Notice Inviting Tender

SLC/E-Proc./2025/ 121 **June 25, 2025**

Online bids are invited in two bid systems for **"'Repair & Renovation of College Building and Structural Repairs at Various Locations within the Shyam Lal College Campus, Delhi.** Manual bids shall not be accepted.

Tender documents may be downloaded from CPPP site https://eprocure.gov.in/eprocure/app as per the schedule as given in as under.

Publishing Date	**25.06.2025 (05:00 PM)**
Bid Document Download Start Date	**25.06.2025 (05:30 PM)**
Tender Fee	**Rs. 5000**
Completion Time	**60 Days**
EMD	**Rs. 50,000 /-**
Bid Submission start date	**25.06.2025 (06:00 PM)**
Bid Submission End date	**09.07.2025 (06:00 PM)**
Bid Opening date	**11.07.2025 (11:00 AM)**

- Bids shall be submitted online only at CPPP website https://eprocure.gov.in/eprocure/app.

- Bidder/Contractors are advised to follow the instructions provided in the 'Instructions to the Contractors/Bidder for the e-submission of the bids online through the Central Public Procurement Portal for e Procurement at https://eprocure.gov.in/eprocure/app'.

- Bids will be opened as per date/time as mentioned above. After online opening of Technical-Bid the results of their qualification as well Price-Bid opening will be intimated later.

CONTENT

1. **Eligibility Requirements**
2. **Price Bid Undertaking**
3. **Conditions**
4. **Scope of work /BOQ (In Excel file)**

1. ELIGIBILITY REQUIREMENTS

The bidder should have the following documents and upload the same when submitted the bid its compulsory.

- Pan Number
- GST Registration
- Price bid undertaking form should be duly filled in.
- The bidder should upload the scanned copy of demand drafts of tender fee & EMD or Exemption certificate during online bid submission.
- The bidder should upload the self-attested scanned copies of all the documents with including tender notice during online bid submission.

2. PRICE BID & UNDERTAKING

- Price bid undertaking
- Schedule of price bid in the form of BOQ xls.

PRICE BID UNDERTAKING

From: (Full name and address of the Bidder)
_____
_____
_____

To
The Principal
Shyam Lal College
Shahdara, Delhi – 110032

Dear Sir/Madam,

1. I submit the Price Bid for_____ and related activities as envisaged in the Bid document.

2. I have thoroughly examined and understood all the terms and conditions as contained in the Bid document, and agree to abide by them.

3. I offer to work at the rates as indicated in the price Bid, BOQ Exclusive of all applicable taxes.

4. I am/we are not blacklisted in any authorities/ Departments.

Yours Faithfully

Signature with Seal
Contractor/Authorised Person

3. TERMS & CONDITIONS

Name of the work: - 'Repair & Renovation of College Building and Structural Repairs at Various Locations within the Shyam Lal College Campus, Delhi.

All materials to be used on the work shall be of reputed makes/ISI marked, as per the sample approved by the College Authority.

1. All taxes as applicable shall be deducted from the bills of contractors.

2. Before tendering/quotationing, the Bidder must visit the site and satisfy himself as to the local conditions, the accessibility of the site of full extent and implication of the operation, the nature of the ground and supply conditions affecting labor and execution of the contract. No claim on these issues will be entertained after the bidding process.

3. The successful contractor or his representative should be made available at work site execution every day during the execution of the work who will receive day to day instructions/direction from the College Authority or his representative.

4. Conditional tenders/ quotations will not be accepted and will be rejected outright.

5. The Contractor shall be fully responsible for the safe custody and proper storage of material at site to the satisfaction of the College Authority for which nothing extra will be paid.

6. The rates should be quoted after visiting the site, otherwise it will be assumed that rates are quoted after visiting the site.

7. Bill Payment will be made as per actual measurement of quantity & satisfactory completion of work done verified on the site.

8. College reserves the right to accept or reject any or all the tender(s) in full or part without assigning any reason. The decision of the college in this regard shall be final and binding on all. It shall not be obligatory on the part of the College to accept the lowest tender and no explanation shall be given with regard to reason for rejection of tender.

9. Incomplete tenders/ quotations will not be accepted and will be rejected outright.

10. Mode of payment for tender fee and EMD: - The bidder shall furnish the tender fee of **Rs. 5000/-** and EMD **Rs. 50,000/-** which should be submitted through Demand draft in favour of **Principal, Shyam Lal College** & submit the same in the office of Shyam Lal College , G.T. Road Shahdara Delhi-110032 before the end date of bid .

11. The tender fee is non-refundable & non-transferable.

12. Work should be completed in all respect with perfection cleanliness and entire satisfaction of college authority. No payment will be made if any deficiency is found after completion of the even a single day work. No extra payment will be given for removing any deficiency.

13. "Malaba" if any will not be stored in the college campus. This should be strictly followed.

14. Bidder should have completed civil work or other related work with CPSU/Nationalized bank/Government Department (Central/State) or autonomous bodies during the last 03 years with costing not less than **Rs. 50, 00,000** Bidder must attach their completion/experience Certificate with the technical bid.

15. In case of any accident during the repair of building the contractor shall be fully responsible for setting all claims and indemnity. In this respect no compensation shall be given by the college whatsoever.

16. 2% Electricity and water charges will be deducted from the bill of contractor.

S/d
Principal SLC (Day)

SCOPE OF WORK

Name of Project : 'Repair & Renovation of College Building and Structural Repairs at Various Locations within the Shyam Lal College Campus, Delhi.'

Project Brief : SLC wishes to repairs to main building block & misc. area which consist two of G+2 storey, misc. area & external development.

- 2 Nos Block with Central Core Area & Misc Area
- External Development

1. The contractor will clearance of all the necessary malba, machinery, etc for handing over of the site to Owner.

2. "The Contractor shall prepare and submit the handover documents to Shyam Lal College.

3. For timely completion of the work the bidder/contractor must have to deploy all tools & tackles, plants, machineries, equipment, and materials required to perform the work simultaneously.

4. The agency should ensure all safety precautions while execution of the repair and renovation work.

5. The contractor will provide site supervisor/Civil Engineer at site. Site supervisor/ civil engineer should have adequate knowledge in civil work.

6. Any other additional work apart of schedule of quantity, if required, will be executed after consultation with authorized person of Shyam lal college.

7. All temporary arrangements, staging, working platforms, safety arrangements etc. is to be provided to carry out the work at their own cost.

8. The contractor shall be charged 2% of the billed amount towards electricity and water charges.

"This scope of work covers all major aspects of the Civil, Plumbing and External development.

GENRERAL INSTRUCTION

1. Codes and Standards

All works shall comply with:

- IS 456: Code of Practice for Plain and Reinforced Concrete
- IS 3370: Concrete Structures for Storage of Liquids (if applicable)
- IS 15988: Seismic Evaluation and Strengthening of Existing Buildings
- IS 383, IS 516, IS 9103, IS 10262 (Materials & Mix Design)
- ASTM standards for epoxy & FRP where applicable
- NBC 2016

2. Materials

- **Cement:** OPC 43/53 grade as per IS 8112/12269
- **Fine Aggregate:** Sand conforming to IS 383
- **Coarse Aggregate:** 10–20 mm size, angular, well-graded
- **Epoxy Resin:** Two-component low-viscosity epoxy (for injection/grouting)
- **Non-shrink Grout:** As per IS 15388
- **FRP Sheets:** Carbon or Glass Fiber with epoxy resin matrix
- **Corrosion Inhibitor:** As specified
- **Reinforcement Steel:** Fe 500/Fe 500D conforming to IS 1786

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4. Methodology

- **Surface Preparation:** Clean, remove loose material, rust, oil, paint; expose corroded rebar
- **Crack Injection:** For structural cracks >0.3 mm, inject low-viscosity epoxy under pressure
- **Concrete Jacketing:** Minimum 100 mm thickness with additional rebars anchored to old concrete
- **FRP Wrapping:** Apply after surface preparation; wrap in layers as per design
- **Steel Plate Bonding:** Epoxy bonding with mechanical anchorage if required
- **Rebar Anchoring:** Hilti/Equivalent mechanical/chemical anchor systems
- **Corrosion Treatment:** Rust removal, passivation coat on rebar, or galvanic anodes
- **Masonry Stitching:** Install stainless steel stitching rods with epoxy resin at cracked locations

5. Quality Control

- Cube/cylinder testing of repair concrete
- Bond strength tests (pull-out, pull-off)
- Visual and ultrasonic testing for crack filling verification
- FRP thickness and adhesion test
- Epoxy pot life and curing validation

6. Documentation & Reporting

- Daily work log with photos
- Quality reports including mix design, test results, and site verification
- As-built drawings showing location and type of repair
- Material Manufacturer's data sheets and compliance certificates

7. External Development Work

- Prepare the site for construction, including grading and levelling.
- Plinth Protection work.

TECHNICAL SPECIFICATION

'Repair & Renovation of College Building and Structural Repairs at Various Locations within the Shyam Lal College Campus, Delhi.'

SHYAM LAL COLLEGE

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GENERAL TECHNICAL SPECIFICATIONS

1.0 Introduction:

1.1 This specification is in respect of Repair & renovation work at Shyam Lal College at Delhi The scope of work in the contract of Repair & Renovation of College Building and Structural Repairs at Various Locations within the Shyam Lal College Campus, Delhi.', site development work, electrification in all respects as per scope of work.

1.2 Any specification mentioned anywhere in the tender document shall be considered as minimum specification for that particular item supply or work execution. Item supply / service of higher specification shall be acceptable for the Engineer-in-charge (EIC).

1.3 This specification shall be read in conjunction with other documents forming the contract such as instructions to bidders, general conditions of contract (GCC), special conditions of contract (SCC), related IS Codes, CPWD specifications of related works and other documents furnished by SLC.

1.4 The contractor shall visit the site and ascertain the local conditions, in the area and also ascertain all site conditions. The contractor shall allow for extra works likely to be incurred due to such conditions and no claim shall be entertained on this account under any circumstances from the contractor.

1.5 The contractor shall set out and level the works and will be responsible for the accuracy of the same. The contractor is to provide all instruments and proper qualified staff with assistance for getting his work checked by SLC/Engineer-in-charge.

1.6 The contractor shall take adequate precautions to ensure complete safety and prevention of accidents at site. The safety precaution shall conform to the relevant BIS codes, laws and local regulations.

1.7 The contractor shall protect benchmarks and reference lines, ground water gauges and control points from damage or movement during work. In case of any damage, the contractor shall have to restore to original condition at his own cost.

2.0 Standard Site Conditions & Relevant IS codes:

All works shall fully comply with the requirements of the Bureau of Indian Standards and other statutory regulations that are in force in the place of installation. The work shall be carried out in accordance with the latest editions of relevant BIS standards particularly and wherever Indian standards are not available international standards shall be followed.

The materials, design, and workmanship shall satisfy the relevant Indian Standards, the Job Specifications contained herein and applicable IS Codes. List of codes are given here for reference.

National Building Code 2016,

Latest CPWD Specifications & guidelines

SP 35 – Plumbing Standard.

IS - 383 Specification for Coarse and Fine aggregate for use in mass concrete

IS - 2387 Method of test for aggregates for concrete.

IS – 2185 Specification for concrete masonry units

IS - 516 Methods of test for strength of concrete.

IS - 1199 Methods of sampling and analysis of concrete

IS - 3025 Methods of sampling and test (physical and chemical) for water used in industry

IS - 432 Specification for Mild steel and medium tensile bars and hard drawn steel wire.

IS – 1139 Specification for hot rolled mild steel, medium tensile steel and high yield strength steel deformed bars for concrete reinforcement.

IS - 1786 Specification for cold twisted steel high strength deformed bars for concrete reinforcement

IS - 303 Specification for Plywood for general purposes

IS - 4990 Specification for plywood for concrete shuttering work

IS - 2645 Specification for integral cement water proofing compounds

IS - 1791 Specification for batch type concrete mixers

IS - 2505 Specification for concrete vibrators, immersion type

IS - 2750 Specification for steel scaffoldings.

IS - 456 Code of practice for plain and reinforced concrete

IS - 3370 Code of practice for concrete (Part I to IV structures for storage of liquids

IS - 2502 Code of practice for bending and fixing of bars for concrete reinforcement

IS - 3558 Code of practice for use of immersion vibrators for consolidating concrete

IS - 3414 Code of practice for design and installation of joints in buildings

IS - 4014 Code of practice for steel tubular, scaffolding

IS 1199 Methods of sampling and analysis of Concrete

IS: 8112 – specifications for 43 grade OPC

IS: 1489 – specifications for PPC (Portland pozzolana cement).

IS: 1077 – specifications for bricks for masonry work.

IS 10262 - Concrete Mix Proportioning - Guidelines

IS 15778 Chlorinated polyvinyl chloride (CPVC) pipes for potable hot and cold water distribution supplies - Specification

IS 2911-1-4: Code of practice for design and construction of pile

IS: 2556 - 1994 (Part - I), (Part - II), (Part - III), Vitreous Chinaware

IS: 1703 - 2000 Ball Valve -

IS: 775 - 1970 Cistern Brackets -

IS: 2548 - 1996 Toilet Seat Cover -

IS: 2326 - 1987 Vitreous China Cistern –

IS 14587: Prelaminated medium density fibre board –Specification

IS 15622: Pressed ceramic tiles

IS 13592: Unplasticized Polyvinyl Chloride (PVC-U) pipes for soil and waste discharge systems inside buildings including ventilation and rainwater system

IS: 1239 Steel Pipes & Tubes

IS: 1879 - 2010 Malleable Iron Fittings

IS: 780 - 1984 Cast Iron Sluice Valves

IS: 778 - 1984 Full Way Valves

IS: 2692 - 1989 Brass Ferrule

IS: 458 - 2003 RCC Pipes

IS: 1538 - 1993 Cast (Spun) Iron Fittings

IS: 4984 - 1995 UPVC Pipes and Fittings

IS: 783 - 1985 Code of Practice for laying of concrete

IS: 12823 marked : Particle board

IS: 2202 (Part 1) Flash door

IS: 4351 Pressed steel door frame

IS 15489 Paint, Plastic emulsion

IS: 5290-1983 (Type 'A') Specification for landing valves

IS: 444 General purpose rubber water hose

IS: 884-Specification for First-Aid Hose-Reel for Fire Fighting

IS: 636 Non-percolating flexible fire fighting delivery hose

IS: 903 Fire Hose Delivery Couplings, Branch Pipe, Nozzles

IS: 904-Specification for 2-Way And 3-Way Suction Collecting Heads For Fire Fighting Purposes

IS 15683 Portable Fire Extinguishers--Performance and Construction--Specification

IS: 14609 Dry Chemical Powder for Fighting A,B,C, Class Fires

IS:10221 Coating and wrapping of underground mild steel pipelines - Code of practice

IS 1868: Anodic Coatings on Aluminium and its Alloys

IS 13983: stainless steel sinks for domestic purposes

3.0 Inclusive Documents:

The provision of special condition of contract (SCC), general condition of contract (GCC), those specified in the bid as well as execution drawings and notes or other specifications issued in writing by the engineer-in-charge shall from part of these specifications.

4.0 Order of Precedence, Clarification and Interpretation:

When the various specifications and codes referred to in preceding portion are at variance with these specifications and each other the following order of precedence will generally be applicable.

i. Scope of Work

ii. AFC (Approved for Construction) Drawings

iii. Special conditions of contract

iv. Technical specifications

v. I.S. codes/specification

vi. CPWD specifications

vii. Standard engineering practices after approval from EIC

The attention of the contractor is drawn to those clauses of IS codes which require other specification by engineer-in-charge or the mutual agreement between the supplier and purchaser. In such cases it is the

responsibility of the contractor to seek clarification on any uncertainty and obtain prior approval of the engineer-in-charge before taking up the supply/construction.

5.0 Unacceptable Work:

All defective works shall be demolished and rebuilt by the contractor at his own cost. In the event of any work being accepted by carrying out repairs etc. as specified by the engineer-in-charge, the cost of all such repairs will be borne by the contractor.

6.0 General Points on Technical Specifications:

- The Technical Specifications is to be read in conjunction with scope of work , special conditions of contract and other articles forming part of this document

- The works shall be carried out in conjunction with specifications, schedule of items and the Construction Drawings approved by the Engineer-in-charge from time to time. The Technical specifications as given in **Latest CPWD specification and Delhi Schedule of Rate (DSR) -2023** for Building (Civil, Sanitary, water supply & electrical works) with up-to-date corrections; relevant to this work, with a cross reference to relevant codes of practice published by the Bureau of Indian Standards, Indian Roads Congress or Analysis of Market Rates in respect of matters not covered by the CPWD specifications shall be followed.

- In the absence of any Specifications covering any material, design of work (s) the same shall be performed / supplies / executed in accordance with Standard Engineering Practice as per the instructions / directions of the Engineer-In-Charge, which will be binding on the Contractor.

- All the works shall be carried out in sound workmanship and true to line, level, plumb and as per the best practice of the trade.

- Rates for all items in which use of cement is involved, is inclusive of charges for curing. The intent of this section of the specification is to define the general technical requirements of the major items of Building and site development works.

- All mandatory tests specified in ***IS Codes or C.P.W.D specifications*** or as directed by the Engineer-In-Charge shall be got done from the approved laboratories as desired by the Engineer- in- charge and all expenses viz. cost of samples, testing charges, including cartage, conveyance etc. whatsoever shall be borne by the contractor. If after any` such test and in the opinion of the Engineer-in- Charge any work or portion of work is found to be defective and unsound the contractor shall pull down and re-execute the same at his own cost. Defective material/ materials failing in mandatory test shall be removed from the site.

- All materials to be supplied by the contractor shall be new. All packed items shall arrive at site in original packing only. Any items found defective or damaged shall be replaced by the contractor at his own expenses. The sources of materials stated in the specifications are those from which materials are generally available. However, materials not conforming to specifications shall be rejected even if they come from the stated source. The contractor should satisfy himself that sufficient quantity of material of acceptable specification is available from the stated or other sources.

- All the materials brought at site shall be stored and stacked in a proper manner as per Standard specifications mentioned above. The materials requiring protection from the sun and rain shall be kept inside the temporary structures to be erected at site by the contractor. The contractor shall also follow the manufacturer's instructions for storing and stacking the materials. The storage facilities are to be created by the contractor at his own expense.

- All materials to be used on works shall bear I.S. certification mark unless specifically permitted otherwise in writing. In case I.S. marked materials are not available (not produced), the materials used shall conform to I.S. Code or CPWD specifications, as applicable in this contract. In such cases the Engineer shall satisfy himself about the quality of such materials and give his approval in writing. Only articles classified as "First Quality" by the manufacturers shall be used unless otherwise specified. All materials shall be tested as per provisions of the Mandatory Tests in CPWD specifications and the relevant IS specifications. The Engineer may relax the condition regarding testing if the quantity of materials required for the work is small. Proper proof of procurement of materials from authentic manufacturers shall be provided by the contractor to the satisfaction of Engineer. **Grade of cement used shall be PPC & OPC 43 Grade unless otherwise specified explicitly. Reinforcement Steel used shall be of TMT Fe-500 or higher grade unless otherwise specified.**

- The contractor shall consult the Engineer-In-Charge regarding collection and stacking of basic materials required for the work. They should not stack any materials in any place other than those approved by the Engineer-in-Charge within the plot area. On completion of the work the area used will be restored, properly dressed to satisfaction of the Engineer-in-Charge at no extra cost.

- QUALITY CONTROL & QUALITY ASSURANCE PLAN: The contractor shall be required to prepare "Quality Assurance Plan" and Bar chart - containing systematic plans and procedures for maintaining the quality of works and progress of work. Contractor should get these approved by EIC.

- The contractor shall carry out required supervision and inspection as per Quality Assurance Plan and furnish all assistance required by Owner in carrying out inspection work during this phase

7.0 Tests & Inspection

- The Contractor shall carry out the various tests as enumerated in the technical specifications of this bidding document and as per the relevant BIS codes as applicable.

- All the tests either on the field or at out side laboratories concerning the execution of the work and supply of materials by the Contractor shall be carried out by Contractor at his own cost. All mandatory tests specified in C.P.W.D specifications or as directed by the Engineer- in-charge shall be got done from the approved laboratories as desired by the Engineer- in- charge and all expenses viz. cost of samples, testing charges, including cartage, conveyance etc. whatsoever shall be borne by the contractor. If after any such test and in the opinion of the Engineer-in-Charge any work or portion of work is found to be defective and unsound the contractor shall pull down and re-execute the same at his own cost. Defective material/materials failing in mandatory test shall be removed from the site.

- The work is subject to inspection at all times by the Engineer-in-Charge. The contractor shall carry

out all instructions given during inspection and shall ensure that the work is being carried out according to the technical specifications of this bid document, the technical documents and the relevant codes of practice will be furnished to him during the performance of the work.

- The Contractor shall provide for purposes of inspection access ladders, lighting and necessary instruments at his own cost.

- Any work not conforming to execution drawings, specifications or codes shall be rejected forth with and the Contractor shall carry out the rectifications at his own cost.

- All results of inspection and tests will be recorded in the inspection reports, proforma of which will be approved by the Engineer-in-Charge/ PMC. These reports shall form part of the completion documents.

- For materials supplied by Owner, Contractor shall carry out the tests,if required by the Engineer-in-Charge/ PMC, and the Owner shall reimburse the cost of such tests at actual to the Contractor on production of documentary evidence.

- Inspection and acceptance of work shall not relieve the Contractor from any of his responsibilities under this Contract.

- The Contractor shall offer for stage wise inspection to the Engineer in charge as required and mentioned in the technical Specification.

8.0 Inspection of supply items / materials

- All inspection and tests on bought out items / materials shall be made as per the specifications forming part of this contract. Various stages of inspection and testing shall be identified after receipt of Quality Assurance Programme from the Contractor / Manufacturer.

- Inspection calls shall be given for associations of Owner's representative as per mutually agreed programme in prescribed proforma with 15 days margin, giving details of equipment and attaching relevant test certificates and internal inspection report of the Contractor. All drawings, General arrangement and other contract drawings, specifications, catalogues etc. pertaining to equipment offered for inspection shall be got approved from Owner and copies shall be made available to Owner before hand for undertaking inspection.

- The Contractor shall ensure full and free access to the inspection engineer of Owner at the Contractor's or their sub-contractor's premises at any time during contract period to facilitate him to carry out inspection and testing assignments.

- The Contractor/sub-contractor shall provide all instruments, tools, necessary testing and other inspection facilities to inspection engineer of Owner free of cost for carrying out inspection.

- Where facilities for testing donot exist in the Contractor's / sub-contractor's laboratories, samples and test pieces shall be drawn by the Contractor / Sub-Contractor in presence of Inspection Engineer of Owner and duly sealed by the later and sent for testing in Government approved Test House or any other testing laboratories approved by the Inspection Engineer at the Contractor's cost.

- All materials to be supplied by the contractor shall be new. All packed items shall arrive at site in original packing only. Any items found defective or damaged shall be replaced by the contractor at his own expenses. The sources of materials stated in the specifications are those from which materials are generally available. However, materials not conforming to specifications shall be rejected even if they come from the stated source. The contractor should satisfy himself that enough material of acceptable specification is available from the stated or other sources.

- All the materials brought at site shall be stored and stacked in a proper manner. The materials requiring protection from the sun and rain shall be kept inside the temporary structures to be erected at site by the contractor. The contractor shall also follow the manufacturer's instructions for storing and stacking the materials. The storage facilities are to be created by the contractor at his own expense.

- The contractor shall consult the Engineer-in-Charge regarding collection and stacking of basic materials required for the work. They should not stack any materials in any place other than those approved by the Engineer-in-Charge within the plot area. On completion of the work the area used will be restored, properly dressed to satisfaction of the Engineer-in-Charge at no extra cost.

- The contractor shall be responsible for co-coordinating the work with works of other trades sufficiently ahead of time to avoid unnecessary hold ups. Hangers, sleeves, recesses etc. shall be left in time as the work proceeds

- All works shall be adequately protected, to the satisfaction of the Engineer-in-charge, so that same is free from damage throughout the period of construction up to the time of handing over. Special care must be taken to prevent damage and scratching of all fittings and fixtures, Tool marks on exposed fixtures shall not be accepted. Protective paper on fixtures shall be removed with hot water only at the final completion of the work. Before handing over the possession of work, the contractor shall clean all elements of the complete installation, remove plasters, splashier, stickers, rust stains and other foreign matter and leave every part in acceptable condition and ready for use to the satisfaction of the Engineer-in-Charge/ Architect.

9.0 Final inspection

After completion of all tests as per specification the whole work will be subject to a final inspection to ensure that job has been completed as per requirement. If any defects noticed in the work attributable to Contractor, the Contractor at his own cost shall attend these, as and when the owner brings them to his notice. The Owner shall have the right to have these defects rectified at the risk and cost of the contractor, if he fails to attend to these defects immediately.

CARRIAGE OF MATERIALS

General

The carriage and stacking of materials, tools and plant shall be done by the contractor on space shown by him on shop drawing duly get it approved from the Engineer-in-Charge. Any tools and plants required for the work shall be arranged by the Contractor. All loading unloading, shifting of items at locations to be installed / execution shall be done by contractor to his entire cost.

Responsibility for loss or damage

In general, all procurement of material and items to be done by contractor. Loading, carriage, unloading and stacking shall be done carefully to avoid loss or damage to the materials. The contractor is fully responsible for any loss / or damage.

General consideration for stacking and storage

Material shall be stored in such a manner as to prevent deterioration or intrusion of foreign matter and to ensure the preservation of their quality and fitness for the work.

Protection against atmospheric conditions / changes

Materials stored at site, depending upon the individual characteristics, shall be protected from atmospheric Conditions / changes / actions, such as rain, sun, winds and moisture to avoid deterioration.

Protection against fire and other hazards

Materials like timber, coal, paints, etc. shall be stored in such a way that there may not be any possibility of fire hazards. Inflammable materials like kerosene and petrol, shall be stored in accordance with the relevant rules and regulations so as to ensure the desired safety during storage. Stacks shall not be piled so high as to make them unstable under fire fighting conditions and in general they shall not be more than 4.5 m in height. The provisions given in IS 13416 (part 5) shall be followed.

CIVIL WORKS

1. Protections

- Excavation where directed by the Engineer-in- Charge shall be securely barricaded and provided with proper caution signs, conspicuously displayed during the day and properly illuminated with red lights and/or written using fluorescent reflective paint as directed by engineer in charge during the night to avoid accident.

- The Contractor shall take adequate protective measures to see that the excavation operations do not damage the adjoining structures or dislocate the services. Water supply pipes, sluice valve chambers, sewerage pipes, manholes, drainage pipes and chambers, communication cables, power supply cables etc. met within the course of excavation shall be properly supported and adequately protected, so that these services remain functional. However, if any service is damaged during excavation shall be restored in reasonable time.

- Excavation shall not be carried out below the foundation level of the adjacent buildings until underpinning, shoring etc. is done as per the directions of the Engineer-in-Charge for which payment shall be made separately.

- Any damages done by the contractor to any existing work shall be made good by him at his own cost. Existing drains pipes, culverts, over-head wires, water supply lines and similar services encountered during the course of execution shall be protected against damage by the contractor. The contractor shall not store material or otherwise occupy any part of the site in manner likely to hinder the operations of such services.

2. Site Clearance

- Before the earth work is started, the area coming under cutting and filling shall be cleared of shrubs, rank vegetation, grass, brushwood, trees and saplings of girth up to 30cm measured at a height of one metre above ground level and rubbish removed up to the dumping yard or as per directed by the EIC. The roots of trees and saplings shall be removed to a depth of 60 cm below ground level or 30 cm below formation level or 15 cm below sub grade level, whichever is lower, and the holes or hollows filled up with the earth, rammed and levelled.

- The trees of girth above 30 cm measured at a height of one metre above ground shall be cut only after permission of the Engineer-in-Charge is obtained in writing. The roots of trees shall also be removed.

- Existing structures and services such as pile old structure, culverts, fencing, water supply pipe lines, sewers, power cables, communication cables, drainage pipes etc. within or adjacent to the area if required to be diverted/removed, shall be diverted/dismantled as per directions of the Engineer-in-Charge.

- Disposal of Earth shall be disposed off at the specified location or as decided by the Engineer-in-Charge. The contractor has to take written permission about place of disposal of earth before the earth is disposed off, from Engineer-in-Charge.

3. Setting out and making profiles

- A masonry pillar to serve as a benchmark will be erected at a suitable point in the area, which is visible from the largest area. This benchmark shall be constructed as per Fig. 2.1 and connected with the standard benchmark as approved by the Engineer-in-Charge. Necessary profiles with strings stretched on pegs, bamboos or 'Burjis' shall be made to indicate the correct formation levels before the work is started. The contractor shall supply labour and material for constructing benchmark, setting out and making profiles and connecting benchmark with the standard benchmark at his own cost. The pegs, bamboos or 'Burjis' and the benchmark shall be maintained by the contractor at his own cost during the excavation to check the profiles.

- The ground levels shall be taken at 5 to 15 meters intervals (as directed by the Engineer-in-Charge) in uniformly sloping ground and at closer intervals where local mounds, pits or undulations are met with. The ground levels shall be recorded in field books and plotted on plans. The plans shall be drawn to a scale of 5 meters to one cm or any other suitable scale decided by the Engineer -in-Charge. North direction line and position of benchmark shall invariable be shown on the plans. These plans shall be signed by the contractor and the Engineer-in-Charge or their authorized representatives before the earth work is started. The labour required for taking levels shall be supplied by the contractor at his own cost.

REPAIRS TO BUILDINGS

14.1 REPAIRS TO PLASTER

14.1.0 The work includes cutting the patch and preparing the wall surface. Patches of 2.50 square metres and less in area shall be measured under item of 'Repairs to Plaster' under this sub-head. Plastering in patches over 2.5 square metres in area shall be paid for at the rate as applicable to new work under sub head 'Finishing'.

14.1.1 Scaffolding

Scaffolding as required for the proper execution of the work shall be erected. If work can be done safely with the ladder or jhoola these will be permitted in place of scaffolding.

14.1.2 Cutting

The mortar of the patch, where the existing plaster has cracked, crumbled or sounds hollow when gently tapped on the surface, shall be removed. The patch shall be cut out to a square or rectangular shape at position marked on the wall as directed by the Engineer-in-Charge or his authorized representative. The edges shall be slightly under cut to provide a neat joint**.**

14.1.3 Preparation of Surface

The masonry joints which become exposed after removal of old plaster shall be raked out to a minimum depth of 10 mm in the case of brick work and 20 mm in the case of stone work. The raking shall be carried out uniformly with a raking tool and not with a basuli, and loose mortar dusted off. The surface shall then be thoroughly washed with water, and kept wet till plastering is commenced. In case of concrete surfaces, the same shall be thoroughly scrubbed with wire brushes after the plaster had been cut out and pock marked as described in 13.1.2. The surface shall be washed and cleaned and kept wet till plastering is commenced.

14.1.4 Application of Plaster

Mortar of specified mix with the specified sand shall be used. The method of application shall be as described for single coat plaster work of the specified mix and under Chapter 13. The surface shall be finished even and flush and matching with the old surrounding plaster. All rounding necessary at junctions of walls, ceilings etc. shall be carried out in a tidy manner as specified in sub-head 13.0. All

dismantled mortar & rubbish etc. shall be disposed off within 24 hours from its dismantling promptly as directed by the Engineer-in-Charge.

14.1.5 Protective Measure

Doors, windows, floors, articles of furniture etc. and such other parts of the building shall be protected from being splashed upon. Splashing and droppings, if any, shall be removed by the contractor at his own cost and the surface cleaned. Damages, if any, to furniture or fittings and fixtures shall be recoverable from the contractor.

14.1.6 Curing

Curing shall be done as per plaster work with special reference to the particular type of plaster mix as described under sub-head 'finishing'.

14.1.7 Finishing

After the plaster is thoroughly cured and dried the surface shall be white washed or colour washed to suit the existing finishing as required unless specified.

14.1.8 Measurements

Length and breadth shall be measured correct to a cm. The area shall be calculated in square metre correct to two places of decimal. Patches below 0.05 square metre in area shall not be measured for payment.

Pre- measurements of the patches to be plastered shall be recorded after the old plaster has been cut and wall surface prepared.

14.1.9 Rate

The rate includes the cost of all the materials and labour involved in all the operations described above including lead as described in the item for disposal of old dismantled plaster /material.

14.10

CLEANING & SURFACE PREPARATION

Cleaning & preparation of the surface by mechanical means using powdered sand or high-pressure water jet and wire brushing to expose firm, sound substrate inclusive of necessary staging and scaffolding as directed by Shyam lal college.

14.11

CHIPPING & REMOVAL

Chipping and removal of damaged deteriorated, unbounded, spalled and unserviceable plaster and concrete and exposing the firm sound surface, including necessary stagging and scaffolding.

14.49 WATER PROOFING TREATMENT WITH APP (ATACTIC POLYPROPYLENE POLYMERIC) MEMBRANE

Water proofing treatment of roofs with APP modified polymeric membrane shall be either five course, seven course as specified in the item. In selecting the combinations of layers of APP membrane, consideration shall be given to the type and construction of buildings, climate and atmospheric conditions and the degree of permanence required. Five course treatment is a normal treatment suitable to moderate rainfall conditions (less than 50 cm.) and seven course treatment is suitable for heavy rainfall (50 cm and above). Seven course treatment with APP modified polymeric membrane 2.00 mm thick and weight 3.00 kg./sqm. to suitable for very heavy conditions of rainfall (more than 150 cm.).

14.49.1 Materials

14.49.1.1 The bitumen primer shall conform to the requirements laid down in IS 3384.

14.49.1.2 APP Modified Membrane: It is a polymeric water proofing membrane manufactured to high standards. It is five layered APP modified polymeric membrane with centre core as 20 micron HMHDPE/ 100 micron HMHDPE High Molecular High Density Polythylene Film, is the heart of the membrane and protects against water and moisture. The centre core is sandwiched on both sides by high quality polymeric mix with properties of high softening point, high heat resistance and cold resistively to make it ideal for all water proofing treatment. The polymeric mix is protected on both sides with 20 micron HMHDPE film. The membrane is available in variable thickness and weights. Usual width is 1.0 m.

Important physical and chemical parameter of the membrane shall be as given in Table 14.5 for guidance.

Centre Core	Film	Thickness	Weight
20 micron HMHPDE	20 micron HMHPDE	1.5 mm	2.25 kg/ sqm.
100 micron HMHPDE	20 micron HMHPDE	2.00 mm	3.00 kg./ sqm.

Where proprietary brands Atactic Polyproplene modified polymeric membrane is proposed to be used by the contractor, they shall conform in all respect to the specification in the preceding paras and manufactured by a company of repute.

14.49.1.3 Bonding Material: This shall consist of blown type bitumen conforming to IS 702 or residual bitumen 85/25 conforming to IS 73 heated to the correct working temperature of 180°C. The penetration of the bitumen shall not be more than 40 when tested in accordance with IS 1203, unless otherwise specified each coat of bonding material shall be of blown type bitumen of grade 85/25 heated to a working temperature of 180 degree C and applied @ 1.20 kg. per square metre of the surface area.

14.49.1.4 Surface Finish: Surface finish shall be with brick tiles of class designation 100 grouted with cement mortar 1:3 (1 cement : 3 fine sand) with 2% integral water proofing compound by weight of cement over a 12 mm thick layer of cement mortar 1:3 (1 cement: 3 fine sand) and finished neat, as shown in Fig. 14.7. Surface finish shall be measured and paid for separately.

14.49.1.5 Preparation of Surface: The surface to be treated shall have a minimum slope of 1 to 120. This grading shall be carried out with cement concrete or cement plaster with coarse sand, as desired, to the average thickness required and finished smooth. Such grading shall be paid for separately.

14.49.1.6 Treatment: The water treatment shall be of five or seven course as specified. In seven course treatment, the first four courses shall be the same as for five course treatment. The fifth course shall be a layer of APP modified polymeric membrane. The sixth course shall be a coat of bonding material and the top most seventh course shall be of specified surface finish.

14.49.1.7 Laying

(a) First course shall be a coat of bitumen primer @ 0.40 kg per sqmt followed by subsequent course as per treatment required.

(b) Drain outlets shall be given a four or six course treatment as specified for the roof in the description of the item in the manner specified for the flat roof surface. Water proofing treatment shall be carried into the drain pipe or outlets by at least 10 cm. The water proofing treatment laid on the roof surface shall overlap the upper edge of the water proofing treatment in the drain outlets by at least 10 cm.

(c) The APP modified polymeric membrane shall be cut to the required length, brushed clean of dusting material and laid out flat on the roof to eliminate curls and subsequent stretching. The membrane shall normally be laid in length in the direction of the slope and laying shall be commenced at the lowest level and worked up to crest. The membrane shall not be laid in single piece of very long lengths as they are likely to shrink; 6 to 8 m are suitable lengths.

The roof surface shall be cleaned and dry before starting the membrane treatment. Each length of membrane shall be laid in position and rolled up for a distance of half its length. The hot bonding material shall be poured on the roof across the full width of the rolled membrane as the latter is steadily rolled out and pressed down. The pouring shall be so regulated that the correct weight of bonding material per unit area is spread uniformly over the surface. Excess bonding material that gets squeezed out at the ends shall be levelled up as laying proceeds. When the first half of the strip of felt has been bonded to the roof, the other half shall be rolled up and then unrolled on the hot bonding material in the same way. Subsequent strips shall also be laid in the same manner. Each strip shall overlap the preceding one by at least 7.5 cm. at the longitudinal edges and 10 cm. at the ends. All overlaps shall be firmly bonded with a blow lamp and levelling down unevenness. The fourth layer of bonding material in the five course treatment shall be carried out in a similar manner after the flashing has been completed.

(d) In a seven course treatment the fifth layers of membrane shall be laid in the manner already described, taking care that laps in the membrane are staggered from those in the earlier layer. The sixth layer of bonding material shall be carried out after the flashing is done.

(e) High Parapet Walls, Chimney Stacks etc.: Membrane shall be laid as flashing wherever junctions of vertical and horizontal surfaces occur. Longitudinal laps shall be 10 cm. The lower layer of flashing membrane in a six course treatment shall overlap the roof water proofing by not less than 20 cm. while the upper layer shall overlap the roofing felt by 10 cm. The minimum overlap of the flashing membrane in five course treatment

over the roofing membrane shall be 10 cm. The flashing shall consist of the same five or seven course treatment as for the roof except that the final course shall be replaced by an application of 12 mm thick cement plaster 1:3 on the vertical and sloping faces only, of the flashing as shown in Fig 14.8. The overlap along the length of flashing shall stagger with those in the second layer of flashing membrane (in a seven course treatment and with the joints in the roof membrane). The upper edge of the finishing membrane shall be well tucked into the flashing grooves in the parapet, chimney stacks etc. to a depth of not less than 6.5 cm. Corresponding applications of bonding material shall also be made. The flashing treatment shall be firmly held in place in the grooves with wood edges at intervals and the grooves shall be filled up with cement mortar 1:4 (1 cement: 4 coarse sand) or cement concrete 1:2:4 (1 cement: 2 coarse sand : 4 graded stone aggregate 6 mm nominal size) and surface finished smooth with the rest of the wall. The cement work shall be cured for 7 days. When dry, the exposed plaster joints of grooves shall be painted with bitumen and two coats of bituminous solution shall be applied on the vertical and sloping surface of flashing (see Fig. 14.7). After the top flashing membrane layer has been fixed, the penultimate layer of bonding material shall be applied over the roofing membrane and the horizontal overlaps and vertical and sloping surfaces of the flashing at the specified rate.

(f) Low Parapet Walls: Where parapet walls are of height 45 cm. or less, membrane flashings shall be provided in the same manner as for flashings in the case of high parapet walls except that the upper edge shall be carried upto the full height of the wall and taken right across the top of the parapet and down on the external vertical faces to a minimum distance of 5 cm. (see Fig 14.8).

(g) Low Dividing Walls: Where low dividing walls or inverted beams are met with, the same shall be covered with a four or six layer treatment as for the main roof, the latter bearing carried down both sides of the wall and overlapping the roofing treatment as in the case of flashing of high parapet walls (see Fig. 14.10).

Drain outlets where formed in the low dividing walls, shall be given water proofing treatment of the same number of courses as specified for the flat roof surface. The bottom and sides shall be so treated that all overlaps are in the direction of flow of drainage.

(h) Expansion Joints: Where the expansion joints are provided in the slabs, the joints and their cover slabs shall be suitably treated with water proofing. A typical sketch of an expansion joint with the RCC slabs on either side of the joint turned vertically up and dwarf walls by not less than 7.5 cm. and are provided with throatings on their underside along their length. The water proofing treatment shall be taken up the sloping junction fillets and the vertical faces of the walls to the underside of the cover slabs. The cover slabs are given the water proofing treatment like the roofs slabs, after the cross joints between adjacent cover slabs are first

sealed with 15 cm width of roofing felt struck to them with bitumen. The water proofing treatment shall be carried down the sides of the cover slabs to their full thickness. Care shall be taken to see that overlaps if any in the roofing over the cover slabs stagger with the joints between cover slabs.

The formation of the expansion joints and provision of the cover slabs shall be the responsibility of the construction agency. The formation of the junction fillets and the water proofing treatment of the joint and cover slabs shall be carried out by the water proofing agency. Nothing agency extra shall be paid for the sealing of the cross joints in the cover slab with 15 cm. width of bitumen strips.

(i) Pipes: Where vertical pipe outlets are met with, 7.5 x 7.5 cm fillets of lime or cement concrete of the type and section shown in Fig. 14.10 shall be provided and flashing of four or six course treatment, same as for the roofing treatment shall be laid.

The upper edge of the flashing shall be laid sloping down forward and butted against the pipe and annular depression so formed shall be filled with hot bitumen. A circular metal collar in the shape of an inverted truncated cone shall be fixed on the pipe to throw off the rain water clear of the flashing and this shall be paid for separately.

14.49.1.8

Measurement: Length and breadth shall be measured correct to a cm. The area shall be calculated in square metres correct to two places of decimal. Measurements shall be taken over the entire exposed area of roofing and flashing treatment including flashing over low parapet walls, low dividing walls and expansion joints and at pipe projections etc. Overlaps and tucking into flashing grooves shall not be measured. Vertical and sloping surfaces of water proofing treatment shall also be measured under the five or seven course treatment as the case may be, irrespective of the fact that the final course is replaced by bitumen primer. No deduction in measurements shall be made for either openings or recesses for chimney stacks, roof lights and the like, for areas upto 0.4 sqm nor anything shall be paid for forming such openings. For areas exceeding 0.40 sqm deduction will be made in measurements for full opening and nothing extra shall be paid for forming such openings.

26.24 CHIPPING OF UNSOUND / WEAK CONCRETE:

26.24.1 Precaution, Preparation and procedure

The Chipping of unsound work / concrete / delaminated layer of gunniting etc. shall be done by chipping (after properly supporting the member with false works) , in regular shape, with sides parallel or normal to the direction of the reinforcement. The chipping shall be done minimum 50 mm beyond the perimeter of the spell. For a single spell, the repair area should have a minimum width of 100 mm in any direction. If a number of spells are closely located to each other, these should be included in a single area marked for repair. The cut shall be made normal to the surface of member .The minimum depth of cut should be 12 mm.

Adequate care is to be taken not to cut the reinforcement steel and a cover metre could be used to estimate the depth of cover, for which nothing extra shall be paid.

Chipping should be done upto the required depth as decided by the Engineer-in- Charge to produce sound concrete surface to a near uniform depth for the repair areas.

Removal of concrete should begin at the interior of the repair areas and progress towards the boundaries. All edges and cavities shall be square shouldered.

26.24.2 Measurements

Dimensions of area chipped off for RCC slabs, beams, columns etc. shall be measured in centimetres after the chipping / dismantling operation is completed for different thicknesses as specified in the item separately. The area of the chipped / exposed RCC surface shall be measured in sq. m correct to second place of decimal for different thicknesses as specified in the item separately.

26.24.3 Rate:- The rate shall include the cost of all the T&P required, labour involved and cost of all the operations as described above.

26.25 CLEANING OF EXISTING REINFORCEMENT AND PASSIVATING ITS SURFACE

26.25.1 Material:-

The alkaline chemical rust remover as approved by the Engineer-in Charge and should be procured in sealed containers indicating the batch number and the date of manufacture etc.

26.25.2 Surface preparation-

The rust has to be removed from the surface of the reinforcement manually using chisels, wire brush, emery paper etc. as directed by Engineer-in-Charge at no extra cost, till the steel surface is cleared of all rust that could be removed manually or mechanically.

26.25.3 Application:-

Then alkaline chemical rust remover, as approved by the Engineer-in Charge shall be applied with brush over the reinforcement surface thoroughly along the full length of rusted reinforcement. After 24 hours of its application the surface shall be cleaned with wire brush and all loose particles removed. It should then be washed clean, with water, thoroughly and allowed to dry. alkaline chemical rust remover should be applied to the reinforcement approximately one litter for 6 to 7 sqm. Of the steel area (assuming the surface of the reinforcement of rough) the consumption of the alkaline chemical rust remover should be about 0.40 liters per 10 Sqm. Area of RCC unit.

26.25.4 Measurements: - The length of the reinforcement bar cleaned shall be measured correct to a centimeter in two categories i.e. i) Bars upto 12mm dia. ii) Bars above 12mm dia.

26.25.5 Rates :- shall include cost of all materials, labour, T&P etc. involved in all the operations as described above.

26.26 DRILLING SUITABLE HOLES IN RCC OR PLAIN CEMENT CONCRETE

26.26.1 Preparation and Procedure

For introducing additional reinforcement bars for new structural connections or supplementing additional steel area to the existing RCC member, the cross sectional area (diameter and no. of bars) and length required shall be approved by the Engineer-in-Charge. Also the depth of embedment of reinforcement bar shall be approved by the Engineer-in-Charge. The holes have to be power drilled in RCC. The drilled hole in dry state has to be cleaned with round brush and by blowing air through a tube inserted in the hole and connected to hand operated blower.

Then epoxy is to be injected from foil pack with help of epoxy dispenser and epoxy cartridge holder and disposable PVC mixing nozzle inserted inside the drilled hole to fill it from bottom of hole and upwards. Then the reinforcement bar is to be inserted and allowed to remain undisturbed for minimum 24 hours and allow epoxy adhesive to be air cured. Epoxy resin anchor grout shall be approved by the Engineer-in Charge.

26.26.2 Measurements:- Holes shall be enumerated.

26.26.3 Rates :- Shall include cost of all inputs of material, labour and T&P etc. involved in all the operations except the cost of reinforcement.

26.27 BONDING COAT

26.27.1 Material:- SBR polymer modified cementitious bond coat and epoxy bonding adhesive shall be approved by the Engineer-in Charge.

26.27.2 Surface Preparation:-

Bonding coat is required to be applied for adhesion of applied repair concrete or mortar to the parent concrete. For this, the surface should be thoroughly cleaned by brushes and by blowing air from hand operated pump. The surface shall then be saturated with water (but without excess water).

26.27.3 Application:-

The components of bonding coat shall be weigh batched and mixed in specific proportions, in a clean container, as directed by the Engineer-in-Charge. They should then be blended to a uniform and homogeneous mixture, lump free and of creamy consistency.

The specified bond coat should be applied by stiff nylon bristle brush. The bonding material should be worked well onto the concrete surface of the parent concrete including reinforcement surface ensuring that no pinholes are visible. The SBR polymer modified bonding cement slurry shall be applied to a thickness not more than 2 mm. A second coat shall be applied within 15 to 20 minutes of application of the first coat at right angles to the first coat to ensure complete coverage and absence of pin holes.

26.27.4 Measurements : Area of exposed RCC unit shall be measured in sqm correct to two decimal places for the purpose of payment.

26.27.5 Rates :- Shall include cost of all inputs of material, labour and T&P etc. involved in all the operations as described above.

26.28 PROVIDING, MIXING AND APPLYING SBR POLYMER MODIFIED CEMENT MORTAR

26.28.1 Procedure and application

Fresh mortar shall be applied while the bond coat is still tacky and well within setting period. If adhesive cured to the extent of loosing its tack or has set before mortar is applied. The same shall be removed or slightly abraded and another coat of bond coat shall to be applied by the contractor at his own cost. Freshly

placed mortar shall be thoroughly consolidated to ensure full bonding of the fresh mortar with the parent concrete. If there is a failure of bond of fresh mortar/ plaster with parent concrete surface and it sounds hollow on tapping, the repair work shall be dismantled and redone by the contractor at his own cost and to the entire satisfaction of the Engineer-in-Charge**.**

26.28.2 Testing : 75mm size cube of the mortar, crushing strength at the end of 28 days to be not less than 30 N/Sqmm2**.**

26.28.3 Measurement

Length and breadth of the application shall be measured correct to a cm and area worked out to in sqm upto 2 decimal places, separately for different thicknesses specified in the item.

26.28.4 Rates

Rates shall include all the materials, labour, T&P in all the operations as described above.

26.29 APPLYING SBR POLYMER MODIFIED CEMENT CONCRETE FOR STRUCTURAL MEMBERS

26.29.1 Material: SBR polymer or equivalent material shall be approved by Engineer-in-charge.

26.29.2 Preparation & application

After bonding coat pre fabricated shuttering shall then be erected immediately. Fresh concrete shall be placed /applied while the bond coat is still tacky and well within pot - life / setting period. If adhesive cures to the extent of loosing its tack or has set before concrete is placed / applied, the same shall be removed or slightly abraded and another coat of adhesive / bond coat shall have to be applied by the contractor at his own cost. Freshly placed concrete shall be thoroughly consolidated to ensure full bonding of the fresh concrete with the parent concrete. If there is a failure of bond of fresh concrete with parent concrete surface and it sounds hollow on tapping, the repair work shall be dismantled and redone by the contractor at his own cost and to the entire satisfaction of the Engineer-in-Charge. Thickness and grade of concrete: As specified in the item with graded stone aggregate of 10 mm maximum size in proportion as per design criteria.

26.29.3 Testing: As per design mix criteria.

26.29.4 Measurement: Length and breadth of the application shall be measured correct to a cm and area worked out to in sqm upto 2 decimal places, separately for different thicknesses specified in the item.

26.29.5 Rates

Rates shall include all the materials, labour, T&P and full curing period in all the operations as described above.

26.30 PROVIDING AND INJECTING GROUT

26.30.1 MATERIAl : The materials for injection grouting shall be approved by the Engineer-incharge.

26.30.2 Surface preparation

The final chipped off concrete surface and exposed reinforcement, if any, of the affected structural member should be cleaned off all loose and foreign materials by free air blast and then with water and allow it to dry. For the honey combed portion of the concrete or cracked concrete, drill holes at least 18 mm in diameter and depth upto 50 mm or half the member thickness whichever is less, at the required spacing, as directed by the Engineer-in-Charge. For cracked surface, open up cracks by making V notch or groove of size 12 mm X 12 mm as directed by the Engineer-in-Charge. Remove coarse debris and dust in opened up cracks and drilled holes by blowing air with hand operated blow out pump. Concrete surface required to be grouted shall be free from all loose and unsound material.

The prepared surface should be clear of dust which could obstruct free flow of grout material and also impede its bonding with concrete surface. Saturate the concrete in vicinity of crack / honey combed concrete surface with water (but without excess water) only if the cement / polymer admixed grout is to be injected.

26.30.3 Application:

The emulsified acrylic polymer/SBR polymer shall be as specified and shall conform to Manufacturer's specification. The physical and mechanical properties of polymers shall conform to manufacturer's specification. One test shall be carried out mandatory for every lot of acrylic polymer/SBR polymer supplied at site, before use in the work. The grouting equipment shall be capable of supplying mixing, stirring and pumping grout to the satisfaction of Engineer-incharge. It shall have capacity to inject grout at a pressure upto 7 kg / sq. cm measured at grout connections. It shall be capable of mixing and pumping the cement sand grout 1:2(1 cement : 2 sand) with water cement ratio ranging from 0.5 to 1.0. Wherever epoxy is to be used, the surface of the concrete shall be dried with air blast, before grouting or applying epoxy. The cement grout in proportion as directed by the Engineer in-Charge shall be prepared. It should be lump free of creamy consistency, thoroughly blended and shall be continuously stirred to keep the cement particles in suspension to retain uniform consistency till grout is injected. In case of vertical cracks the injection shall be started at the lowest nipple and continued until the injected grout begins to flow out at the next higher nipple. The first nipple shall then be closed and injection continued from second until grout flows out at the third and so on.

The process shall be repeated until the whole surface is treated. As soon as the system is cured, the nipples shall be suitably cut. In case of honey combed concrete, each grout hole shall be grouted individually. The sequence of injection shall be as per the directions of the Engineer-in-Charge.

26.30.4 Measurement:

The measurement of grout material shall be on the basis of actual weight of approved grout injected. Pre measurements of the quantities of such grouting materials brought at site and balance quantities remaining at the end of grouting application shall be recorded separately, which will determine the quantity of grout material actually injected. Adequate care is to be taken by the contractor as not to waste the grout. The quantity which can be consumed immediately within the prescribed time only shall be prepared in batches. The quantity of grout material wasted, discarded, hardened shall not qualify for payment and shall be recorded for deduction at the end of each operation.

26.30.5 Rates: The rate shall include all the operation, labour, materials described above except injection nipple which will be paid in the relevant item.

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Principal, Shyam Lal College G.T. Road Shahdara Delhi - 110032

Name of Work: Repair & Renovation of College Building and Structural Repairs at Various Locations within the Shyam Lal College Campus, Delhi -110032

Contract No: SLC/E-Proc/2025/

Name of the Bidder/ Bidding Firm / Company :	

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	NUMBER #	TEXT #	NUMBER	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	Estimated Rate in Rs. P	BASIC RATE In Figures To be entered by the Bidder in Rs. P	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT In Words
1	2	4	5	6	13	53	55
1	**Repair & Renovation of College Building and Structural Repairs at Various Locations within the Shyam Lal College Campus, Delhi -110032**						
1.01	Surface dressing of the ground including removing vegetation and in-equalities not exceeding 15 cm deep and disposal of rubbish , lead upto 50 meter and lift upto 1.5 meter	71.400	Sqmt	0.00		**#VALUE!**	#VALUE!
1.02	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement : 3 coarse sand (zone - III) : 6 graded stone aggregate 20 mm nominal size) over 75mm thick bed of dry brick ballast 40 mm nominal size, well rammed and consolidated and grouted with fine sand, including necessary excavation, levelling & dressing & finishing the top smooth.	71.400	Sqmt	0.00		**#VALUE!**	#VALUE!
1.03	Providing and laying 60mm thick faciory made cement concrete interlocking paver block of M -30 grade made by block making machine with strong vibratory compaction, of approved s;ze, design & shape, laid in required colour and pattern over and including 50mm thick compacted bed of coarse sand, filling the joints with line sand etc. all complete as per the direction of Engineer-in-charge.	71.400	Sqmt	0.00		**#VALUE!**	#VALUE!
1.04	Repairs to plaster of thickness 12 mm to 20 mm in patches of area 2.5 sq.meters and under, including cutting the patch in proper shape, raking out joints and preparing and plastering the surface of the walls complete, including disposal of rubbish to the dumping ground, all complete as per direction of Engineer-in-Charge. With cement mortar 1:4 (1cement: 4 coarse sand)	608.320	Sqmt	0.00		**#VALUE!**	#VALUE!
1.05	Excavating, supplying, stacking and filling of local earth (including royalty) by mechanical transport upto a lead of 5km also including ramming and watering of the earth in layers not exceeding 20 cm in foundation trenches, plinth, sides of foundation etc. complete for all lift	24.000	Cum	0.00		**#VALUE!**	#VALUE!

2	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	608.320	Sqmt	0.00		**#VALUE!**	#VALUE!
3	Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour. Two or more coats on new work	304.160	Sqmt	0.00		**#VALUE!**	#VALUE!
4	For Exterior wall - Finishing walls with 100% Premium acrylic emulsion paint having VOC less than 50 gm/litre and UV resistance as per IS 15489:2004, Alkali & fungal resistance, dirt resistance exterior paint of required shade (Company Depot Tinted) with silicon additives. New work (Two or more coats applied @ 1.43 litre/ 10 sqm. Over and including priming coat of exterior primer applied @ 0.90 litre/10 sqm.	304.160	Sqmt	0.00		**#VALUE!**	#VALUE!
5	Centering & shuttering including strutting, propping etc. and removal of form work for: Suspended floors, roofs, landings, balconies and access platform.	100.000	Sqmt	0.00		**#VALUE!**	#VALUE!
6	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1 m x1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.	20.000	Each	0.00		**#VALUE!**	#VALUE!
7	Providing and laying six courses water proofing treatment with bitumen felt over roofs consisting of first, third and fifth courses of blown or / and residual bitumen applied hot at 1.45, 1.20 and 1.70 kg per square metre of area respectively, second and fourth courses of roofing felt type 2 grade II (glass fibre base self finished bitumen felt) and sixth and final course of stone grit 6 mm and down size or pea sized gravel spread at 6 cubic decimeter per sqm including preparation of surface but excluding grading, complete.	138.000	Sqmt	0.00		**#VALUE!**	#VALUE!
8.01	Grading roof for water proofing with Cement concrete 1:2:4 (1 cement :2 coarse sand : 4 graded stone aggregate of nominal size upto 20 mm)	5.000	Cum	0.000		**#VALUE!**	#VALUE!
8.02	Chipping of unsound/weak concrete material from slabs, beams, columns etc. with manual Chisel and/ or by standard power diven percussion type or of approved make including tapering of all edges, making square shoulders of cavities including cleaning the exposed concrete surface and reinforcement with wire brushes etc. and disposal of debris for all lead and lifts all complete as per direction of Engineer-In-Charge 75 mm average thickness	50.000	Sqmt	0.000		**#VALUE!**	#VALUE!

8.03	Chipping of unsound/weak concrete material from slabs, beams, columns etc. with manual Chisel and/ or by standard power diven percussion type or of approved make including tapering of all edges, making square shoulders of cavities including cleaning the exposed concrete surface and reinforcement with wire brushes etc. and disposal of debris for all lead and lifts all complete as per direction of Engineer-In-Charge 50 mm average thickness	500.000	Sqmt	0.000		**#VALUE!**	#VALUE!
9	Chipping of unsound/weak concrete material from slabs, beams, columns etc. with manual Chisel and/ or by standard power diven percussion type or of approved make including tapering of all edges, making square shoulders of cavities including cleaning the exposed concrete surface and reinforcement with wire brushes etc. and disposal of debris for all lead and lifts all complete as per direction of Engineer-In-Charge 25 mm average thickness	500.000	Sqmt	0.000		**#VALUE!**	#VALUE!
10	Cleaning of reinforcement from rust from the reinforcing bars to give it a total rust free steel surface by using alkaline chemical rust remover of approved make with paint brush and removing loose particles after 24 hours of its application with wire brush and thoroughly washing with water and allowing it to dry, all complete as per direction of Engineer-In-Charge (Bars upto 12 mm diameter)	100.000	Meter	0.000		**#VALUE!**	#VALUE!
11	Cleaning of reinforcement from rust from the reinforcing bars to give it a total rust free steel surface by using alkaline chemical rust remover of approved make with paint brush and removing loose particles after 24 hours of its application with wire brush and thoroughly washing with water and allowing it to dry, all complete as per direction of Engineer-In-Charge (Bars Above 12 mm diameter)	100.000	Meter	0.000		**#VALUE!**	#VALUE!
12	Providing, mixing and applying bonding coat of approved adhesive on chipped portion of RCC as per specifications and direction of Engineer-In-charge complete in all respect.Epoxy bonding adhesive having coverage 2.20 sqm/kg of approved make	150.000	Sqmt	0.000		**#VALUE!**	#VALUE!
13	Providing, mixing and applying SBR polymer (of approved make) modified Cement mortar in proportion of 1:4 (1 cement 4 graded coarse sand with polymer minimum 2% by wt. of cement used) as per specifications and directions of Engineer-in-charge. Note: Measurement and payment: The pre-measurement of thickness shall be done just after the surface preparation is completed and Payment under this item shall be made only after proper wet curing has been done and surface has been satisfactorily evaluated by sounding / tapping with a blunt metal instrument and/or the 75 mm size cube crushing strength at the end of 28 days to be not less than 30 N/Sqmm2). 12 mm average thickness.	350.000	Sqmt	0.000		**#VALUE!**	#VALUE!

14	Providing, mixing and applying SBR polymer (of approved make) modified Cement mortar in proportion of 1:4 (1 cement 4 graded coarse sand with polymer minimum 2% by wt. of cement used) as per specifications and directions of Engineer-in-charge. Note: Measurement and payment: The pre-measurement of thickness shall be done just after the surface preparation is completed and Payment under this item shall be made only after proper wet curing has been done and surface has been satisfactorily evaluated by sounding / tapping with a blunt metal instrument and/or the 75 mm size cube crushing strength at the end of 28 days to be not less than 30 N/Sqmm2). 25 mm average thickness in 2 layers.	250.000	Each	0.000		**#VALUE!**	#VALUE!
15	Providing and injecting approved grout in proportion recommended by the manufacturer into cracks/honey-comb area of concrete/masonry by suitable gun/pump at required pressure including cutting of nipples after curing etc. complete as per directions of Engineer-in-Charge. (The payment shall be made on the basis of actual weight approved grout injected.) Epoxy injection grout in concrete/RCC work of approved make	500.000	Kg	0.000		**#VALUE!**	#VALUE!
16	Providing & fixing on wall face unplasticised -Ragid PVC rain water pipes conforming to IS ; 13592 Tyape A included jointing with seal ring conforning to IS ; 5382 leaving 10 mm gap for thermal expansion. a)110 mm diameter	150.000	Meter	0.000		**#VALUE!**	#VALUE!
17	Providing, fixing on wall face unplasticised - PVC moulded fittings /accessories for unplasticised - Rigid PVC rain water pipes conforming to IS ; 13592 Type A including jointing with seal ring conforming to IS ; 5382 leaving 10 mm gap for thermal expansion. Coupler-110mm diameter	100.000	Each	0.000		**#VALUE!**	#VALUE!
18	Providing, fixing on wall face unplasticised - PVC moulded fittings /accessories for unplasticised - Rigid PVC rain water pipes conforming to IS ; 13592 Type A including jointing with seal ring conforming to IS ; 5382 leaving 10 mm gap for thermal expansion - Bend-87.5deg-110mm diameter	100.000	Each	0.000		**#VALUE!**	#VALUE!
19	Providing, fixing on wall face unplasticised - PVC moulded fittings /accessories for unplasticised - Rigid PVC rain water pipes conforming to IS ; 13592 Type A including jointing with seal ring conforming to IS ; 5382 leaving 10 mm gap for thermal expansion., Shoe-110mm shoe	50.000	Each	0.000		**#VALUE!**	#VALUE!
20	Providing & fixing unplasticised - PVC pipe clips of approved design to unplasticised - PVC rain water pipes by means of 50x50x50mm hard wood plugs, screwed with .M.S. screws of required length including cutting brick work and fixing in cement mortar 1:4(1cement : 4 coarse sand) and making good the wall etc. complete. 110mm dia	150.000	Each	0.000		**#VALUE!**	#VALUE!
21	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15cm diameter and weighting not less than 440 grams.	100.000	Each	0.000		**#VALUE!**	#VALUE!

22	Providing and Applying ACRYLIC emulsion polymer waterproofing chemical coating, on over roof on over roof slabs/terrace/balconies/parapet wall etc.with following method/ specification: Paint the surface with regular paint brush so as to obtain approximately 0.3mm thickness coating. apply the 2nd coat next day at right angles to the 1st coat so that total thickness of the coating should be approximately 0.6mm coverage by using above formulation will be 40 ft2/ litre of chemical. painted surface does not require any external water curing since chemical will hold sufficient water for curing. After the primer coat Apply 2 coats of modified acrylic emulsion polymer water proofing compound having solar heat reduction properties coating @ 0.330 KG/SQM on the surface of the interval of 3-4 hours. Undulation on the surface is repair before the waterproofing work.	630.590	Sqmt	0.000		**#VALUE!**	#VALUE!
23	Dismantling of existing wooden furniture manually, including careful removal without damage to adjoining surfaces, stacking of serviceable material, and disposal of unserviceable material outside the college premises up to a lead of 10 km, all as directed by the Engineer-in-Charge.	200.000	Sqmt	0.000		**#VALUE!**	#VALUE!
Total in Figures						**#VALUE!**	#VALUE!
Quoted Rate in Words		**#VALUE!**					