THAN FOR
AGE AT TESTING	GRADE 53
72 ± 1 hours	27.0
168 ± 2 hours	37.0
672 ± 4 hours	53.0

- 4 Setting time of cement of any type of any grade when tested by Vicat apparatus method described in IS: 4031 shall conform to the following requirement:
  - 4.1 Initial setting time: not less than 30 minutes
  - 4.2 Final setting time: not more than 600 minutes
- 5 Cement bags must be stored in a water-tight shed having wooden floors or platforms raised at least by 50 mm from ground. Cement which is partially set or has become lumpy or caked is to be treated as damaged and shall be removed from the site immediately.

**6.1.5 Sand:**

1. All sand shall be clean, sharp and free from clay, loam, organic or any other foreign matters and shall be obtained from approved source. The Contractor shall get samples of sand to be used in different kind of works approved by the Architect before using in the works.
2. Sand shall be washed with clean water at the cost and expense of the Contractor if in the opinion of the Employer / Architect it is dirty.
3. Sand used in all cement concrete works must be coarse, ie it shall pass through a mesh, 4.75 mm square, measured in the clear. Sand, containing more than 10 % (ten percent) of fine grain passing through a 76 mesh as used for cement test or having fineness modulus less than 2.00, shall not be used in cement concrete works, unless approved by the Architect.
4. Medium coarse sand, with fineness modulus between 2.00 to 1.80, may be used in cement mortar for masonry and plaster works etc.
5. Sand filling in plinth or foundation, where specified, may be done with fine sand or silver sand.

**6.1.6 Coarse Aggregates:**

- 1 All coarse aggregates for concrete works must be well graded and shall be screened to remove dust and if necessary, shall be washed with clean water at the cost and expense of the Contractor as per instruction of the Architect.
- 2 Stone chips or ballast:
  - 2.1 Stone chips or stone ballast for plain cement concrete (PCC) or reinforced cement concrete (RCC) shall be hard, uniform in texture, free from faults or planes of weakness and weathered faces. The ballast or chips must be free from loam, clay or any surface coating, organic matter or other impurities and dust. Stone of black and hard variety as is generally available from quarries in Pakur or Chandil areas will be normally used. The ballast or chips shall be obtained by breaking large stone blocks and must be more or less cubic in shape.
  - 2.2 For any of the nominal sizes of graded coarse aggregates, grading shall be in conformity with the requirements laid down in IS: 383 – 1963. When coarse aggregates brought to site is ungraded, single sized coarse aggregates of different nominal sizes shall be mixed at site with the other ingredients of concrete either directly in the mixture or on platform in proper proportions by volume. If combined aggregates are available, they need not be separated in fine and coarse, but necessary adjustment may be made in the grading by addition of single sized aggregates, as per IS: 2386 (Part I).
- 3 Gravel:
  - 3.1 Gravel, if permitted for use as coarse aggregates in PCC or RCC works must be hard, absolutely free from surface coating and on being broken the fractured surface must indicate a uniform and fine texture, free from laminations or planes of weakness. Gravel shall be thoroughly washed and free from any foreign materials.

**6.1.7 Steel For Reinforcement:**

- 1 All steel shall be clean and free from mill scales, dust, loose rust and coats of paints, oil or other coatings.
- 2 The steel used for reinforcement shall be any of the following types:
  - 2.1 Mild steel and medium tensile bars conforming to IS: 432 (Part I)
  - 2.2 High strength deformed steel bars conforming to IS: 1786
  - 2.3 Structural steel conforming to Grade A of IS: 2062
  - 2.4 Thermo-mechanically treated (TMT) bars.
- 3 Welding of reinforcement bars, if required, shall be done in accordance with the requirements of IS: 2751.
- 4 Mild steel is not recommended for the use in structures located in earthquake zone subjected to severe damage and for structures subjected to dynamic loading (other than wind loading) such as railway and highway bridges.
- 5 The TMT bars shall conform to IS: 1786 pertaining to Fe 415 D or Fe 500 D or Fe grade of steel as specified.
- 6 In design and construction of reinforced concrete building in 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.

**6.1.8 Floor & Wall Tiles:**

- 1 Ceramic Tiles:
  - 1.1 The tiles shall be of approved make and shall generally conform to IS: 15622. They shall be flat, and true to shape and free from blisters crazing, chips, welts, crawling or other imperfections detracting from their appearance.
  - 1.2 Classification and characteristics of ceramic tiles shall be as per IS: 13712.
  - 1.3 The tiles shall be square or rectangular of nominal size. Thickness shall be specified by the manufacturer. It includes the profiles on the visible face and on the rear side.
  - 1.4 The top surface of the tiles shall be glazed. Glaze shall be either glossy or matt as specified. The underside of the tiles shall not have glaze on more than 5 % of the area in order that the tile may adhere properly to the base. The edges of the tiles shall be preferably free from glaze. However, any glaze if unavoidable, shall be permissible on only up to 50 % of the surface area of the edges.

**6.1.9 Glass:**

- 1 All glass shall be of specified type, colour, visibility and sound and shall be free from cracks, flaws, bubbles and blemishes.
- 2 Float glass, if specified, shall be clear float glass and should be approved by the Architect. It shall be clear, float

- transparent and free from cracks subject to allowable defects. The float glass shall conform to the IS: 14900.
- 3 Glass shall not weigh less than 7.4 kg/m<sup>2</sup>, unless otherwise specified.
- 6.1.10 *Cement Mortar:*
- 4 Proportioning: Proportioning on weight basis shall be preferred taking into account specific gravity of sand and moisture content. Cement bag weighting 50 kg shall be taken as 0.035 m<sup>3</sup>. Sand shall be measured on the basis of its dry volume in the case of volumetric proportioning.
- 5 Mixing: The mixing of mortar shall be done in mechanical mixers operated manually or by power as decided by the Employer / Architect. The Employer / Architect may, however, permit hand mixing at his discretion taking into account the nature, magnitude and location of the work and practicability of the use of mechanical mixers or where item involving small quantities are to be done or if in his opinion the use of mechanical mixer is not feasible. In cases, where mechanical mixers are not to be used the Contractor shall take permission of the Employer / Architect in writing before the commencement of the work.
- 6 Mortar shall be used as soon as possible after mixing and before it begins to set, and in any case within half hour, after the water is added to the dry mixture.
- 6.1.11 *Dismantling & Maintenance Works:*
- 1 Necessary propping, shoring and or under pinning shall be provided to ensure the safety of the adjoining work or property before dismantling and demolishing is taken up and the work shall be carried out in such a way that no damage is caused to the adjoining work or property. Wherever specified, temporary enclosures or partitions and necessary scaffolding with suitable double scaffolding and proper cloth covering shall also be provided, as directed by the Employer / Architect.
- 2 Necessary precautions shall be taken to keep noise and dust nuisance to the minimum. Helmets, goggle, safety belts etc should be used whenever required and as directed by the Employer / Architect. The demolition work shall be proceeded with in such a way that it causes the least damage and nuisance to the adjoining building and the public.
- 3 Dismantling shall be done in a systematic manner. All materials which are likely to be damaged by dropping from a height or by demolishing roofs, masonry etc shall be carefully removed first. Chisels and cutters may be used carefully as directed. The dismantled articles shall be removed manually or otherwise, lowered to the ground (and not thrown) and then properly stacked as directed by the Employer / Architect.
- 4 Where existing fixing is done by nails, screws, bolts, rivets, etc, dismantling shall be done by taking out the fixing with proper tools and not by tearing or ripping off.
- 5 Any serviceable material, obtained during dismantling or demolition, shall be separated out and stacked properly as directed by the Employer / Architect within a lead of 50 m. All unserviceable materials, rubbish etc. shall be disposed off as directed by the Employer.
- 6 The Contractor shall maintain / disconnect existing services, whether temporary or permanent, where required by the Employer / Architect.
- 7 No demolition work should be carried out at night especially when the building or structure to be demolished is in an inhabited area.
- 8 Screens shall be placed where necessary to prevent injuries due to falling pieces.
- 9 Water may be used to reduce dust while tearing down plaster from brick work.
- 10 Safety belts shall be used by labourers while working at higher level to prevent falling from the structure.
- 11 First-aid equipment shall be got available at all demolition works of any magnitude.
- 12 Measurement:
- 12.1 Measurement for concrete structures, brick works etc shall be in cubic metre, whereas those for partitions, floorings etc shall be square metre or as directed by the Employer / Architect.
- 12.2 Measurements of all work except hidden work shall be taken before demolition or dismantling and no allowance for increase in bulk shall be allowed.
- 13 Rates:
- 13.1 The rate shall include the cost of all labour involved and tools used in demolishing and dismantling including scaffolding.
- 13.2 The rate shall also include the charges for separating out and stacking the serviceable material properly and disposing off unserviceable material within a distance of 50 m.
- 13.3 The rate shall also include for temporary shoring for the safety of portions not required to be pulled down, or of adjoining property, and providing temporary enclosures or partitions, where considered necessary.
- 6.1.12 *Brick Works:*
- 1 Mortar:
- 1.1 The mortar for the brick work shall be as specified, and conform to accepted standards.
- 2 Soaking of Bricks:
- 2.1 Bricks shall be soaked in water before use for a period for the water to just penetrate the whole depth of the bricks.
- 2.2 Alternatively bricks may be adequately soaked in stacks by profusely spraying with clean water at regular intervals for a period not less than six hours.
- 2.3 When the bricks are soaked they shall be removed from the tank sufficiently early so that at the time of laying they are skin-dry. Such soaked bricks shall be stacked on a clean place where they are not again spoiled by dirt, earth etc.
- 3 Laying:
- 3.1 Bricks shall be laid in English Bond unless otherwise specified.

- 3.2 For brick work in half brick wall, bricks shall be laid in stretcher bond.
- 3.3 Half or cut bricks shall not be used except as closer where necessary to complete the bond. Closers in such cases, shall be cut to the required size and used near the ends of the wall.
- 3.4 Header bond shall be used preferably in all courses in curved plan for ensuring better alignment.
- 3.5 Header bond shall also be used in foundation footings unless thickness of walls (width of footing) makes the use of headers impracticable. Where thickness of footing is uniform for a number of courses, the top course of footing shall be headers.
- 3.6 All loose materials, dirt and set lumps of mortar which may be lying over the surface on which brick work is to be freshly started, shall be removed with a wire brush and surface wetted.
- 3.7 Bricks shall be laid on a full bed of mortar, when laying, each brick shall, be properly bedded and set in position by gently pressing with the handle of a trowel.
- 3.8 The inside face shall be buttered with mortar before the next brick is laid and pressed against it.
- 3.9 Joints shall be fully filled and packed with mortar such that no hollow space are left inside the joints.
- 3.10 The walls shall be taken up truly in plumb or true to the required batter where specified. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. Vertical joints in the alternate course shall come directly one over the other.
- 3.11 Quoin, jambs and other angles shall be properly plumbed as the work proceeds. Care shall be taken to keep the perpend properly aligned within following maximum permissible tolerances:
  - 3.11.1 Deviation from vertical within a storey shall not exceed 6 mm per 3.0 m height.
  - 3.11.2 Deviation in verticality in total height of any wall of building more than one storey in height shall not exceed 12.5 mm.
  - 3.11.3 Deviation from position shown on plan of any brick work shall not exceed 12.5 mm.
  - 3.11.4 Relative displacement between load bearing wall in adjacent storeys intended to be vertical alignments shall not exceed 6 mm.
- 3.12 No part of the wall during its construction shall rise more than one metre above the general construction level.
- 3.13 Parts of wall left at different levels shall be raked back at an angle of 45° or less with the horizontal.
- 3.14 Teething shall not be permitted as an alternative to raking back.
- 3.15 For half brick partition to be keyed into main walls, indents shall be left in the main walls.
- 3.16 All pipe fittings and specials, spouts, hold fasts and other fixtures which are required to be built into the walls shall be embedded, as specified, in their correct position as the work proceeds unless otherwise directed by the Employer / Architect.
- 3.17 Bricks shall be laid with frog (where provided) up. However, when top course is exposed, bricks shall be laid with frog down. For the bricks to be laid with frog down, the frog shall be filled with mortar before placing the brick in position.
- 3.18 In case of walls one brick thick and under, one face shall be kept even and in proper plane, while the other face may be slightly rough. In case of walls more than one brick thick, both the faces shall be kept even and in proper plane.
- 3.19 Care shall be taken during construction that edges of jambs, sills and projections are not damaged in case of rain. New built work shall be covered with gunny bags or tarpaulin so as to prevent the mortar from being washed away. Damage, if any, shall be made good to the satisfaction of the Employer / Architect.
- 3.20 Specified thickness of joints shall be of 1 cm. Deviation from the specified thickness of all joints shall not exceed one-fifth of specified thickness.
- 3.21 The face of brick work may be finished flush or by pointing.
  - 3.21.1 In flush finishing either the face joints of the mortar shall be worked out while still green to give a finished surface flush with the face of the brick work or the joints shall be squarely raked out to a depth of 1 cm while the mortar is still green for subsequently plastering. The faces of brick work shall be cleaned with wire brush so as to remove any splashes of mortar during the course of raising the brick work.
  - 3.21.2 In pointing, the joints shall be squarely raked out to a depth of 1.5 cm while the mortar is still green and raked joints shall be brushed to remove dust and loose particles and well wetted, and shall be later refilled with mortar to give ruled finish.
- 4 Curing:
  - 4.1 The brick work shall be constantly kept moist on all faces for a minimum period of 7 (seven) days.
  - 4.2 Brick work done during the day shall be suitably marked indicating the date on which the work is done so as to keep a watch on the curing period.
- 5 Scaffolding:
  - 5.1 Scaffolding shall be strong to withstand all dead, live and impact loads which are likely to come on them.
  - 5.2 Scaffolding shall be provided to allow easy approach to every part of the work.
- 6 Measurement:
  - 6.1 All brickworks of one brick thickness or more shall be measured in cubic metre only.
  - 6.2 Brickworks of half brick thickness or brick-on-edge shall be measured in square metre.
  - 6.3 Separate measurements shall be taken for works in substructures and superstructures and also the works in superstructures shall be measured separately for each floor or up to heights of 4.0 m or as specified.
  - 6.4 No deduction shall be allowed for any other materials embedded within the work and forming part of it, unless otherwise specified.
- 7 Rates:
  - 7.1 The rate shall include the cost of materials and labour required for all the operations described above except for any reinforcement and its encasement in cement mortar or cement concrete. The rate shall also

include the following:

- 7.1.1 Raking out joints or finishing joints flush as the work proceeds;
- 7.1.2 Preparing tops of existing walls and the like for raising further new brick work.
- 7.1.3 Rough cutting and waste for forming gables, splays at eaves and the like.
- 7.1.4 Leaving holes for pipes up to 150 mm diameter and encasing hold fasts etc.
- 7.1.5 Rough cutting and waste for brick work curved in plan and for backing to stone or other types of facing.
- 7.1.6 Embedding in ends of beams, joists, slabs, lintels, sills, trusses etc.
- 7.1.7 Bedding wall plates, lintels, sills, roof tiles, corrugated sheets, etc in or on walls if not covered in respective items and
- 7.1.8 Leaving chases of section not exceeding 50 cm in girth or 350 cm<sup>2</sup> in cross section.
- 7.1.9 Brick on edge courses, cut brick corners, splays reveals, cavity walls, brick works curved on plan to a mean radius exceeding six metres.

#### 6.1.13 Shuttering & Centring Works:

##### 1 General:

- 1.1 Form work shall include all temporary or permanent forms or moulds required for forming the concrete which is cast-in-situ, together with all temporary construction required for their support.
- 1.2 Form work shall be designed and constructed to the shapes, lines and dimensions shown on the drawings with the minimum tolerance.
- 1.3 It shall be strong enough to withstand the dead and live loads and forces caused by ramming and vibrations of concrete and other incidental loads, imposed upon it during and after casting of concrete.
- 1.4 It shall be made sufficiently rigid by using adequate number of ties and braces, screw jacks or hard board wedges where required shall be provided to make up any settlement in the form work either before or during the placing of concrete.
- 1.5 Form shall be so constructed as to be removable in sections in the desired sequence, without damaging the surface of concrete or disturbing other sections, care shall be taken to see that no piece is keyed into the concrete.

##### 2 Materials:

- 2.1 All propping and centring should be either of steel tubes with extension pieces or built up sections of rolled steel.
- 2.2 Form work and concreting of upper floor shall not be done until concrete of lower floor has set at least for 14 days.
- 2.3 Shuttering used shall be of sufficient stiffness to avoid excessive deflection and joints shall be tightly butted to avoid leakage of slurry.
- 2.4 Form work shall be properly designed for self weight, weight of reinforcement, weight of fresh concrete, and in addition, the various live loads likely to be imposed during the construction process (such as workmen, materials and equipment).
- 2.5 In case the height of centring exceeds 3.50 m, the prop may be provided in multi-stages.

##### 3 Stripping Time:

- 3.1 Table showing stripping time for 53 grade of cement:

SL NO	TYPE OF FORM WORK	MIN TIME FOR PPC
1	Vertical form work to columns, walls and beams	24 hours – 36 hours
2	Soffit form work to slabs (Props to be re-fixed immediately after removal of form work)	4 days
3	Soffit form work to beams (Props to be re-fixed immediately after removal of form work)	10 days
4	Props to slabs	
4.1	Spanning up to 4.5 m	10 days
4.2	Spanning over 4.5 m	20 days
5	Props to beams and arches	
5.1	Spanning up to 6.0 m	20 days
5.2	Spanning over 6.0 m	30 days

- 3.2 In case of cantilever slabs and beams, the centring shall remain till structures for counter acting or bearing down have been erected and have attained sufficient strength.

- 3.3 Work damaged through premature or careless removal of forms shall be reconstructed within 24 hours.

- 4 The design of form work shall conform to sound Engineering practices and relevant IS codes.
- 5 The completed form work shall be inspected and approved by the Employer / Architect before the reinforcement bars are placed in position.
- 6 Measurement:
  - 6.1 All measurements shall be in square metre up to the thickness or height of concreting.
  - 6.2 No deductions from the shuttering due to the openings/ obstructions shall be made if the area of each openings / obstructions does not exceed 0.4 m<sup>2</sup>. Nothing extra shall be paid for forming such openings.
- 7 Rate: The rate of the form work includes the cost of labour and materials required for all the operations described above.

**6.1.14 Cement Concrete Works:****1 Mixing:**

- 1.1 The unit of measurement of cement shall be one bag of cement of weight 50 kg and this shall be taken as 0.035 m<sup>3</sup>. The proportion of sand shall be on the basis of its dry volume and bulkgage may be allowed only in case of damp sand.
- 1.2 All structural concrete shall be machine mixed in proportions specified until the time when a uniform consistency in form is achieved, but in no case the mixing shall be done for less than 2 minutes.
- 1.3 For small amount of concrete where machine mixing is not feasible, hand mixing may be allowed by the Employer / Architect on condition that 10 % (ten percent) extra quantity of cement has to be added in in each batch.
- 1.4 Water mixed concrete shall not be kept unused for long time and in general should be used up within half hour of mixing.
- 1.5 The quantity of water in the mixture shall be such so that proper workability is obtained and shall be as follows per cubic metre of concrete:
  - 1.5.1 for 1:3:6 mix – 34 litre
  - 1.5.2 for 1:2:4 mix – 32 litre
  - 1.5.3 for 1:1.5:3 mix – 30 litre
  - 1.5.4 for 1:1:2 mix – 27 litre

**2 Sampling & Testing:**

- 2.1 Sampling shall be done in regular frequencies at random procedure in standard cubes.
- 2.2 Tests shall be carried out to determine the strength of concrete achieved after 7 (seven), 14 (fourteen) and 28 (twenty-eight) days respectively.
- 2.3 The tests should be conducted in standard laboratory at the expense of the Contractor and the test results, in duplicate, shall be directly sent to the Architect.

**3 Compaction:**

- 3.1 The concrete laid shall be properly compacted into a mass but without disturbing the homogeneity of the mixture.
- 3.2 Proper care shall be taken so that the water content remains constant and segregation of aggregates does not occur.

**4 Protection & Curing:**

- 4.1 The freshly laid concrete shall be protected for the first 2 (two) hours from rapid drying, rain and shocks.
- 4.2 After 24 (twenty-eight) hours of laying, the concrete surface shall be cured by water for 7 (seven) days minimum by flooding water of 25 mm level on flat surface or covering the surfaces with absorptive materials kept wet for the stipulated time.

**5 Where the strength of concrete mix (for ordinary concrete or controlled concrete) as indicated by tests, lies in between the strengths of any of two grades, such concrete shall be classified as a grade belonging to the lowest of the two grades between which its strength lies. In case the cube test strength show higher strengths than those specified for the particular grade, the concrete shall not be placed in any higher grade nor shall Contractor be entitled for any extra payment on such account.****6 Concrete in all underground works such as water tanks and the like where concrete of M25 grades or richer is specified, will be considered as watertight concrete even if not specifically mentioned in the Schedule of Quantities. In respect of such concrete it shall be Contractor shall carry out at his own cost, all necessary remedial measures as per direction of the Employer / Architect.****7 Excepting for internal RC columns and RC walls all structural concrete of basement slab and retaining walls, ramp wall and slab, water tanks and underground tanks shall be cast with admixture of water proofing compound as advised by the specialist waterproof agency. The waterproofing compound for the purpose shall be of approved manufactures and shall be mixed as per manufacturer's specification and shall be mixed @ 1.50 kg per bag of cement ie 3 (three) % by weight of cement as per manufacturer's specification. The resulting concrete shall be perfectly waterproof. The work of waterproofing concrete by the admixture of waterproofing compound shall be done under direct supervision of a senior representative of the approved manufacturer. The Contractor shall give a guarantee for 10 (ten) years against water leakages through the resulting concrete work and shall rectify all defects during the guarantee period without any extra charges. The waterproofing compound for this purpose shall be paid in a separate item as entered in the Schedule of Quantities.****8 If in the Employer's / Architect's opinion there is doubt as to the strength of the structure due to the work test cube failing to attain specified strength due to poor workmanship like honeycombing etc or any reason attributable to negligence on the part of the Contractor then the Employer's / Architect's decision regarding dismantling of such concrete or rectification if concrete is allowed to be retained in its place shall be final and binding on the Contractor.****9 Measurement: All measurements shall be done in cubic metre after excluding all voids and openings.****10 Rate: The rate shall include all materials and labour, including tools and machineries and hire charges for scaffolding, centring and staging, if required.****6.1.15 Plaster Works:**

- 1 The proportion of mortar for exterior and interior plaster work shall be as per Clause No: 6.1.10.
- 2 The thickness shall be as specified by the Employer / Architect with corners and edges rounded off or chamfered as directed without any extra cost.
- 3 All concrete surfaces shall be chipped off before plastering.
- 4 Measurement: Measurement shall be done in square metre after deducting openings in walls.
- 5 Rate: The rate shall include all materials and labour including tools and machineries and hire charges for

scaffolding, if required.

6.1.16 *Wood Works:*

1 Timber:

1.1 The timber shall be free from decay, fungal growth, boxed heart, pitch pockets or streaks on the exposed edges, splits and cracks.

1.2 Timber shall be either air seasoned or kiln seasoned. Kiln seasoning of timber, where specified, shall be done as per IS: 1141 in a plant approved by Employer / Architect.

2 Structural Timber Works:

3 Timber Frameworks:

3.1 General: Timber shall be sawn in the direction of the grains. All members of a frame shall be of the same species of timber and shall be straight without any warp or bow. Frames shall have smooth, well-planed (wrought) surfaces except the surfaces touching the walls, lintels, sill etc, which may be left clean sawn. Rebates, rounding or moulding shall be done before the members are jointed into frames. The depth of the rebate for housing the shutters shall be 15 mm, and the width of the rebates shall be equal to the thickness of the shutters. A tolerance of  $\pm 2$  mm shall be permitted in the specified finished dimensions of timber sections in frames.

3.2 Joints: The jamb posts shall be through tenoned in to the mortise of the transoms to the full thickness of the transoms and the thickness of the tenon shall be not less than 2.5 cm. The tenons shall closely fit into the mortise without any wedging or filling. The contact surface of tenon and mortise before putting together shall be glued with polyvinyl acetate (PVA) dispersion based adhesive conforming to IS: 4835 or adhesive conforming IS: 851 and pinned with 10 mm diameter hard wood dowels, star shaped metal pins. The joints shall be at right angles when checked from the inside surfaces of the respective members. The joints shall be pressed in position. Each assembled door frame shall be fitted with a temporary stretcher and a temporary diagonal brace on the rebated faces.

3.3 Fixing of frames: The frames shall be got approved by the Employer / Architect before being painted, oiled or otherwise treated and before fixing in position. The surface of the frames abutting masonry or concrete and the portions of the frames embedded in floors shall be given a coating of coal tar. Frames shall be fixed to the abutting masonry or concrete with hold-fasts or metallic clamps as specified. After fixing, the jamb posts of the frames shall be plugged suitably and finished neat. Vertical members of the door frames shall be embedded in the floor for the full thickness of the floor finish and shall be suitably strutted and wedged in order to prevent warping during construction. A minimum of two hold fasts shall be fixed on each side of door and window frames. Hold fasts and metallic clamps shall be measured and paid for separately.

3.4 Measurement:

3.4.1 Wood work wrought, framed and fixed shall be measured for finished dimension without any allowance for the wastage or for dimensions beyond specified dimension.

3.4.2 In case of members having mouldings, rounding or rebates and members of circular or varying sections, finished dimensions shall be taken as the sides of the smallest square or rectangle from which such a section can be cut.

3.4.3 Length of each member shall be measured over all to the nearest cm so as to include projection for tenons.

3.4.4 Width and thickness shall be measured to the nearest mm and the quantity shall be worked out in unit of up to three places of decimal.

3.5 Rates: The rate shall include the cost of material and labour involved in all the operations described above except the hold fasts or metallic clamps which will be paid for separately.

4 Fibre Glass Reinforced Plastic (FRP) Door Frames: Door Frames shall be three legged of cross section 90 mm x 45 mm having single rebate of size 32 mm x 15 mm to receive shutter of 30 mm thickness. The frame shall be made of laminate of thickness of 2 mm and shall be filled with wooden blocks of exterior grade MDF or seasoned and treated hard wood inside the laminate in all the three legs of the frame. The frame to be moulded by either hand lay up or resin transfer moulding process. The process shall consist of laying gel-coat at 1000 g/m<sup>2</sup> and laid over with layer of FRP mat (CSM mat) gel-coat and FRP (CSM mat) are defined in IS: 14856. The CSM mat shall be bonded with isophatholic resin in the ratio not less than 1:2 (one part of mat to two parts of isopatholic resin and fillers and additives) by weight. The edge shall be sealed with gel-coat and FRP mat to obtain smooth finish. Sufficient roving shall be laid in the corner to have smooth curve while laying the CSM mat.

5 Shutters:

5.1 Flush Doors: Flush door shutters shall have a solid core and may be of the decorative or non-decorative (paint-able type as per IS: 2202 – Part I). Nominal thickness of shutters may be 25, 30 or 35 mm. Thickness and type of shutters shall be as specified. All four edges of the shutters shall be square. The shutter shall be free from twist or warp in its plane. Lipping, where specified, shall be provided internally on all edges of the shutters. Lipping shall be done with battens of first class hardwood or as specified of depth not less than 25 mm.

5.2 Fibre Glass Reinforced Plastic (FRP) Door Shutters: FRP shutters shall be manufactured conforming to the specifications as per IS: 14856 and nomenclature of item and direction of Employer / Architect. Blocks of any seasoned hardwood of bulk density not less than 450 kg/m<sup>3</sup> at 12 per cent moisture content or any other material of sufficient thickness and length shall be provided inside the shutter at suitable place to hold fittings and fixtures such as aldrops, tower bolt, handle, sliding door bolt, mortice lock etc. Blocks for hinges shall be provided at three locations, unless otherwise specified by the purchaser. One at the centre and other two at 200 mm from the top and the bottom of the shutter. Blocks shall be provided at predetermined

places in the shutter so as to fix hinges mortice locks, tower bolts, aldrops, door closures, etc. The finished surface shall be buffed and polished with wax.

### 5.3 Fixing:

- 5.3.1 For side hung shutters of height up to 1.2 m, each leaf shall be hung on two hinges at quarter points and for shutter of height more than 1.2 m, each leaf shall be hung on three hinges one at the centre and the other two at 200 mm from the top and bottom of the shutters.
- 5.3.2 Top hung and bottom hung shutters shall be hung on two hinges fixed at quarter points of top rail or bottom rail.
- 5.3.3 Centre hung shutter shall be suspended on a suitable pivot in the centre of the frame. Size and type of hinges and pivots shall be as specified.
- 5.3.4 Flap of hinges shall be neatly counter sunk into the recesses cut to the exact dimensions of flap.
- 5.3.5 Screws for fixing the hinges shall be screwed in with screw driver and not hammered in.
- 5.3.6 Unless otherwise specified, shutters of height more than 1.2 mm shall be hung on butt hinges of size 100 mm and for all other shutters of lesser height butt hinges of size 75 mm shall be used.
- 5.3.7 For shutter of more than 40 mm thickness butt hinges of size 125 mm x 90 mm x 4 mm shall be used.
- 5.3.8 Continuous (piano) hinges shall be used for fixing cup-board shutters where specified.

5.4 Measurement: Length and width of the shutters shall be measured to the nearest cm in closed position covering the rebates of the frames but excluding the gap between the shutter and the frame. Overlap of two shutters shall not be measured. No deduction shall be made for providing Venetian opening and opening for glazing.

5.5 Rates: The rate includes the cost of material and labour involved in all the operations described above.

### 6.1.17 Mild Steel Works For Doors & Windows:

- 1 Hot rolled steel sections for fabrication of steel doors, windows, ventilators and fixed lights shall conform to IS: 7452. Shapes weights and designations of hot rolled sections shall be as per IS: 7452.
- 2 Tolerance in thickness of the sections shall be + 0.2 mm.
- 3 The steel doors and windows shall be according to the specified sizes and design. The size of doors and windows shall be calculated, so as to allow 1.25 cm clearance on all the four sides of opening to allow for easy fitting of doors windows and ventilators into opening. The actual sizes of doors, windows and ventilators shall not vary by more than + 1.5 mm from those given in the drawing.
- 4 Frames:
  - 4.1 Both the fixed and open-able frames shall be made of sections which have been cut to length and mitred. All frames shall be square and flat.
  - 4.2 The corner of fixed and open-able frames shall be welded to form a solid fused welded joint conforming the requirements given below. The process of welding adopted shall be flush but-welding or can be any other process as agreed which shall fulfil the requirements given in Clause No: 6.1.1 of IS: 1038, metal arc welding or any other suitable method.
  - 4.3 The section for glazing shall be tennoned and riveted into the frames and where they intersect the vertical tie shall be broached and horizontal tee threads through it, and the intersection closed by hydraulic pressure.
- 5 Welded Joints: When two opposite corners of the frame are cut, paint removed and inspected, the joint shall conform to the following:
  - 5.1 welds should have been made all along the place of meeting the members and tack welding shall not be permitted.
  - 5.2 welds should have been properly grounded and
  - 5.3 complete cross section of the corner shall be checked up to see that the joint is completely solid and there are no cavities visible.
- 6 Hinges:
  - 6.1 For fixing steel hinges, slots shall be cut in the fixed frame and hinges inserted inside and welded to the frame at the back. The hinges shall be of projecting type with thickness not less than 3.15 mm and length not less than 65 mm and width not more than 25 mm.
  - 6.2 Non projecting type hinges may also be allowed if approved by the Architect.
  - 6.3 The diameter of hinge pins shall not be less than 6 mm. The hinge pin and washer shall be of galvanized steel or aluminium alloy of suitable thickness.
- 7 Handle:
  - 7.1 The handle of side hung shutters shall be pressed brass, cast brass, aluminium or steel protected against rusting and shall be mounted on a steel plate.
  - 7.2 Thickness of handle shall not be less than 3 mm in case of steel or brass and 3.5 mm in case of aluminium.
  - 7.3 The handle plate shall be welded, screwed and / or revetted to the opening frame in such a manner that it should be fixed before the shutter is glazed and should not be easily removable after glazing.
  - 7.4 The handle shall have a two point nose which shall engage with a brass or aluminium alloy striking plate on the fixed frame in a slightly opened position as well as closed position. The boss of handle shall incorporate a friction device to prevent the handle from dropping under its own weight and the assembly shall be so designed that the rotation of the handle may not cause it to unscrew from the pin.
- 8 Stay:
  - 8.1 The windows shall be fitted with peg stays which shall be either of black oxidised steel, pressed or cast



- brass or as specified, 300 mm long or as specified with steel peg and locking brackets.
- 8.2 The pegs stay shall have three holes to open the side hung casement in three different angles.
- 8.3 The peg stay shall be of minimum thickness 2 mm in case of brass or aluminium and 1.25 mm in case of steel.
- 9 Glazing Works:
- 9.1 The glass panes shall have square corners and straight edges. The glass panes shall be so cut that it fits slightly loose in the frames.
- 9.2 In doors, windows and clerestory windows of bath, WC and lavatories frosted glass panes shall be used which shall weight not less than 10.00 kg/m<sup>2</sup>.
- 9.3 Glazing shall be provided on the outside of the frame unless otherwise specified.
- 9.4 Putty of approved make conforming to IS: 419 shall be used for fixing glass panes. Putty shall be applied between glass panes and glazing bars. Putty shall then be applied over the glass pane, which shall stop 2 to 3 mm from the sight line of the back rebate to enable the painting to be done up to the sight line to seal the edge of the putty to the glass. The oozed out putty shall be cleaned and from putty cut to straight line.
- 9.5 Quantity of putty shall not be less than 185 g/m of glass perimeter.
- 9.6 Putty shall be painted within 2 to 3 weeks, after glazing is fixed to avoid its cracking.
- 10 Finishing:
- 10.1 All steel surfaces shall be thoroughly cleaned of rust, scale and dirt.
- 10.2 A priming coat of approved steel primer ie red oxide/ zinc chromate primer conforming to IS: 2074 shall be given.
- 10.3 Final finishing coat shall be given to the doors, windows and ventilators after they are erected and fixed in final position.
- 11 Measurement:
- 11.1 The weight of finished section door / windows of different sizes, inclusive of all fixed / welded fittings ie hinges pivots, lugs, brackets striking plates etc shall be worked out before fixing of windows (exclusive of weight of glass panes, glazing clips, putty etc).
- 11.2 Sectional weight of steel members only shall be measured without weight of glass panes etc.
- 11.3 Any loose fittings such as casement stays / fasteners etc shall be enumerated and paid for separately.
- 12 Rates:
- 12.1 Rate shall include the cost of materials and labour involved in all the operations described above excluding two coats of painting but including cost of glazing and priming including the cost of projecting hinges in case of side hung doors / windows, plain hinges in case of top / bottom hung windows / ventilators and pivots for centre hung windows/ ventilators.
- 12.2 Metal beading and other fittings such as peg stay and casement window fasteners etc shall be enumerated and paid for separately.
- 6.1.18 *Artificial Stone Works:*
- 1 Floor:
- 1.1 Preparation of Sub grade: The surface of the structural slab shall be struck of reasonably true at a level average 40 mm below the level of finished floor. All water or dirt on the surface of the structural slab shall be removed before the base course is laid. The slope required should be provided in the concrete of the structural slab to obtain uniform thickness of artificial stone towards the predetermined positions of outlets.
- 1.2 Base Course: The mix for the base of the artificial stone shall be one part of OPC, two parts of fine aggregate and four parts of coarse aggregate by volume. The stone chips for the base course should be 6 mm and down and should be properly screened and washed before use. Not more than 27.50 l of mixing water including the moisture in the aggregate shall be used for each bag of OPC in the mixture. The concrete shall be of the driest consistency possible to work with a sawing motion of the strike of board or straight edge. Changes in consistency shall be obtained by adjusting the proportions of aggregate and cement. In no case, shall be the specified amount of water exceed.
- 1.3 Sectors: Artificial stone flooring shall be laid in sections not exceeding 1.50 m<sup>2</sup> with a maximum length of 1.50 m as directed. Flooring of the panels laying diagonally shall be completed first. The edges of the panel, to be concreted, shall be bounded by about 50 mm wide oiled wooden battens of the finished floor thickness. Immediately before the placing of the concrete the sub-base will be given a coat of neat cement grouting.
- 1.4 Top Layers: After striking off the base course to the required slope, it shall be compacted with a wood flat. The surface shall be tested with a straight edge to direct high and low spots which shall be eliminated, before the concrete of the base course has hardened, the topping shall then be floated with a wooden float to render the surface even. After the surface is slightly it shall be trowelled three times at intervals, so as to produce a uniform and hard surface. Excessive trowelling of rich mix of dry cement and fine aggregate on to the surface shall not be permitted.
- 1.5 Finishing: When working with alternate bay principle of the pounding of flooring should be deferred till the whole floor is complete. But the portions already completed should be occasionally damped with water by moist sand till the whole floor is complete. After this the whole floor will be flooded with water. For coloured finishes a suitable colour mixture shall be added to top cement finishing coat. The quality of colouring matter to be added to cement should be in the proportion of one part of pigment to three parts of Portland cement mixed thoroughly and screened before making to paste. The pigment shall be of approved manufacturer and tints shall be uniform. Any cracks, rust, dis-figuration or discolouring of surfaces shall

- have to be made good without any extra charges to the satisfaction of the Employer / Architect.
- 1.6 Rates to include: Apart from other factors, mentioned elsewhere in this contract the rate quoted for Artificial stone flooring shall include for the following:
    - 1.6.1 All labour, materials and equipments, cleaning the sub-grade, laying base course and top layer to have finished 40 mm thick flooring as per above specification.
    - 1.6.2 Curing.
    - 1.6.3 Cleaning the floor from all stains etc.
  - 1.7 Mode of Measurement: The measurement shall be in square metre for the actual flooring provided.
  - 2 Dado & Skirting:
    - 2.1 The specification for materials and workmanship will be same as that of artificial stone flooring (Sub-clause No: 1 of Clause No: 6.1.18, except that the finished thickness of dado and skirting will be 20 mm.
    - 2.2 The thickness of base course and top layer has to be adjusted accordingly, to have a finished thickness of 20 mm after polishing.
    - 2.3 The rate quoted for the same shall include for all the stages as mentioned in case of flooring except that the finished thickness will be 20 mm dado and skirting shall be on the basis of wall length of area in contact with skirting and the dado respectively.
- 6.1.19 *Tile Work With Cement Mortar / Tile Adhesive:*
- 1 Preparation of base:
    - 1.1 Base concrete or the RCC slab on which the tiles are to be laid shall be cleaned, wetted and mopped when cement mortar is used as base.
    - 1.2 If cement-based high polymer modified quick-set water-based adhesive is used then the old flooring shall be thoroughly cleaned and checked for undulations, if any shall be rectified with cement mortar 1:3 (1 cement: 3 coarse sand). Old cement concrete surface shall be hacked and cleaned off to have proper bond with the old surface.
  - 2 Laying with cement mortar:
    - 2.1 Base concrete or the RCC slab on which the tiles are to be laid shall be cleaned, wetted and mopped. The bedding for the tile shall be with cement mortar 1:4 (1 cement : 4 coarse sand) or as specified.
    - 2.2 The average thickness of the bedding shall be 20 mm or as specified while the thickness under any portion of the tiles shall not be less than 10 mm.
    - 2.3 The base shall be hardened reasonably before tiles are fixed true to level by the application of cement slurry prepared with water by adding cement @ 3.3 kg/m<sup>2</sup> with the help of wooden mallet.
  - 3 Laying with tile adhesive:
    - 3.1 High polymer modified quick set tile adhesive (conforming to IS: 15477) shall be thoroughly mixed with water and a paste of zero slump shall be prepared so that it can be used within 1.5 to 2 hours. It shall be spread over an area not more than one square metre at one time.
    - 3.2 Average thickness of adhesive shall be 3 mm The adhesive so spread shall be combed using suitable trowel.
    - 3.3 Tiles shall be pressed firmly in to the position with slight twisting action checking it simultaneously to ensure good contact gently being tapped with wooden mallet till it is properly backed with adjoining tiles. The tiles shall be fixed within 20 minutes of application of adhesive. The surplus adhesive from the joints, surface of the tiles shall be immediately cleaned.
  - 4 Tiles which are fixed in the floor adjoining the wall shall enter not less than 10 mm under the plaster, skirting or dado.
  - 5 Pointing & Finishing:
    - 5.1 The joints shall be cleaned off the grey cement slurry with wire / coir brush or trowel to a depth of 2 mm to 3 mm and all dust and loose mortar removed.
    - 5.2 Joints shall then be flush pointed with white cement added with pigment if required to match the colour of tiles.
    - 5.3 The floor shall then be kept wet for 7 (seven) days. After curing, the surface shall be washed and finished clean.
    - 5.4 The finished floor shall not sound hollow when tapped with a wooden mallet.
  - 6 Measurement:
    - 6.1 Measurement shall be in square metre.
    - 6.2 No deduction shall be made, nor extra paid for voids not exceeding 0.20 m<sup>2</sup>. Deduction for ends of dissimilar materials or other articles embedded shall not be made for areas not exceeding 0.10 m<sup>2</sup>. Nothing extra shall be paid for laying the floor at different levels in the same room or courtyard.
  - 7 Rate: The rate shall include the cost of all materials and labour involved in all the operations described above including cleaning of surface of RCC slab or base concrete and application of cement slurry.
- 6.1.20 *Rendering Works:*
- 1 Preparation of Wood Surface:
    - 1.1 The wood work to be painted shall be dry and free from moisture.
    - 1.2 The surface shall be thoroughly cleaned. All unevenness shall be rubbed down smooth with sand paper and shall be well dusted. Knots, if any shall be covered with preparation of red lead made by grinding red lead in water and mixing with strong glue sized and used hot. Appropriate filler material conforming to IS: 345 with same shade as Paint shall be used where specified. The surface treated for knotting shall be dry before Paint is applied. After obtaining approval of Architect for wood work, the priming coat shall be

- applied before the wood work is fixed in position.
- 1.3 After the priming coat is applied, the holes and indentation on the surface shall be stopped with glazier's putty or wood putty. Stopping shall not be done before the priming coat is applied as the wood will absorb the oil in stopping and the latter is therefore liable to crack.
- 2 Preparation of Steel Surface:
- 2.1 All rust and scales shall be removed by scrapping or by brushing with steel wire brushes. Hard skin of oxide formed on the surface of wrought iron during rolling which becomes loose by rusting, shall be removed.
- 2.2 All dust and dirt shall be thoroughly wiped away from the surface.
- 2.3 If the surface is wet, it shall be dried before priming coat is undertaken.
- 3 Preparation of Plastered Surface:
- 3.1 The surface shall ordinarily not be painted until it has dried completely.
- 3.2 Trial patches of primer shall be laid at intervals and where drying is satisfactory, painting shall then be taken in hand. Before primer is applied, holes and undulations, shall be filled up with plaster of Paris / cement putty and rubbed smooth.
- 4 Primer:
- 4.1 The primer for wood work, iron work or plastered surface shall be as specified in the description of item.
- 4.2 Primer for plaster / wood work / iron and steel / aluminium surfaces shall be as specified below:
- 4.2.1 Woodwork – Pink variety conforming IS: 3536
- 4.2.2 Iron, steel etc – Red oxide zinc chromate conforming IS: 2074
- 4.2.3 Concrete work / plastered surface – Cement primer conforming IS: 109
- 4.3 The primer shall be ready mixed primer of approved brand and manufacture.
- 4.4 Where primer for wood work is specified to be mixed at site, it shall be prepared from a mixture of red lead, white lead and double boiled linseed oil in the ratio of 0.7 kg : 0.7 kg : 1 litre.
- 4.5 Where primer for steel work is specified to be mixed at site, it shall be prepared from a mixture of red lead, raw linseed oil and turpentine in the ratio of 2.8 kg : 1 litre : 1 litre.
- 4.6 Mineral turpentine ie petroleum distillate which has the same rate of evaporation as vegetable turpentine (distillate product of oleo-resin of conifers) shall be used. It shall have no grease or other residue when allowed to evaporate. It shall conform to IS: 533.
- 4.7 All the materials shall be of approved manufacture and brought to site in their original packing in sealed condition.
- 4.8 The primer shall be applied with brushes, worked well into the surface and spread even and smooth. The painting shall be done by crossing and laying off.
- 5 White Washing:
- 5.1 Surface Preparation: Before new work is white washed, the surface shall be thoroughly brushed free from mortar droppings a foreign matter.
- 5.2 Preparation of Lime: The lime wash shall be prepared from fresh stone white lime. The lime shall be thoroughly slaked on the spot, mixed and stirred with sufficient water to make a thin cream. This shall be allowed to stand for a period of 24 hours and then shall be screened through a clean coarse cloth. 40 gm of gum dissolved in hot water, shall be added to each 10 dm<sup>3</sup> of the cream. The approximate quantity of water to be added in making the cream will be 5 litres of water to 1.0 kg of lime. Indigo up to 3.0 g/kg of lime dissolved in water, shall then be added and stirred well. Water shall then be added at the rate of about 5.0 l/kg of lime to produce a milky solution.
- 5.3 Application:
- 5.3.1 The white wash shall be applied with brushes to the specified number of coats. The operation for each coat shall consist of a stroke of the brush given from the top downwards, another from the bottom upwards over the first stroke, and similarly one stroke horizontally from the right and another from the left before it dries.
- 5.3.2 Each coat shall be allowed to dry before the next one is applied. Further each coat shall be inspected and approved by the Employer / Architect before the subsequent coat is applied.
- No portion of the surface shall be left out initially to be patched up later on.
- 5.3.3 For new work, three or more coats shall be applied till the surface presents a smooth and uniform finish through which the plaster does not show. The finished dry surface shall not show any signs of cracking and peeling nor shall it come off readily on the hand when rubbed.
- 5.3.4 For old work, after the surface has been prepared and a coat of white wash shall be applied over the patches and repairs. Then a single coat or two or more coats of white wash as stipulated in the description of the item shall be applied over the entire surface. The white washed surface should present a uniform finish through which the plaster patches do not appear.
- 5.3.5 The washing on ceiling should be done prior to that on walls.
- 5.4 Protective Measures: Doors, windows, floors, articles of furniture etc and such other parts of the building not to be white washed, shall be protected from being splashed upon. Splashing and dropping, if any shall be removed by the contractor at his own cost and the surfaces cleaned. Damages, if any, to furniture or fittings and fixtures shall be recoverable from the Contractor.
- 6 Synthetic Enamel Paint:
- 6.1 Synthetic Enamel Paint, conforming to IS: 2933, of approved brand and manufacture and of the required colour shall be used for the top coat and an undercoat of ordinary paint of shade to match the top coat as recommended by the same manufacturer as far the top coat shall be used.
- 6.2 Under Coat: One coat of the specified ordinary Paint of shade suited to the shade of the top coat, shall be

applied and allowed to dry overnight. It shall be rubbed next day with the finest grade of wet abrasive paper to ensure a smooth and even surface, free from brush marks and all loose particles dusted off.

6.3 Top Coat: Top coats of synthetic enamel Paint of desired shade shall be applied after the undercoat is thoroughly dry. Additional finishing coats shall be applied if found necessary to ensure properly uniform glossy surface.

7 Measurement:

7.1 All measurements shall be in square metre.

7.2 Areas to be measured shall be done flat instead of girthed.

7.3 For door and window, area of the opening in wall to be considered and no separate payment for frames shall be made. For grills or grating the area shall be that bounded by the outer frame.

7.4 Table showing the factor for multiplication for above areas shall be as followings:

SL NO	SURFACE TO BE PAINTED	MULTIPLYING FACTOR	
		ONE SIDE ONLY	BOTH SIDES ONLY
1	Timber doors, windows etc – fully panelled / flushed	1.30	2.60
2	Timber doors, windows etc – 2/3rd glazed	1.20	2.40
3	Steel windows – full glazed	0.50	1.00
4	Grills, gratings, railings, balustrades etc	-	1.00
5	Collapsible gates	-	1.50
8	Rate: The rate for all the above works shall include all materials, labour, tools and machineries, hire charges for scaffolding etc.		

## 7 SPECIFICATIONS &amp; BILL OF QUANTITIES

SI No	Refer Page No / Item No	Description of Items	Quantity	Unit	Rate	Amount
					₹	₹
<b>A BRICK, CONCRETE &amp; REINFORCEMENT WORKS</b>						
1	26/12	Hire and labour charges for Shuttering with centring and necessary staging up to 4.0 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams, columns, lintels curved or straight including fitting, fixing and striking out after completion of works (up to roof of ground floor)				
		25 MM thick to 30 MM thick wooden shuttering as per decision and direction of Engineer-in-Charge				
1.1		For Second Floor	600.00	m <sup>2</sup>	387.00	2,32,200.00
2	27/15	Reinforcement for reinforced concrete work in all sorts of structures including distribution bars, stirrups, binders etc, initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape, placing in proper position and binding with 16 gauge black annealed wire at every intersection, complete as per drawing and direction				
		For works in foundation, basement and up to roof of ground floor / up to 4.0 m				
		Tor steel / mild steel				
2.1		For Second Floor	12.00	t	68,359.00	8,20,308.00
3	14/7	Ordinary Cement Concrete (mix 1:1.5:4) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement, if any, in ground floor as per relevant IS code				
		Pakur variety				
3.1		For Second Floor	76.00	m <sup>3</sup>	6,164.00	4,68,464.00
4	29/22	Brick Work with 1st class bricks in cement mortar (1:6)				
		In superstructure				
4.1		For Second Floor	35.00	m <sup>3</sup>	5,006.00	1,75,210.00
5	31/29	125 mm thick Brick Work with 1st class bricks in cement mortar (1:4) in ground floor				
		For Second Floor	200.00	m <sup>2</sup>	663.00	1,32,600.00
6	32/34a	75 mm thick Brick Work with 1st class bricks set in cement sand mortar (1:4) in ground floor, including HB netting in every alternate layers				
6.1		For Second Floor	20.00	m <sup>2</sup>	473.00	9,460.00
<b>B FENESTRATION WORKS</b>						
1	85/1	Wood Work in door and window frame, fitted and fixed in position, complete including a protective coat of painting at the contact surface of the frame, excluding cost of concrete, iron butt hinges, MS clamps				
		Sal: Malaysian				
1.1		For Second Floor	0.55	m <sup>3</sup>	86,776.00	47,726.80
2	90/18	Supplying, fitting and fixing MS Clamps for door				

SI No	Refer Page No / Item No	Description of Items	Quantity	Unit	Rate	Amount
					₹	₹
		and window frame, made of flat bent bar, end bifurcated, with necessary screws etc by cement concrete (1:2:4) as per direction; cost of concrete will be paid separately				
2.1		40 mm x 6 mm, 200 mm length	84	no	28.00	2,352.00
3	91/20	Iron Butt Hinges of approved quality, fitted and fixed with steel screws, with ISI mark				
3.1		75 mm x 47 mm x 1.7 mm	18	no	24.00	432.00
3.1		100 mm x 58 mm x 1.9 mm	45	no	52.00	2,340.00
4	139/154	Supplying solid flush type doors of deluxe decorative (both side) quality, conforming to I:S 2202 timber frame consisting of top and bottom rail and side styles of well seasoned timber 65mm wide each and the entire frame fitted with 27.5mm wide battens places both ways in order to made the door of solid core and internal lipping with teak, mahogany or rose wood approved decorative veneers using phenol formaldehyde as glue etc. complete, including fitting, fixing the shutters in position but excluding the cost of hinges and other fittings in ground floor				
		35mm thick shutters (single leaf)				
4.1		For Second Floor	21.00	m <sup>2</sup>	4,689.00	98,469.00
5	132/144	Supplying fitting and fixing in position approved PVC. door frame (Matt finish) made of extruded PVC. Multi-chamber hollow section having dimensions 60mm x 50mm x 2mm (+/-0.2mm), horizontal section will be joined with vertical section by galvanised steel screws after inserting two number steel brackets as reinforcement making suitable space for placing hinges, one steel tube 40mm x 20mm x 1.20 mm will be inserted on one full vertical side of the frame (hinge side) as reinforcement, the frame will then be fixed in the opening with the help of PVC expandable fastener/ wooden gutties and galvanised steel screws including cost of all materials and labour, hire charges of tools and appliances, carriage of all materials, taxes and all other incidental charges complete.				
		66mm x 90mm				
5.1		For Second Floor	30.00	m	282.00	8,460.00
6	140/155	Supplying, Fitting & Fixing 30 mm thick Factory made solid Panel PVC Door Shutter consisting of outer frame made out of M.S. tubes of 19 gauge thickness and size 19 mmx19 mm for styles, top and bottom rails, M.S. frame shall have cost of steel primers of approved make and manufacture, M.S. frame covered with 5 mm th. heat moulded PVC "C" channel of size 30 mm th, 70 mm width out of which 50 mm shall be flat and 20 mm shall be tapered in 45 degree angle on either sides forming styles; and 5 mm th. 95 mm wide PVC sheet out of which 75 mm shall be flat and 20 mm tapered in 45 degree on the inner side to form top & bottom rail and 115 mm wide PVC sheet out of which 75mm shall be flat and 20 mm shall be tapered on both sides to form lock rail. Top, bottom and lock rails				

SI No	Refer Page No / Item No	Description of Items	Quantity	Unit	Rate	Amount
					₹	₹
		shall be provided either side of the panel with 10 mm (5 mmx2) th.,20 mm wide cross PVC sheet as gap insert for top rail and bottom rail. Paneling of 5 mm th. both side PVC sheet to be fitted in the M.S. frame welded/sealed to the styles & rails with 7 mm (5 mm+2 mm) th.x15 mm wide PVC sheet beading on inner side and joined together with solvent cement adhesive. An additional 5 mm th. PVC strip of 20 mm which is to be stuck on the interior side of the "C" channel using PVC solvent adhesive etc. complete excluding all necessary hardwares as per direction of Engineer-in-Charge				
6.1		For Second Floor	9.00	m <sup>2</sup>	2,149.00	19,341.00
7	93/25	Iron socket bolt of approved quality fitted and fixed complete				
7.1		150mm long x 10mm dia bolt	45	no	71.00	3,195.00
8	93/27	Iron hasp bolt of approved quality fitted and fixed complete (oxidised) with 16mm dia rod with centre bolt and round fitting				
8.1		300mm long	14	no	193.00	2,702.00
9	100/65	Anodised aluminium D-type handle of approved quality manufactured from extruded section conforming to IS specification (IS:230/72) fitted and fixed complete:				
		With continuous plate base (Hexagonal / Round rod)				
9.1		150 mm grip x 10 mm dia rod	60	no	111.00	6,660.00
<b>C</b>		<b>STEEL &amp; GLAZING WORKS</b>				
1	81/33	Supplying, fitting and fixing Windows and Ventilators with or without integrated grills, conforming to IS: 1038-1975 and manufactured from Rolled Steel sections conforming to IS: 7452-1974 with non-friction projecting box type hinges, glazing clips, lugs, locking bracket, handle plate etc. including hoisting in position, straightening if required, fixing lugs in cement concrete (1:2:4) with stone chips 20 mm down, cutting holes and mending good damages to match with existing surface complete in all respect excluding glazing in Ground floor				
1.1		Open able steel windows as per IS sizes with side hung shutters and horizontal glazing bars with / without fixed type ventilators				
		For Second Floor	45.00	m <sup>2</sup>	2,079.74	93,588.30
1.2		MS integrated grill as per approved design integrated with steel window or ventilator, joints continuously welded with M.S. flats and bars				
		For Second Floor	260.00	Kg	85.00	22,100.00
1.3		Two point nose aluminium handle including fitting and fixing	44	no	46.00	2,024.00
1.4		Aluminium peg stay 300 mm long including fitting and fixing	44	no	46.00	2,024.00
2	76/10a	MS or WI Ornamental Grill of approved design, joints continuously welded with MS, WI flats and				

SI No	Refer Page No / Item No	Description of Items	Quantity	Unit	Rate	Amount
					₹	₹
		bars for windows, railing etc, fitted and fixed with necessary screws and lugs, in ground floor				
		Grill weighing above 10 kg/m2 and upto 16 kg/sqm.				
2.1		For Second Floor	1.00	Qntl	9,232.02	9,232.02
3	166/1	Supplying best Indian Sheet Glass Panes, set in putty and fitted and fixed with nails and putty complete; in all floors for internal wall and up to 6.0 m height for external wall				
3.1		4 mm thick	32.00	m <sup>2</sup>	615.00	19,680.00
<b>D</b>		<b>PLASTER WORKS</b>				
1	151/2	Plaster (to wall, floor, ceiling etc) with sand and cement mortar including rounding off or chamfering corners as directed and ranking out joints including throating, nosing and drip course, scaffolding / staging where necessary (Ground Floor)				
1.1		With 1:6 cement mortar				
1.1.1		20 mm thick plaster				
		For Second Floor	200.00	m <sup>2</sup>	172.00	34,400.00
1.1.2		15 mm thick plaster				
		For Second Floor				
		For Second Floor	650.00	m <sup>2</sup>	151.00	98,150.00
1.2		With 1:3 cement mortar				
1.2.1		10 mm thick plaster				
		Internal Plaster				
		For Second Floor	400.00	m <sup>2</sup>	139.00	55,600.00
2	319/1	Labour for Chipping of concrete surface before taking up Plastering work	420.00	m <sup>2</sup>	21.00	8,820.00
<b>E</b>		<b>RENDERING WORKS</b>				
1	162/7a	Priming one coat on timber or plastered surface with Synthetic Oil-bound Primer of approved quality including smoothing surfaces by sand paper etc	70.00	m <sup>2</sup>	41.00	2,870.00
2	162/7b	Priming one coat on steel or other metal surface with Synthetic Oil-bound Primer of approved quality including smoothing surfaces by sand paper etc	110.00	m <sup>2</sup>	31.00	3,410.00
3	155/3	White washing including cleaning and smoothening surface thoroughly				
		Two coats	1,200.00	100 m <sup>2</sup>	2,081.00	24,972.00
4	162/8	Painting with best quality Synthetic Enamel Paint of approved make and brand including smoothing surface by sand papering etc, including using of approved putty etc on the surface, as necessary				
		With super gloss (hi-gloss)				
		Two coats (with any shade except white)				
5.1		On timber or plastered surface with super gloss (high gloss)	70.00	m <sup>2</sup>	89.00	6,230.00
5.2		On steel or other metal surface with super gloss (high gloss)	110.00	m <sup>2</sup>	77.00	8,470.00
<b>F</b>		<b>DRAINAGE WORKS</b>				



SI No	Refer Page No / Item No	Description of Items	Quantity	Unit	Rate	Amount
					₹	₹
1	173/21	Supplying, fitting and fixing UPVC Pipes, A-type, and fittings conforming to IS: 13592-1992, with all necessary clamps, nails, including making holes in walls, floor etc, cutting trenches in any soil, through masonry / concrete structures etc, if necessary, and mending good damages including joining with jointing materials (spurn yarn / valamoid / bitumen / M-Seal etc) complete				
		UPVC Pipes				
1.1		110 mm diameter	12.00	m	291.00	3,492.00
<b>G</b>		<b>TOTAL OF CIVIL WORKS</b>				<b>24,24,982.12</b>
<b>H</b>		<b>TOTAL OF CIVIL WORKS (Rounded Off)</b>				<b>24,25,000.00</b>

**Notes:** The above estimates are prepared based on rates available from PWD (WB) Schedule of Rates Volume-I for Building Works, 2014 for Birbhum District- updated till 5th corrigendum.

**NOTES**

- All dimensions are in millimetre, unless otherwise mentioned.
- Drawings are not to be scaled; only written dimensions are to be followed.
- All external brick walls are 250 mm thick and internal brick walls are 125 mm thick, unless otherwise mentioned.
- Grade of concrete is M20 and grade of steel is Fe415.
- First class brick work with 4:1/6:1 sand cement mortar recommended.
- For general specifications for materials and labour refer to the latest National Building Code of India.
- For specifications for specialised items refer to Manufacturer's Manual.

**OPENING SCHEDULE**

M/C	OPENING SIZE	NUMBERS	REMARKS
D1	1200 x 2100		
D2	900 x 2100		
W1	1500 x 1350		
W2	1000 x 1350		
W3	750 x 750		

**ARCHITECTURAL DRAWING**

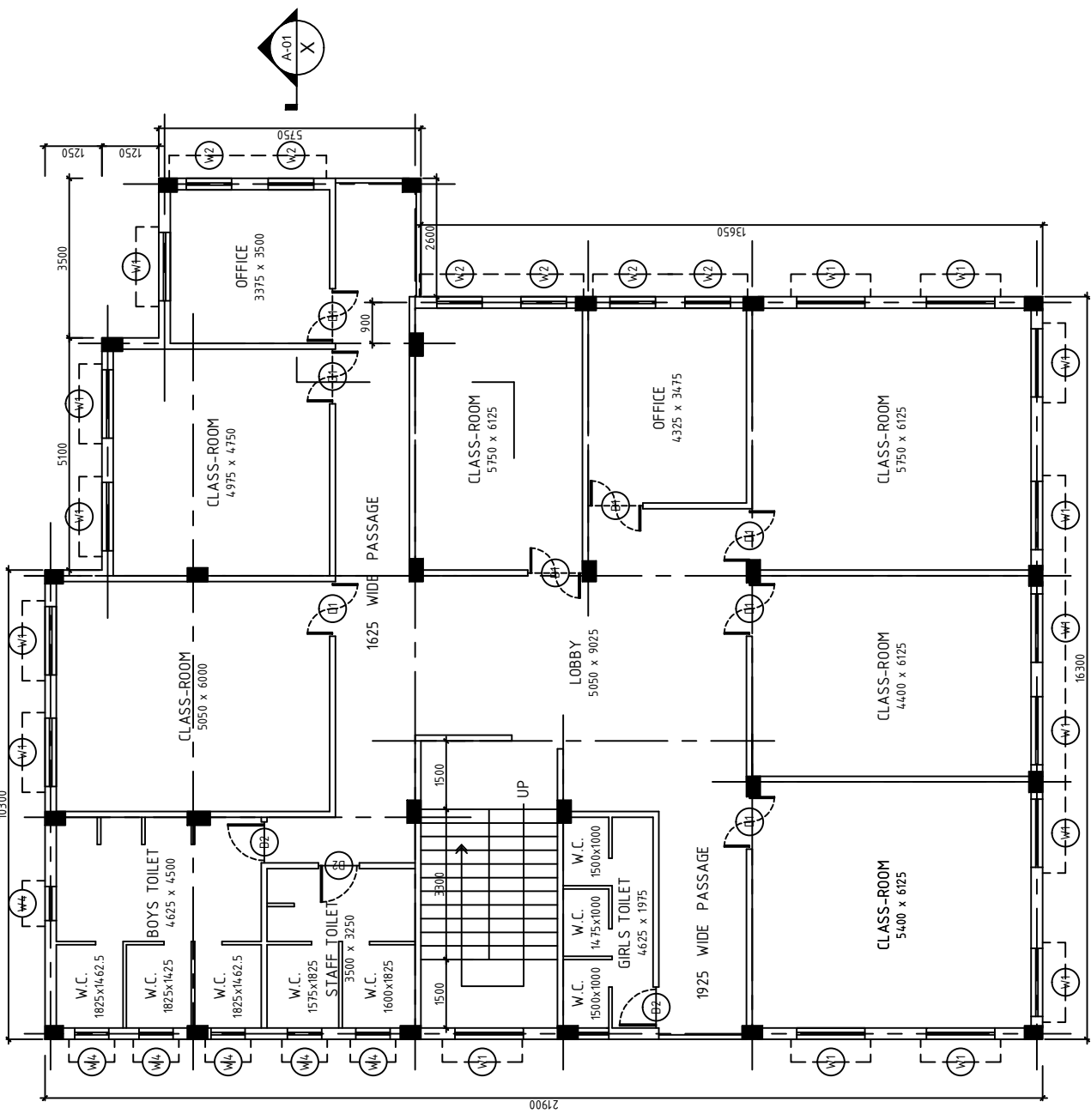
TITLE  
**FLOOR PLAN**

PROJECT  
**Proposed Constuction of Second Floor of NEW HUMANITIES BUILDING at Dag No: 1258 JL No: 143 Mouza: Hetampur PS: Dubrajpur Dist: Birbhum**

CLIENT  
**The Principal, Krishna Chandra College**  
Hetampur, Birbhum, West Bengal

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DWG NO	1121-TD-A-02	JOB NO	1121-INS-KCCollege-ArtsBldgs
REVISION	0	DEALT BY	SB
DWG DATE	27 July 2015	CHECKED BY	PM
DWG SCALE	as mentioned	FILE NAME	1121-TD-A-02



COVERED AREA: 363.295 m<sup>2</sup>

**1 SECOND FLOOR PLAN**  
Scale: 1:100

**NOTES**

- All dimensions are in millimetre, unless otherwise mentioned.
- Drawings are not to be scaled; only written dimensions are to be followed.
- All external brick walls are 250 mm thick and internal brick walls are 125 mm thick, unless otherwise mentioned.
- Grade of concrete is M20 and grade of steel is Fe415.
- First class brick work with 4:1:6:1 sand cement mortar recommended.
- For general specifications for materials and labour refer to the latest National Building Code of India.
- For specifications for specialised items refer to Manufacturer's Manual.

**OPENING SCHEDULE**

M/N	OPENING SIZE	NUMBERS	REMARKS
D1	1200 x 2100		
D2	900 x 2100		
W1	1500 x 1350		
W2	1000 x 1350		
W3	750 x 750		

**ARCHITECTURAL DRAWING**

**SECTION & ELEVATION**



PROJECT

**Proposed Constuction of Second Floor of NEW HUMANITIES BUILDING at Dag No: 1258 JL No: 143 Mouza: Hetampur PS: Dubrajpur Dist: Birbhum**

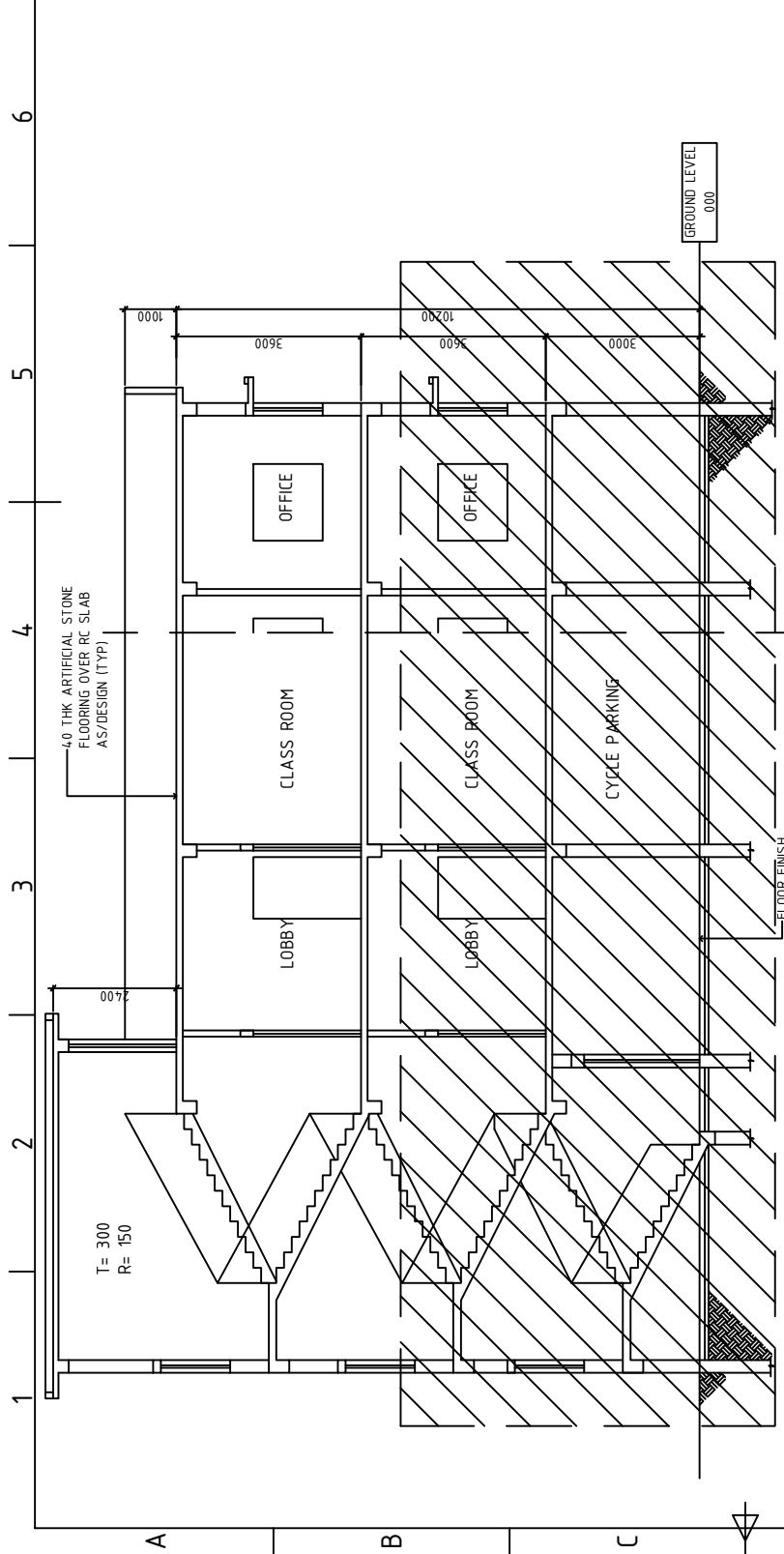
CLIENT

**The Principal, Krishna Chandra College**  
Hetampur, Birbhum, West Bengal

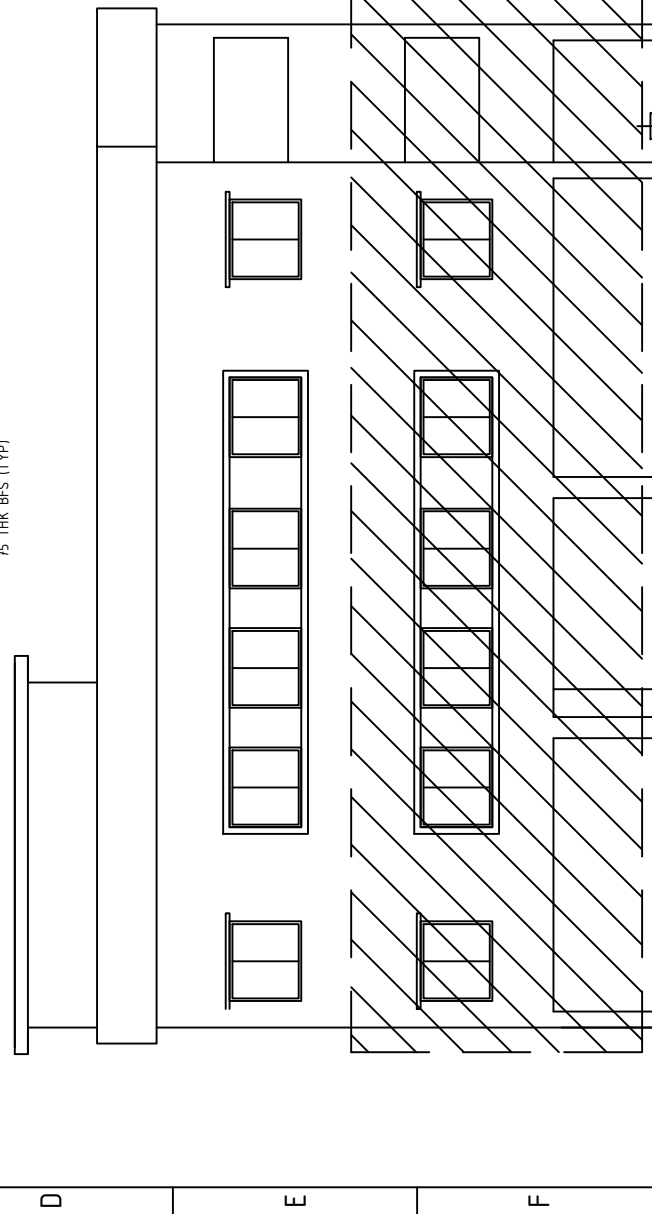
ARCHITECT

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DWG NO	1121-TD-A-03	JOB NO	1121-INS-KCCollege-ArtsBldgs
REVISION	0	DEALT BY	SB
DWG DATE	27 July 2015	CHECKED BY	PM
DWG SCALE	as mentioned	FILE NAME	1121-TD-A-02



**SECTION X**  
Scale: 1:100



**ELEVATION**  
Scale: 1:100