



**STATE BANK OF INDIA  
A.O. OFFICE KANPUR**

**TENDER DOCUMENT FOR RETROFITTING & STRUCTURAL  
REPAIR WORKS**

**AT**

**S.M.E. INDUSTRIAL ESTATE BRANCH  
FAIZALGANJ, KANPUR,  
UTTAR PRADESH**

**ISSUED TO:** All prequalified

**CLIENT:**

**STATE BANK OF INDIA**  
REGIONAL BUSINESS OFFICE-1.  
ADMINISTRATIVE OFFICE COMPLEX,  
MALL ROAD KANPUR, UP- 208001.

**ARCHITECT:**

**THE GRID**  
E-326 G.K. II  
NEW DELHI-110001

THE GRID

## INDEX

S. NO.	DESCRIPTION
1.	INDEX OF TENDER DOCUMENT
2.	NOTICE INVITING TENDER
3.	INSTRUCTIONS TO THE TENDERERS
4.	FORM OF TENDER
5.	AGREEMENT
6.	GENERAL CONDITIONS OF CONTRACT
7.	SPECIAL CONDITIONS OF CONTRACT
8.	SEC-A MATERIAL, SEC-B MODE OF MEASUREMENT
9.	SEC-C WORKMANSHIP
10.	SPECIFICATIONS
11.	SAFETY CODE
16.	STANDARD PROFORMAS
17.	LIST OF APPROVED MAKES/ BRANDS
18.	BILL OF QUANTITIES
19.	TENDER DRAWINGS

## Notice Inviting Tender

State Bank of India invites online Tenders in two parts 1. TECHNICAL QUALIFICATION 2. PRICE BID of Technically pre-qualified contractors for work of specialised nature for the **TENDER DOCUMENT FOR RETROFITTING & STRUCTURAL REPAIR WORKS OF OLD BUILDING SME INDUSTRIAL ESTATE BRANCH FAIZALGANJ, KANPUR, UTTAR PRADESH**

Details of tenders are as under:

1.	Name of Work	:	<b>RETROFITTING &amp; STRUCTURAL REPAIR WORKS OF OLD BUILDING SME INDUSTRIAL ESTATE BRANCH FAIZALGANJ, KANPUR, UTTAR PRADESH</b>
2.	Time allowed for completion	:	<b>120 days</b> from date of handing over of the site.
3.	Earnest Money Deposit	:	<b>Rs. 70000/- (Rupees Seventy thousand only)</b> by crossed Bank Draft/ Banker's Cheque/ Demand Draft drawn in favour of State Bank of India, Lucknow <b>(to be enclosed in sealed envelope as a part of Technical Bid)</b> .
4.	Initial Security Deposit	:	2% of the total value of the contract including Earnest Money.
5.	Processing Fee of Tender Documents.	:	<b>NIL</b>
6.	Last date and time of receipt of Tenders	:	<b>03<sup>RD</sup> October 2025 upto 3.00 p.m.</b>
8.	Address at which the Tenders are to be submitted	:	<b>Technical Bid: to be submitted in hard copy at STATE BANK OF INDIA. REGIONAL BUSINESS OFFICE-1, ADMINISTRATIVE OFFICE COMPLEX MALL ROAD KANPUR, UP- 208001.</b> <b>Price Bid: Price Bid to be uploaded online <a href="http://www.tenderwizard.com/SBIETENDER">www.tenderwizard.com/SBIETENDER</a></b>
9.	Date and time of opening of Tenders	:	<b>03<sup>RD</sup> October 2025 at 3.30 p.m.</b>
10.	Place of opening Tenders	:	<b>STATE BANK OF INDIA REGIONAL BUSINESS OFFICE-1, ADMINISTRATIVE OFFICE COMPLEX MALL ROAD KANPUR, UP- 208001.</b>
11.	Defects Liability Period	:	12 months from the date of handing over of the project to the satisfaction of Bank.
12.	Validity of Offer	:	90 days from the date of opening the Tenders.
13.	Liquidated Damages	:	At the rate of 0.5% of the Contract Value per week which subject to a maximum of 5% of the accepted Contract Value.

14	Note		<i>If the vendor is found to have delayed the running/in hand project beyond the prescribed time limit specified in related tender document, the vendor will not be issued the new tender until completion of the previous delayed work.</i>
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**Mode of Submission of Tender:** The tender shall be submitted in both physical and online in two cover system in accordance with the procedure detailed herein below. Specified documents shall be sealed in envelopes of appropriate size each of which shall be sealed.

- 1) First Envelope marked **Cover 1** shall contain Earnest Money Deposit along with TECHNICAL PRE- QUALIFICATION DOCUMENTS (attached in tender) Covering Letter along with Undertaking as in Annexure- I.
- 2) Envelope marked **Cover 2** – Tender documents signed and stamped with price bid
- 3) Envelope marked **Cover 3** –shall be of adequate size and shall contain envelopes marked **Covers 1 & 2** and shall be properly sealed & signed. This envelope shall be endorsed on the outside face as under:

**"RETROFITTING & STRUCTURAL REPAIR WORKS OF OLD BUILDING SME INDUSTRIAL ESTATE BRANCH FAIZALGANJ, KANPUR, UTTAR PRADESH."**

**All envelopes marked Cover 1, 2, 3 containing the tender documents as per instructions mentioned above shall be submitted in the office of REGIONAL MANAGER STATE BANK OF INDIA** REGIONAL BUSINESS OFFICE-1, ADMINISTRATIVE OFFICE COMPLEX MALL ROAD KANPUR, UP - 208001

**ON OR BEFORE 3.00 p.m. on 03<sup>rd</sup> October 2025.**

Envelope marked Cover 1 containing Earnest Money Deposit along with Pre-Qualification documents as attached in tender and certificates and Covering Letter will be opened first and only the Prequalified Contractors Cover-2 containing Tender signed copy along with price bid will be opened , the tender not containing EMD shall be rejected out rightly.

In case the date of opening of tenders is declared as a holiday, the tenders will be opened on the next working day at the same time.

State Bank of India has the right to accept / reject any or all tenders without assigning any reasons.

For E-Tender related queries: **Service provider:** M/s Antares Systems Limited, Registered Office at: - #24, Sudha Complex, 3rd Stage, 4th Block, Bangalore – 560079. Ph: - 080-49352000 / 40482000 Fax: - 080-49352034

**Help Desk:** Contact Person: Mr. Pushpraj /Mr. Tousik Ghosh / Mr. Kushal Bose Mobile no. 7503347659/ 09674758724/ 07686913157(On working days-9 hours-18 hours) E-mail:[pushpraj@antaressystems.com](mailto:pushpraj@antaressystems.com)/ [tousik.g@antaressystems.com](mailto:tousik.g@antaressystems.com) / [kushal.b@antaressystems.com](mailto:kushal.b@antaressystems.com)

For any other queries the vendors may contact **MR. VARUN PANDEY**, Deputy General Manager (Civil) at the office of DGM ( A.O.) , KANPUR . Phone – 9650241122./ MR. MANISH GUPTA, PRINCIPAL ARCHITECT, THE GRID. PHONE- 9810135852

## INSTRUCTIONS TO THE TENDERERS

**NOTE:** INCASE OF ANY DISPUTE ARISING REGARDING THE JOB CONTRACT, INCLUDING THE INTERPRETATION OR THE SCOPE FOR WORKING THEREOF, THE DECISION OF **RM (RBO-1.) KANPUR** SHALL BE FINAL AND BINDING.

### 1.0 Scope of Work

Sealed tenders are invited by STATE BANK OF INDIA, KANPUR for and on behalf of State Bank of India for the **RETROFITTING & STRUCTURAL REPAIR WORKS OF OLD BUILDING SME INDUSTRIAL ESTATE BRANCH, FAIZALGANJ, KANPUR, UTTAR PRADESH**

### 1.1 Site and its Location

The proposed work is to be carried out at **RETROFITTING & STRUCTURAL REPAIR WORKS OF SME INDUSTRIAL ESTATE BRANCH, FAIZALGANJ, KANPUR, UTTAR PRADESH.**

### 2.0 Tender Documents

- 2.1 The work has to be carried out strictly according to the conditions stipulated in the tender consisting of the following documents and the most workmen like manner:

Instructions to Tenderers

General Conditions of Contract

Special Conditions of Contract

Additional Specifications

Drawings

Price Bid

- 2.2 The above documents shall be taken as complementary and mutually explanatory of one another but in case of ambiguities or discrepancies, shall take precedence in the order given below:

- a) Price Bid
- b) Additional Specifications
- c) Technical Specifications
- d) Drawings
- e) Special Conditions of Contract
- f) General Condition of Contract
- g) Instruction to Tenderers

- 2.3 Complete set of tender documents including relative drawings can be downloaded from e-tendering portal of the e-tendering service provider engaged by SBI.

- 2.4 The tender documents are not transferable.

### 3.0 Site Visit

- 3.1 The tenderer must obtain himself on his own responsibility and his own expenses all information and data which may be required for the purpose of filling this tender document and enter into a contract for the satisfactory performance of the work. The tenderer is

requested satisfy himself regarding the availability of water, power, transport and communication facilities, the character quality and quantity of the materials, labour, the law and order situation, climatic conditions, **liaison requirements with local authorities/ authorities maintaining the campus, security agencies guarding the campus, traffic regulations in and around the site etc. The rates quoted shall include working at all heights, cost for provision of nets, barriers and the like as required by authorities, CPWD, NBC and codes to stop any sound, dust and the like from disturbing the precinct. Nothing extra shall be paid in this regard. Tenderer should NOTE that work is to be done in an "OLD BUILDING".**

The tenderer will be fully responsible for considering the financial effect of any or all the factors while submitting his tender.

#### 4.0 **Earnest Money**

- 4.1 The tenderers are requested to submit the Earnest Money of **Rs. 70,000.00/-(Rupees Seventy Thousand only)** in the form of Demand Draft or Bankers' Cheque in favour of State Bank of India payable at Lucknow drawn on any Scheduled Bank in India.
- 4.2 EMD in any other form other than as specified above will not be accepted. Tender not accompanied by the EMD in accordance with clause 4.1 above shall be rejected.
- 4.3 No interest will be paid on the EMD.
- 4.4 EMD of unsuccessful tenderers will be refunded/ returned within 30 days of award of Contract.
- 4.5 EMD of successful tenderer will be retained as a part of security deposit.

#### 5.0 **Initial Security Deposit**

The successful tenderer will have to submit a sum equivalent to 2% of contract value less EMD, by means of Demand Draft drawn in favour of State Bank of India payable at Lucknow within a period of 7 days of acceptance of tender.

#### 6.0 **Security Deposit**

- 6.1 Total security deposit shall be 5% of contract value. Out of this 2% of contract value is in the form of initial security deposit, which includes the EMD. Balance 3% shall be deducted from the running account bill of the work at the rate of 10% of the respective running account bills i.e., deduction from each running bill account will be 10% till total 3% of contract value is reached. 50% of the total security shall be paid to the contractors on the basis of architect's certifying the virtual completion. The balance 50% would be paid to the contractors after the defects liability period as specified in the contract provided he has carried out all the work and attended to all the defects in accordance with the condition of the contract and clearance, if any, of the observations of the CTE of CVC.
- 6.2 No interest shall be paid to the amount retained by the Bank as Security Deposit.

#### 7.0 **Signing of Contract Documents**

The successful tenderer shall be bound to implement the contract by signing an agreement and conditions of contract attached herewith within 7 days from the receipt of intimation of acceptance of his tender by the Bank. However, the written acceptance of the tender by the Bank will constitute a binding agreement between the Bank and successful tenderer whether such formal agreement is subsequently entered into or not.

#### 8.0 **Completion Period**

Time is essence of the contract. The work should be completed in all respects in accordance with the terms of contract within a period of **120 Days** from the date of handing over of the site.

## 9.0 **Validity of Tender**

Tenders shall remain valid and open for acceptance for a period of ninety days from the date of opening price bid. If the tenderer withdraws his/her offer during the validity period or makes modifications in his/her original offer which are not acceptable to the Bank without prejudice to any other right or remedy the Bank shall be at liberty to forfeit the EMD.

## 10.0 **Liquidated Damages**

The liquidated damages shall be 0.5% per week subject to a maximum of 5% of the accepted Contract Value.

## 11.0 **Rate and Prices:**

- 11.1 The tenderers shall quote their rates for individual items both in words and figures. In case of discrepancy between the rate quoted in words and figures the unit rate quoted in words will prevail. If no rate is quoted for a particular item the contractor shall not be paid for that item when it is executed.

The amount of each item shall be calculated and the requisite total is given. In case of discrepancy between the unit rate and the total amount calculated from multiplication of unit rate and the quantity the unit rate quoted will govern and the total amount will be corrected.

- 11.2.1 The tenderers need not quote their rates for which no quantities have been given. In case the tenderers quote their rates for such items those rates will be ignored and will not be considered during execution.
- 11.2.2 The tenderers should not change the units as specified in the tender. If any unit is changed the tenders would be evaluated as per the original unit and the contractor would be paid accordingly.
- 11.3 The tenderer should not change or modify or delete the description of the item. If any discrepancy is observed he should immediately bring to the knowledge of the Architect/Bank.
- 11.4 Each page of the BOQ shall be signed by the authorised person and cutting or over writing shall be duly attested by him.
- 11.5 Each page shall be totaled and the grand total shall be given.
- 11.5.1 The rate quoted shall be firm and shall include all costs, allowances, taxes, levies etc. and deduction at source for Income Tax, Work Contract Tax etc. will be made as per statutory rules.
- 11.5.2 The contractor shall be required to conduct necessary tests of the water brought from tube well or any other outside source, from approved laboratory.
- 11.5.3 The contractor is required to comply with all act of the Government relating to labour and the rules and regulations made there under from time to time and to submit at the proper times all particulars and statements required to be furnished to the appropriate authorities.

## 12.0 **Nominated Contractor for Allied work, if any.**

The contractor shall get allied works executed only through Contractors already in SBI's Panel, for different categories of works.

**Annexure-I**  
**UNDERTAKING**  
**(To be submitted along with the technical Bid)**

To

REGIONAL BUSINESS OFFICE-1,  
ADMINISTRATIVE OFFICE COMPLEX  
MALL ROAD KANPUR, UP- 208001

Dear Sir,

**RETROFITTING & STRUCTURAL REPAIR WORKS OF OLD BUILDING SME  
INDUSTRIAL ESTATE BRANCH, FAIZALGANJ, KANPUR, UTTAR PRADESH**

1. I / We refer to the tender notice issued by you for Interior works and allied works in connection with the above.
2. **I undertake to submit in Hard copy the tender document along with all terms & Conditions, Specifications and subsequent annexure and corrigendum's duly signed and stamped by authorised representative/ signatory on becoming L1. However we accept all the terms and conditions along with the specifications, Drawings, Layouts etc. defined in the tender documents.**
3. I/ We hereby offer to perform, provide, execute, complete and maintain the works in conformity with the drawings, designs, conditions of contracts&specifications schedule of quantities relating to the works.
4. I/ We have satisfied myself/ ourselves as to the site conditions, examined the drawings and all aspects of the tender conditions, subject to above, I/ We do hereby agree, should this tender be accepted in whole or in part, to:
  - a. Abide by and fulfill all the terms and provisions of the said conditions annexed here to,
  - b. Complete the works within **120 Days** as per the work programme enclosed with the tender in two or three shifts if considered necessary by the Employer / Consultants at no extra cost to the Employer.
2. I / We have deposited a **EMD amount of Rs. 70,000.00/- (Rupees Seventy Thousand only)** in the form of Demand Draft / Banker's Cheque drawn in favour of State Bank of India payable at Lucknow , respectively which, I / We note, will not bear any interest and is liable for forfeiture.
  - I. If our offer is withdrawn within the validity period of acceptance by the Employer.
  - Or
  - II. If the contract agreement is not executed by us within 7 days from the date of receipt of the letter of acceptance.
  - Or
  - III. If we fail to pay the initial security deposit as stipulated.
  - Or
  - IV. If the work is not commenced within 7 days after issue of work order.



3. I / We understand that you are not bound to accept the lowest or any tender you receive.

The names of **DIRECTORS/ PARTNERS** of our Firm are:

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_

Yours faithfully,

Signature .....

Designation .....

Name of Partner / Director of the Firm, authorised to sign or name of person having power of attorney to sign the contract. (Certified true copy of power of attorney should be attached)

Signature and address of witnesses:

a. Signature .....

Name .....

Address .....

b. Signature.....

Name .....

Address .....

## **AGREEMENT**

This agreement made on the \_\_\_\_\_ day of \_\_\_\_\_ Two Thousand \_\_\_\_\_ BETWEEN State Bank of India a corporation constructed under the State Bank of India Act, 1955 and having its Local Head Office at Lucknow and many other places, (hereinafter called "the Employer") of the one part and M/s \_\_\_\_\_ through its \_\_\_\_\_ having its registered office at \_\_\_\_\_ (hereinafter called "the Contractor") of the other part.

WHEREAS the Employer is desirous of executing Certain Works to be carried out **at RETROFITTING & STRUCTURAL REPAIR WORKS OF OLD BUILDING SME INDUSTRIAL ESTATE BRANCH, FAIZALGANJ, KANPUR, UTTAR PRADESH** .as per Schedule-I, to this agreement and has caused Drawings, Bills of Quantities and Specification describing the work to be done, prepared by **M/s THE GRID** (hereinafter called "the Architects").

AND WHEREAS the said Drawings, the Bills of Quantities marked pages \_\_\_\_\_ to \_\_\_\_\_ (inclusive) and the Specifications as stated have been signed by or on behalf of the parties hereto:

AND WHEREAS the Contractor has agreed to execute the work upon the Conditions of Tender and the Conditions of Contract and further subject to the Special Conditions set forth in Schedule-II hereto attached (hereinafter collectively referred to as "the said Conditions") as per the said Drawings and as described in the said Specification and included in the said Bills of Quantities for the sum of Rupees \_\_\_\_\_

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### **NOW IT IS HEREBY AGREED AS FOLLOWS:**

1. In consideration of the sum of Rupees \_\_\_\_\_ to be paid at the time and in the manner set forth in the said Conditions, the Contractor shall upon and subject to the said Drawings and described in the said Specification and Bills of Quantities.
2. The Employer shall pay to the Contractor the said sum of Rs. \_\_\_\_\_  
\_\_\_\_\_ or such other sum as shall become payable hereunder at the times and in the manner specified hereinafter.
3. The term "The Architects" in the said conditions shall mean **M/s THE GRID** or in the event of their ceasing to be Architects for the purposes of this Contract, such other persons as shall be nominated for that purpose by the Employer, not being a person to whom the contractor shall object for reasons considered to be sufficient by the Employer mentioned in the said Conditions. Provided always that no persons subsequently appointed to be Architects under this Contract shall be entitled to disregard or overrule any decision or approval or direction given or expressed by the Architects for the time being.
4. The said Conditions, Specifications and Priced Bills of Quantities shall be read and construed as forming part of this agreement, and the parties hereto shall respectively abide by and submit themselves to the conditions and stipulations and perform the agreement on their parts respectively in such Conditions, Specifications and Priced Bills of Quantities contained.
5. This agreement is subject to jurisdiction of courts in UP only.
6. **Regional Manager (RBO-1), ADMINISTRATIVE OFFICE COMPLEX MALL ROAD KANPUR, UP- 208001** shall exercise powers on behalf of the said Employer for the purpose of the Contract Agreement.

7. Whereas both the parties agree to sign the following annexure Annexed to this Agreement in token of their acceptance.
- (i) Agreement
  - (ii) General Conditions of contract.
  - (iii) Special Condition of Contract.
  - (iv) Safety Codes.
  - (v) Specifications.
  - (vi) Material Testing & Their Frequency.
  - (vii) List of Approved Makes/ Brands
  - (viii) Priced Bill of Quantities.
  - (ix) Drawings.
8. The Bank shall pay the contractor such sum as shall become payable hereunder at the times and in the manner specified in the said Conditions mentioned in the General Conditions of Contract.
9. Whereas the Contractor hereby undertakes and agrees to carry out and complete the works within **120 Days** from the date of handing over site or 15 days from the date of issue of letter of acceptances, whichever is later. The Contractor agrees and has deposited the sum of Rs. \_\_\_\_\_ by way of Initial Security Deposit for due fulfillment of this Contract for the Works. It is agreed that the Security Deposit shall be deducted from each running bills and refunded to the contractor as per clause 2 of the General Conditions of the Contract Annexed herewith.
10. Whereas it is agreed that the earnest money amounting to **Rs. 70,000.00/- (Rupees Seventy Thousand only)** deposited by the Contractor in the form of Demand Draft along with the tender shall be forfeited in full in case the Contractor does not remit the Initial Security Deposit within the stipulated period of the start of the works by the stipulated date mentioned in the award letter.
11. Whereas Shri \_\_\_\_\_ is the accredited representative(s) of the Contractor who would be responsible for taking instructions from the Employer in relation to the Works. The Contractor agrees to pay Sales Tax or any other Tax on material or finished works like Works Contract Tax, Turnover Tax etc. including Income Tax in respect of this Contract of the Works and the Employer will not entertain any claim whatsoever in this report nor the Employer shall be responsible to pay any Tax as mentioned above. If due to non – payment of any of the aforesaid Tax or other Taxes connected with the Works, the Contractor suffers any loss or damages occurred to the Contractor and the Employer will be entitled to claim damages from the contractor for non-completion of the Work within **12 calendar months** stipulated in Para 9, above.
12. Whereas the Contractor hereby declares the list of all the relative working with the Employer which is annexed herewith.

OR

Whereas the Contractor declares that none of his relative is working with the Employer.

OR

Whereas the Contractor declares that he has associated himself with the agencies of the appropriate classes of person for Sanitary and Water Supply Installation etc. or any other specialized job to complete the works.

The Plans, Drawings, Specifications, Contract Documents and the Documents above mentioned shall form basis of this Contract and the decision of **Regional Manager (RBO-1)**

**,STATE BANK OF INDIA ADMINISTRATIVE OFFICE COMPLEX MALL ROAD KANPUR, UP- 208001** for the time being as mentioned in the Conditions of Contract in reference to all matters of dispute as to material, workmanship or account and as to the intended interpretation of the clauses of the Agreement or any of the document attached hereto shall be final and binding on both parties and may be made rule of the court.

13. The work comprises of the **"RETROFITTING & STRUCTURAL REPAIR WORKS OF OLD BUILDING SME INDUSTRIAL ESTATE BRANCH, FAIZALGANJ, KANPUR, UTTAR PRADESH."** as mentioned above and all subsidiary and other works connected therewith on the same site as may be ordered to be done from time to time by **RM (RBO-1),STATE BANK OF INDIA ADMINISTRATIVE OFFICE COMPLEX MALL ROAD KANPUR, UP- 208001** for the time being even though such works may not have been shown on the , Plans or described in the said Specifications or Schedule of Quantities of various classes of Work to be done.
14. The Employer through the **RM (RBO-1), STATE BANK OF INDIA ADMINISTRATIVE OFFICE COMPLEX MALL ROAD KANPUR, UP- 208001** reserves himself the right of altering the Plans, Drawings and nature of Work of adding to or omitting any items of work or having portions of the same carried out departmentally or otherwise and such alterations or variations shall be carried out without prejudice to this Contract.
15. All disputes arising out of or in any way connected with this agreement shall be deemed to have arisen in UP and only the courts of UP shall have jurisdiction to determine the same.
16. The several parts of this Contract have been read to us and fully understood by us.  
In Witness whereof the parties above named have executed these presents today and year first hereinabove written.

Signed, Sealed and Delivered by:

**Authorised Representative of Employer**

**Authorised Representative of Contractor**

**SCHEDULE I**

**RETROFITTING & STRUCTURAL REPAIR WORKS OF OLD BUILDING SME INDUSTRIAL ESTATE BRANCH, FAIZALGANJ, KANPUR, UTTAR PRADESH.** all as described in Tender and Drawings inclusive hereto as Specifications.

**SCHEDULE II**

The following Letters/ Correspondence form a part of Agreement:

- 1.
- 2.
- 3.

As witness our hands the day and year first written above,

In presence of

Signature:

Name:

Occupation:

Address:

Signature by the said Employer

Name:

Designation:

Address:

In presence of

Signature:

Name:

Occupation:

Address:

Signature by the said Contractor

Name:

Designation:

Address:

## GENERAL CONDITIONS OF CONTRACT

### 1.0 Definitions:

"Contract means the documents forming the tender and the acceptance thereof and the formal agreement executed between State Bank of India (client) and the contractor, together with the documents referred therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the architects/ Bank and all these documents taken together shall be deemed to form one contract and shall be complementary to one another.

1.1 In the contract the following expressions shall, unless the context otherwise requires, have the meaning hereby respectively assigned to them.

1.1.1 'SBI' shall mean State Bank of India (client) having its Corporate Centre at State Bank Bhavan, Madame Cama Road, Mumbai-400 021 and includes the client's representatives, successors and assigns.

'Architects/ Consultants' shall mean **M/S THE GRID**. 'Site Engineer' shall mean an Engineer appointed by the Bank as their representative to give instructions to the contractors.

1.1.2 'The Contractor' shall mean the individual or firm or company whether incorporated or not, undertaking the works and shall include legal personal representative of such individual or the composing the firm or company and the permitted assignees of such individual or firms of company.

The expression 'works' or 'work' shall mean the permanent or temporary work described in the "Scope of work" and/ or to be executed in accordance with the contract and includes materials, apparatus, equipment, temporary supports, fittings and things of all kinds to be provided, the obligations of the contractor hereunder and work to be done by the contractor under the contract.

1.1.3 'Engineer' shall mean the representative of the Architect/Consultant.

1.1.4 'Drawings' shall mean the drawings prepared by the Architects and issued by the Engineer and referred to in the specifications and any modifications of such drawings as may be issued by the Engineer from time to time. 'Contract Value' shall mean the value of the entire work as stipulated in the letter of acceptance of tender subject to such additions thereto or deductions there from as may be under the deductions there from as may be made under the provision herein after contained.

1.1.5 'Specifications' shall mean the specifications referred to in the tender and any modifications thereof as may time to time be furnished or approved by the Architect/ Bank Engineer  
"Month" means calendar month.

1.1.6 "Week" means seven consecutive days.

1.1.7 "Day" means a calendar day beginning and ending at 00 Hrs. and 24 Hrs. respectively.

### 2.0 Total Security Deposit

Total Security Deposit comprise of

Earnest Money Deposit

Initial Security Deposit

Retention Money

#### a) Earnest Money Deposit:

The tenderer shall furnish EMD of **Rs. 70,000.0/- (Rupees Seventy Thousand only)** in the form of Demand Draft drawn in favour of State Bank of India payable at **Lucknow** on any Scheduled Bank. No tender shall be considered unless the EMD is so deposited in the required

form. No interest shall be paid on this EMD. The EMD of the unsuccessful tenderer shall be refunded after the decision to award the contract is taken without interest. The EMD shall stand absolutely forfeited if the tenderer revokes his tender at any time the period when he is required to keep his tender open acceptance by the SBI or after it is accepted by the SBI the contractor fails to enter into a formal agreement or fails to pay the initial security deposit as stipulated or fails to commence the work within the stipulated time.

**b) Initial Security Deposit (ISD)**

The amount of ISD shall be 2% of accepted value of tender including the EMD in the form of D/D drawn on any scheduled Bank and shall be deposited within 7 days from the date of acceptance of tender.

**c) Retention Money:**

Besides the ISD as deposited by the contractor in the above said manner the retention money shall be deducted from the running account bill at the rate of 10% of the gross value of work done by the contractor and claimed in each bill provided the total security deposit i.e. the ISD plus Retention Money shall both together not exceed 5% of the contract value. 50% of the total security deposit shall be refunded to the contractor without any interest on issue of Virtual Completion certificate by the Architect / consultant. The balance 50% of the total security deposit shall be refunded to the contractors without interest within fifteen days after the end of defects liability period provided the contractor has satisfactorily attended to all defects in accordance with the conditions of contract including site clearance.

**d) Language**

The language in which the contract documents shall be drawn shall be in English.

**3.0 Errors, Omissions and Discrepancies**

In case of errors, omissions and/ or disagreement between written and scaled dimensions on the drawings or between the drawings and specifications etc., the following order shall apply.

- i) Between scaled and written dimension (or description) on a drawing, the latter shall be adopted.
- ii) Between the written or shown description or dimensions in the drawings and the correspondence one in the specification the former shall be taken as correct.
- iii) Between written description of the item in the specifications and descriptions in bills of quantities of the same item, the former shall be adopted.
- a) In case of difference between rates written in figures and words, the rate in words shall prevail.
- b) Between the duplicate / subsequent copies of the tender, the original tender shall be taken as correct.

**4.0 Scope of Work:**

The contractor shall carryout complete and maintain the said work in every respect in strictly accordance with this contract and with the directions of and to the satisfaction of the Bank/ SBI to be communicated through the Architect/ Bank Engineer. The Architect/ Bank Engineer at the directions of the Bank from time to time issue further drawings and/ or written instructions, details directions and explanations which are hereafter collectively referred to as Architect's/ Consultant's instructions in regard to the variation or modification of the design, quality or quantity of work or the addition or omission or substitution of any work. Any discrepancy in the drawings or between the BOQ and/ or specifications. The removal from the site of any material brought thereon by the contractor and any substitution of any other materials therefore the removal and / or re-execution of any work executed by him. The dismissal from the work of any person employed / engaged thereupon.

**3.0 i) Letter of Acceptance:**

Within the validity period of the tender the Bank shall issue a letter of acceptance either

directly or through the architect by registered post or otherwise depositing at the address of the contractor as given in the tender to enter into a Contract for the execution of the work as per the terms of the tender. The letter of acceptance shall constitute a binding contract between the SBI and the contractor.

**ii) Contract Agreement:**

On receipt of intimation of the acceptance of tender from the SBI/ Architect the successful tenderer shall be bound to implement the contract and within **fifteen days** thereof he shall sign an agreement in a non-judicial stamp paper of appropriate value.

**6.0 Ownership of Drawings:**

All drawings, specifications and copies thereof furnished by the SBI through its architects / consultants are the properties of the SBI. They are not to be used on other work.

**7.0 Detailed Drawings and Instructions:**

The **SBI** through its architects/ consultants shall furnish with reasonable promptness additional instructions by means of drawings or otherwise necessary for the proper execution of work. All such drawings and instructions shall be consistent with the contract documents, true developments thereof and reasonably inferable there from.

The work shall be executed in conformity therewith and the contractor prepare a detailed programmer schedule indicating therein the date of start and completion of various activities on receipt of the work order and submit the same to the SBI through the architect / consultant.

**8.0 Copies of Agreement**

Two copies of agreement duly signed by both the parties with the drawings shall be handed over to the contractors.

**9.0 Liquidated Damages:**

If the contractor fails to maintain the required progress in terms of clause 30 of GCC or to complete the work and clear the site including vacating their office on or before the contracted or extended date or completion without justification in support of the cause of delay, he may be called upon without prejudice to any other right of remedy available under the law to the SBI on account of such breach to pay a liquidated damages at the rate of 0.5% of the contract value per week which is subject to a maximum of 5% of the contract value.

**10.0 Materials, Appliances and Employees**

Unless or otherwise specified the contractor shall provide and pay for all materials, labour, water, power, tools, equipment transportation and any other facilities that are required for the satisfactory execution and completion of the work. Unless or otherwise specified all materials shall be new and both workmanship and materials shall be of best quality. The contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him. Workman whose work or behavior is found to be unsatisfactory by the SBI/ SBIIMS/ Architect/ Bank Engineer he shall be removed from the site immediately.

**11.0 Permits, Laws and Regulations:**

Permits and licenses required for the execution of the work shall be obtained by the contractor at his own expenses. The contractor shall give notices and comply with regulations, laws, and ordinances rules, applicable to the contract. If the contractor observes any discrepancy between the drawings and specifications, he shall promptly notify the SBI in writing under intimation of the Architect/ Bank Engineer. If the contractor performs any act which is against the law, rules and regulations he shall meet all the costs arising there from and shall indemnify the SBI any legal actions arising there from.



**12.0 Setting out Work:**

The contractor shall set out the work and shall be responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions, and alignment of all parts thereof and get it approved by the Architect/ Bank Engineer before proceeding with the work. If at any time any error in this respect shall appear during the progress of the works, irrespective of the fact that the layout had been approved by the Architect/ Bank Engineer the contractor shall be responsible for the same and shall at his own expenses rectify such error, if so, required to satisfaction of the SBI/ SBIIMS.

**13.0 Protection of Works and Property:**

The contractor shall continuously maintain adequate protection of all his work from damage and shall protect the SBI's properties from injury or loss arising in connection with contract. He shall make good any such damage, injury, loss, except due to causes beyond his control and due to his fault or negligence.

He shall take adequate care and steps for protection of the adjacent properties. The contractor shall take all precautions for safety and protections of his employees on the works and shall comply with all applicable provisions of Govt. and local bodies safety laws and building codes to prevent accidents, or injuries to persons or property on, about or adjacent to his place of work. The contractor shall take insurance covers as per clause 26.0 at his own cost. The policy may take in joint names of the contractor and the SBI and the original policy may be lodged with the SBI.

**14.0 Inspection of Work:**

The SBI / Architect/ Bank Engineer or their representatives shall at all reasonable times have free access to the work site and/ or to the workshop, factories, or other places where materials are lying or from where they are obtained and the contractor shall give every facility to the SBI, Architect / consultant and their representatives necessary for inspection and examination and test of the materials and workmanship. No person unless authorised by the SBI/ Architect / Consultant except the representative of Public authorities shall be allowed on the work at any time. The proposed work either during its construction stage or its completion can also be inspected by the Chief Technical Examiner's organization a wing of Central Vigilance Commission.

**15.0 Assignment and Subletting**

The whole of work included in the contract shall be executed by the contractor and he shall not directly entrust and engage or indirectly transfer, assign or underlet the contract or any part or share thereof or interest therein without the written consent of the SBI through the architect and no undertaking shall relieve the contractor from the responsibility of the contractor from active superintendence of the work during its progress.

**16.0 Quality of Materials, Workmanship & Test**

All materials and workmanship shall be best of the respective kinds described in the contract and in accordance with Architect/ Bank Engineer instructions and shall be subject from time to time to such tests as the Architect/ Bank Engineer may direct at the place of manufacture or fabrication or on the site or an approved testing laboratory. The contractor shall provide such assistance, instruments, machinery, labour, and materials as are normally required or examining measuring sampling and testing any material or part of work before incorporation in the work before incorporation in the work or testing as may be selected and required by the Architect / Consultant.

**ii) Samples**

All samples of adequate numbers, size, shades and pattern as per specifications shall be supplied by the contractor without any extra charges. If certain items proposed to be used are of such nature that samples cannot be presented or prepared at the site detailed

literature/ test certificate of the same shall be provided to the satisfaction of the Architect/ Bank Engineer. Before submitting the sample / literature the contractor shall satisfy himself that the material/ equipment for which he is submitting the sample/ literature meet with the requirement of tender specification. Only when the samples are approved in writing by the architect / consultant the contractor shall proceed with the procurement and installation of the particular material / equipment. The approved samples shall be signed by the Architect / Consultant for identification and shall be kept on record at site office until the completion of the work for inspection / comparison at any time. The Architect / Consultant shall take reasonable time to approve the sample. Any delay that might occur in approving the samples for reasons of its not meeting the specifications or other discrepancies inadequacy in furnishing samples of best qualities from various manufacturers and such other aspects causing delay on the approval of the materials / equipment etc. shall be to the account of the contractor.

iii) **Cost of Tests**

The cost / expenditure required for the tests shall be borne by the contractor if such test is intended by or provided for in the specification or BOQ.

iv) **Cost of Tests not provided for**

If any test is ordered by the Architect / Consultant which is either

If so intended by or provided for or (in the cases above mentioned) is not so particularized, or though so intended or provided for but ordered by the Architect / Consultant to be carried out by an independent person at any place other than the site or the place of manufacture or fabrication of the materials tested or any Government / approved laboratory, then the cost of such test shall be borne by the contractor.

**17.0 Obtaining Information Related to Execution of Work**

No claim by the contractor for additional payment shall be entertained which is consequent upon failure on his part to obtain correct information as to any matter affecting the execution of the work nor any misunderstanding or the obtaining incorrect information or the failure to obtain correct information relieve him from any risks or from the entire responsibility for the fulfillment of contract.

**18.0 Contractor's Superintendence**

The contractor shall give necessary personal superintendence during the execution of the works and as long, thereafter, as the Architect / consultant may consider necessary until the expiry of the defects liability period stated hereto.

**19.0 Quantities**

- i) The Bill of Quantities (BOQ) unless or otherwise stated shall be deemed to have been prepared in accordance with the Indian Standard Method of Measurements and quantities. The rate quoted shall remain valid for variation of quantity against individual item to any extent subject to maximum variation of the contract value by 25%. The entire amount paid under Clause 20, 21 hereof as well as amounts of prime cost and provisional sums, if any, shall be excluded.

**Variation exceeding 25%:** The items of work executed in relation to variation exceeding 25% shall be paid on the basis of provisions of clause 22 (e) hereof.

**20.0 Works to be measured**

The Architect / Consultant may from time to time intimate to the contractor that he required the work to be measured and the contractor shall forthwith attend or send a qualified

representative to assist the Architect in taking such measurements and calculations and to furnish all particulars or to give all assistance required by any of them. Such measurements shall be taken in accordance with the Mode of measurements detailed in the specifications. The representative of the Architect / Consultant shall take joint measurements with the contractor's representative and the measurements shall be entered in the measurement book. The contractor or his authorised representative shall sign all the pages of the measurement book in which the measurements have been recorded in token of his acceptance. All the corrections shall be duly attested by both representatives. No over writings shall be made in the M book should the contractor not attend or neglect or omit to depute his representative to take measurements then the measurements recorded by the representative of the Architect / consultant shall be final. All authorised extra work, omissions and all variations made shall be included in such measurement.

## **21.0 Variations**

No alteration, omission or variation ordered in writing by the Architect / consultant shall vitiate the contract. In case the SBI /Architect / Consultant thinks proper at any time during the progress of works to make any alteration in, or additions to or omissions from the works or any alteration in the kind or quality of the materials to be used therein, the Architect / Consultant shall give notice thereof in writing to the contractor or shall confirm in writing within seven days of giving such oral instructions the contractor shall alter to, add to, or omit from as the case may be in accordance with such notice, but the contractor shall not do any work extra to or make any alterations or additions to or omissions from the works or any deviation from any of the provisions of the contract, stipulations, specifications or contract drawings without previous consent in writing of the Architect / Consultant and the value of such extras, alterations, additions or omissions shall in all cases be determined by the Architect / Consultant and the same shall be added to or deducted from the contract value, as the case may be.

## **22.0 Valuation of Variations**

No claim for an extra shall be allowed unless it shall have been executed under the authority of the Architect/ Bank Engineer with the concurrence of the SBI as herein mentioned. Any such extra is herein referred to as authorised extra and shall be made in accordance with the following provisions.

- a)
  - i) The net rates or prices in the contract shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced herein.
  - ii) Rates for all items, wherever possible should be derived out of the rates given in the priced BOQ.
- b) The net prices of the original tender shall determine the value of the items omitted, provided if omissions do not vary the conditions under which any remaining items of works are carried out, otherwise the prices for the same shall be valued under sub-clause (c) hereunder.
- c) Where the extra works are not of similar character and /or executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items or works are carried out, then the contractor shall within 7 days of he receipt of the letter of acceptance inform the Architect / consultant of the rate which he intends to charge for such items of work, duly supported by analysis of the rate or rates claimed and the Architect / Consultant shall fix such rate or prices as in the circumstances in his opinion reasonable and proper, based on the market, rate.
- d) Where extra work cannot be properly measured or valued the contractor shall be allowed day work prices at the net rates stated in the tender of the BOQ or, if not, so stated then in accordance with the local day work rates and wages for the district; provided that in either case, vouchers specifying the daily time (and if required by the Architect / Consultant) the workman's name and materials employed be delivered for verifications to the Architect / consultant at or before the end of the week following that in which the work has been

executed.

- e) It is further clarified that for all such authorised extra items where rates cannot be derived from the tender, the Contractor shall submit rates duly supported by rate analysis worked on the market rate basis" for material, labour, hire / running charges of equipment and wastage etc. plus 15% towards establishment charges, contractor's overheads and profit. Such items shall not be eligible for escalation.

### **23.0 Final Measurement**

The final measurement, valuation and payment in respect of the contract shall be completed within six months of the virtual completion of the work.

### **24.0 Virtual Completion Certificate (VCC)**

On successful completion of entire works covered by the contract to the full satisfaction of the Architects/ SBI/ SBIIMS, the contractor shall ensure that the following works have been completed to the satisfaction of the Architects / SBI/ SBIIMS.

- a) Clear the site of all scaffolding, wiring, pipes, surplus materials, contractor's labour, equipment and machinery.
- b) Demolish, dismantle and remove the contractor's site office, temporary works, structures including labour sheds/camps and constructions and other items and things whatsoever brought upon or erected at the site or any land allotted to the contractor by the SBI and not incorporated in the permanent works.
- c) Remove all rubbish, debris etc. from the site and the land allotted to the contractor by the SBI and shall clear, level and dress, compact the site as required by the SBI.
- d) Shall put the SBI in undisputed custody and possession of the site and all land allotted by the SBI.
- e) Shall hand over the work in a peaceful manner to the SBI.
- f) All defects / imperfections have been attended and rectified as pointed out by the SBI to the full satisfaction of SBI.

Upon the satisfactory fulfillment by the contractor as stated above, the contractor shall be entitled to apply to the Architect / consultant is satisfied of the completion of the work. Relative to which the completion certificate has been sought, the Architect / consultant shall within fourteen (14) days of the receipt of the application for virtual completion certificate, issue a VCC in respect of the work for which the VCC has been applied.

This issuance of a VCC shall be without prejudice to the SBI's rights and contractor's liabilities under the contract including the contractor's liability for defects liability period nor shall the issuance of VCC in respect of the works or work at any site be construed as a waiver of any right or claim of the SBI against the contractor in respect of works or work at the site and in respect of which the VCC has been issued.

### **25.0 Work by other Agencies**

The SBI / Architect / Consultant reserves the rights to use premises and any portion of the site for execution of any work not included in the scope of this contract which it may desire to have carried out by other persons simultaneously and the contractor shall not only allow but also extend reasonable facilities for the execution of such work, the contractor, however, shall not be required to provide any plant or material for the execution of such work except by special arrangement with the SBI/ SBIIMS. Such work shall be carried out in such manner as not to impede the progress of the works included in the contract.

### **26.0 Insurance of Works**

- 26.1 Without limiting his obligations and responsibilities under the contract, the contractor shall insure in the joint names of the SBI and the contractor against all loss of damages from

whatever cause arising other than the excepted risks, for which he is responsible under the terms of contract and in such a manner that the SBI and contractor are covered for the period stipulated in clause 28 of GCC and are also covered during the period of maintenance for loss or damage arising from a cause, occurring prior to the period of maintenance for loss or damage arising from a cause, occurring prior to the commencement of the period of maintenance and for any loss or damage occasioned by the contractor in the course of any operations carried out by him for the purpose of complying with his obligations under clause.

- a) The works for the time being executed to the estimated current Contract value thereof, or such additional sum as may be specified together with the materials for incorporation in the works at their replacement value.
- b) The constructional plant and other things brought on to the site by the contractor to the replacement value of such constructional plant and other things.
- c) Such insurance shall be effected with an insurer and in terms approved by the SBI which approval shall not be unreasonably withheld and the contractor shall whenever required produce to the Architect / consultant the policy of insurance and the receipts for payment of the current premiums.

## **26.2 Damage to Persons and Property**

The contractor shall, except if and so far as the contract provides otherwise indemnify the SBI against all losses and claims in respect of injuries or damages to any person or material or physical damage to any property whatsoever which may arise out of or in consequence of the execution and maintenance of the works and against all claims proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto except any compensation of damages for or with respect to:

- a) The permanent use or occupation of land by or any part thereof.
- b) The right of SBI to execute the works or any part thereof on, over, under, in or through any lands.
- c) Injuries or damages to persons or properties which are unavoidable result of the execution or maintenance of the works in accordance with the contract.
- d) Injuries or damage to persons or property resulting from any act or neglect of the SBI their agents, employees or other contractors not being employed by the contractor or for or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or where the injury or damage was contributed to by the contractor, his servants or agents such part of the compensation as may be just and equitable having regard to the extent of the responsibility of the SBI/ SBIIMS, their employees, or agents or other employees, or agents or other contractors for the damage or injury.

## **26.3 Contractor to Indemnify SBI**

The contractor shall indemnify the SBI against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the matters referred to in the provision sub-clause 26.2 of this clause.

## **26.4 Contractor's Superintendence**

The contractor shall fully indemnify and keep indemnified the SBI against any action, claim, or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claim made under or action brought against SBI in respect of such matters as aforesaid the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expenses to settle any dispute or to conduct any litigation that may arise there from, provided that the contractor shall not be liable to indemnify the SBI if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Architect / Consultant in this behalf.

## **26.5 Third Party Insurance**

**26.5.1** Before commencing the execution of the work the contractor but without limiting his obligations and responsibilities under clause 26.0 of GCC shall insure against his liability for any material or physical damage, loss or injury which may occur to any property including that of SBI/ SBIIMS, or to any person, including any employee of the SBI/ SBIIMS, by or arising out of the execution of the works or in the carrying out of the contract, otherwise than due to the matters referred to in the provision to clause 26.0 thereof.

### **26.5.2 Minimum amount of Third Party Insurance**

Such insurance shall be effected with an insurer and in terms approved by the SBI which approval shall not be reasonably withheld and for at least the amount stated below. The contractor shall, whenever required. Produce to the Architect / consultant the policy or policies of insurance cover and receipts for payment of the current premiums.

**26.5.3** The minimum insurance cover for physical property, injury, and death is Rs. 5 lacs per occurrence with the number of occurrences limited to four. After each occurrence contractor will pay additional premium necessary to make insurance valid for four occurrences always.

## **26.6 Accident or Injury to Workman**

The SBI shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workmen or other person in the employment of the contractor or any sub-contractor, save and except an accident or injury resulting from any act or default of the SBI or their agents, or employees. The contractor shall indemnify and keep indemnified SBI against all such damages and compensation, save and except as aforesaid, and against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

### **26.6.1 Insurance against Accidents etc. to Workmen**

The contractor shall insure against such liability with an insurer approved by the SBI during the whole of the time that any persons are employed by him on the works and shall, when required, produce to the architect / consultant such policy of insurance and receipt for payment of the current premium. Provided always that, in respect of any persons employed by any sub-contractor the contractor's obligation to insure as aforesaid under this sub-clause shall be satisfied if the sub contractor shall be insured against the liability in respect of such persons in such manner that SBI is indemnified under the policy but the contractor shall require such sub-contractor to produce to the Architect / Consultant when such policy of insurance and the receipt for the payment of the current premium.

### **26.6.2 Remedy on Contractor's failure to Insure:**

If the contractor fails to effect and keep in force the insurance referred to above or any other insurance which he may be required to effect under the terms of contract, then and in any such case the SBI may effect and keep in force any such insurance and pay such premium or premiums as may be necessary for that purpose and from time to time deduct the amount so paid by the SBI as aforesaid from any amount due or which may become due to the contractor, or recover the same as debt from the contractor.

Without prejudice to the others rights of the SBI against contractors. In respect of such default, the employer shall be entitled to deduct from any sums payable to the contractor the amount of any damages costs, charges, and other expenses paid by the SBI and which are payable by the contractors under this clause. The contractor shall upon settlement by the insurer of any claim made against the insurer pursuant to a policy taken under this clause, proceed with due diligence to rebuild or repair the works destroyed or damaged. In this event all the monies received from the insurer in respect of such damage shall be paid to the contractor and the contractor shall not be entitled to any further payment in respect of the expenditure incurred for rebuilding or repairing of the materials or goods destroyed or damaged.

**27.0 Commencement of Works:**

The date of commencement of the work will be reckoned as the date of handing over site or three days from the date of issue of letter of acceptance of the tender by the SBI which ever is later.

**28.0 Time for Completion**

Time is essence of the contract and shall be strictly observed by the contractor. The entire work shall be completed within a period of **120 Days** from the date of commencement. If required in the contract or as directed by the Architect / Consultant. The contractor shall complete certain portions of work before completion of the entire work. However the completion date shall be reckoned as the date by which the whole work is completed as per the terms of the contract.

**29.0 Extension of Time**

If, in the opinion of the Architect/consultant, the work be delayed for reasons beyond the control of the contractor, the Architect/consultant may submit a recommendation to the SBI to grant a fair and reasonable extension of time for completion of work as per the terms of contract. If the contractor needs an extension of time for the completion of work or if the completion of work is likely to be delayed for any reasons beyond the due date of completion as stipulated in the contract, the contractor shall apply to the SBI through the Architect / Consultant in writing in detail and his justification if any, for the delays. The Architect/Consultant shall submit their recommendations to the SBI in the prescribed format for granting extension of time. While granting extension of time the contractor shall be informed the period-extended time which will qualify for levy of liquidated damages. For the balance period in excess of original stipulated period and duly sanctioned extension of time by the SBI the provision of liquidated damages as stated under clause 10.0 of Instructions to the Tenderers shall become applicable. Further the contract shall remain in force even for the period beyond the due date of completion irrespective whether the extension is granted or not.

**30.0 Rate of Progress**

Whole of the materials, plant and labour to be provided by the contractor and the mode, manner and speed of execution and maintenance of the works are to be of a kind and conducted in a manner to the satisfaction of the Architect / Consultant should the rate of progress of the work or any part thereof be at any time be in the opinion of the Architect / consultant too slow to ensure the completion of the whole of the work by the prescribed time or extended time for completion the Architect / Consultant to expedite progress so as to complete the works by the prescribed time or extended time. Such communications from the Architect / Consultant neither shall relieve the contractor from fulfilling obligations under the contract nor will he be entitled to raise any claims arising out of such directions.

**31.0 Work during Nights and Holidays**

Subject to any provision to the contrary contained in the contract no permanent work shall save as herein provided be carried on during the night or on holidays without the permission in writing of the Architect/ Bank Engineer, save when the work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the work in which case the contractor shall immediately advise the Architect/ Bank Engineer. However the provisions of the clause shall not be applicable in the case of any work which becomes essential to carry by rotary or double shifts in order to achieve the progress and quality of the part of the works being technically required/ continued with the prior approval of the Architect/ Bank Engineer at no extra cost to the SBI/ SBIIMS.

All work at night after obtaining approval from competent authorities shall be carried out without unreasonable noise and disturbance.

**32.0 No Compensation or Restriction of Work.**

If at any time after acceptance of the SBI shall decide to abandon or reduce the scope of work for any reason whatsoever and hence not required the whole or any part of the work to be carried out. The Architect/ Bank Engineer shall give notice in writing to that effect to the contractor and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the work fully but which he did not derive in consequence of the foreclosure of the whole or part of the work.

Provided that the contractor shall be paid the charges on the cartage only of materials actually and bonafide brought to the site of the work by the contractor and rendered surplus

as a result of the abandonment, curtailment of the work or any portion thereof and then taken back by the contractor, provided however that the Architect/ Bank Engineer shall have in such cases the option of taking over all or any such materials at their purchase price or a local current rate whichever is less.

"In case of such stores having been issued for SBI stores and returned by the contractor to stores, credit shall be given to him at the rates not exceeding those at which were originally issued to the contractor after taking into consideration and deduction for claims on account of any deterioration or damage while in the custody of the contractor and in this respect the decision of Architect/ Bank Engineer shall be final.

### **33.0 Suspension of Work**

- i) The contractor shall, on receipt of the order in writing of the Architect/ Bank Engineer (whose decision shall be final and binding on the contractor) suspend the progress of works or any part thereof for such time and in such manner as Architect/ Bank Engineer may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of following reasons.
  - a) One account any default on the part of the contractor, or
  - b) for proper execution of the works or part thereof for reasons other than the default of the contractor, or for safety of the works or part thereof.
  - c) The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Architect/ Bank Engineer.
- ii) If the suspension is ordered for reasons (b) and (c) sub-para (i) above: the contractor shall be entitled to an extension of time equal to the period of every such suspension. No compensation whatsoever shall be paid on this account.

### **34.0 Action when the whole Security Deposit is forfeited**

In any case in which under any clause or clauses of this contract, the Contractor shall have rendered himself liable to pay compensation amounting to the whole of his security deposit the Architect / consultant shall have the power to adopt any of the following course as they may deem best suited to the interest of the SBI/ SBIIMS.

- a) To rescind the contract (of which rescission notice in writing to the contractor by the Architect/ Bank Engineer shall be conclusive evidence) and in which case the security deposit of the contractor shall be forfeited and be absolutely at the disposal of SBI/ SBIIMS.
- b) To employ labour paid by the SBI and to supply materials to carry out the work, or any part of the work, debiting the contractor with the cost of the labour and materials (the cost of such labour and materials as worked out by the Architect /Consultant shall be final and conclusive against the contractor) and crediting him with the value of the work done, in all respects in the same manner and at the same manner and at the same rates as if it had been carried out by the contractor under the terms of this contract the certificate of Architect/



Bank Engineer as to the value of work done shall be final and conclusive against the contractor.

- c) To measure up the work of the contractor, and to take such part thereof as shall be unexecuted, out of his hands, to give it to another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (of the amount of which excess the certificates in writing of the Architects/ Consultant shall be final and conclusive) shall be borne by original contractor and may be deducted from any money due to him by SBI under the contract or otherwise, or from his security deposit or the proceeds of sale thereof, or sufficient part thereof. In the event of any of above courses being adopted by the SBI the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any material or entered into any engagements or make any advances on account of, or with a view to the execution of the work or the

performance of the contract and in case the contract shall be rescind under the provision aforesaid, the contractor shall not be entitled to recover or to be paid any sum or any work thereto for actually performed under this contract, unless, and until the Architect/ Bank Engineer will have certified in writing the performance of such work and the value payable in respect thereof, and he shall only be entitled to be paid the value so certified.

### **35.0 Owner's Right to Terminate the Contract**

If the contractor being an individual or a firm commit any 'Act of Insolvency' or shall be adjusted an insolvent or being an incorporated company shall have an order for compulsory winding up voluntarily or subject to the supervision of Govt. and of the Official Assignee of the liquidator in such acts of insolvency or winding up shall be unable within seven days after notice to him to do so, to show to the reasonable satisfaction of the Architect/ Bank Engineer that he is able to carry out and fulfil the contract, and to give security therefore if so required by the Architect/ Bank Engineer.

Or if the contractor (whether an individual firm or incorporated Company) shall suffer execution to be issued or shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the contractor.

Or shall assign or sublet this contract without the consent in writing of the SBI through the Architect / consultant or shall charge or encumber this contract or any payment due to which may become due to the contractor thereunder:

- a) Has abandoned the contract; or
- b) Has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for days after receiving from the SBI through the Architect/ Bank Engineer written notice to proceed, or
- c) Has failed to proceed with the works with such diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or has failed to remove the materials from the site or to pull down and replace work within seven days after written notice from the SBI through the Architect/ Bank Engineer that the said materials were condemned and rejected by the Architect/ Bank Engineer under these conditions; or has neglected or failed persistently to observe and perform all or any the acts, matters or things by this contract to be observed and performed by the contractor for seven days after written notice shall have been given to the contractor to observe or perform the same or has to be determent of good workmanship or in defiance of the SBI's or Architect's/ Consultant's instructions to the contrary subject any part of the contract. Then and in any of said cases the SBI and or the Architect/ Bank Engineer, may not withstanding any previous waiver, after giving seven days notice in writing to the contractor, determine the contract, but without thereby affecting the powers of the SBI or the Architect/ Bank Engineer or the obligation and liabilities of the contractor the whole of which shall continue in force as fully as if the contract had not been so determined and as if the works subsequently had been

executed by or on behalf of the contractor. And further the SBI through the Architect/ Bank Engineer their agents or employees may enter upon and take possession of the work and all plants, tools, scaffoldings, materials, sheds, machineries lying upon the premises or on the adjoining lands or roads use the same by means of their own employees or workmen in carrying on and completing the work or by engaging any other contractors or persons to complete the work and the contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other contractor or other persons employed for completing and finishing or using the materials and plant for the works.

When the works shall be completed or as soon thereafter as convenient the SBI or the architect / consultant shall give a notice in writing to the contractor to remove his surplus materials and plants and should the contractor fail to do so within 14 days after receipt thereof by him the SBI sell the same by public auction after due publication, and shall adjust the amount realised by such auction. The contractor shall have no right to question any of the act of the SBI incidental to the sale of the materials etc.

### **36.0 Certificate of Payment**

The contractor shall be entitled under the certificates to be issued by the Architect / Consultant to the contractor within 14 working days from the date of certificate to the payment from SB from time to time. The SBI shall recover the statutory recoveries towards Income tax, Work contract tax as per the prevailing bye laws and other dues including the retention amount from the certificate of payment.

Provided always that the issue of any certificate by the Architect/ Bank Engineer during the progress of works or completion shall not have effect as certificate of satisfaction or relieve the contractor from his liability under clause.

The Architect/ Bank Engineer shall have power to withhold the certificate if the work or any part thereof is not carried out to their satisfaction.

The Architect/ Bank Engineer may by any certificate make any corrections required in previous certificate.

The SBI shall modify the certificate of payment as issued by the Architect/ Bank Engineer from time to time while making the payment.

The contractor shall submit interim bills only after taking actual measurements and property recorded in the measurement books

The contractor shall not submit interim bills when the approximate value of work done by him is less than **Rs.40 lacs** and maximum one bill shall be submitted.

The final bill may be submitted by contractor within a period of one month from the date of virtual completion and Architect/ Bank Engineer shall issue the certificate of payment within a period of two months. The SBI shall pay the amount within a period of three months from the date of issue of certificate provided there is no dispute in respect of rates and quantities.

The contractor shall submit the interim bills in the prescribed format with all details.

### **37.0 Settlement of Disputes and Arbitration**

Except where otherwise provided in the contract all questions and disputes relating to the meaning of the specifications, design, drawings and instructions herein before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or those conditions or otherwise concerning the work or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter.

- ii) If the contractor considers that he is entitled to any extra payment or compensation in respect of the works over and above the amounts admitted as payable by the Architect or in

case the contractor wants to dispute the validity of any deductions or recoveries made or proposed to be made from the contract or raise any dispute, the contractor shall forthwith give notice in writing of his claim, or dispute to the **Regional Manager (RBO-1), STATE BANK OF INDIA, ADMINISTRATIVE OFFICE COMPLEX MALL ROAD KANPUR, UP- 208001** and endorse a copy of the same to the Architect, within 30 days from the date of disallowance thereof or the date of deduction or recovery. The said notice shall give full particulars of the claim, grounds on which it is based and detailed calculations of the amount claimed and the contractor shall not be entitled to raise any claim nor shall the Bank be in any way liable in respect of any claim by the contractor unless notice of such claim shall have been given by the contractor to the **Regional Manager (RBO-1), STATE BANK OF INDIA, ADMINISTRATIVE OFFICE COMPLEX MALL ROAD KANPUR, UP- 208001** in the manner and within the time as aforesaid. The contractor shall be deemed to have waived and extinguished all his rights in respect of any claim not notified to the **Regional Manager (RBO-1), STATE BANK OF INDIA, ADMINISTRATIVE OFFICE COMPLEX MALL ROAD KANPUR, UP- 208001** in writing in the manner and within the time aforesaid.

- iii) **Regional Manager (RBO-1), STATE BANK OF INDIA, ADMINISTRATIVE OFFICE COMPLEX MALL ROAD KANPUR, UP- 208001** shall give his decision in writing on the claims notified by the contractor. The contractor may within 30 days of the receipt of the decision of the **Regional Manager (RBO-1), STATE BANK OF INDIA, ADMINISTRATIVE OFFICE COMPLEX MALL ROAD KANPUR, UP- 208001** submit his claims to the conciliating authority namely the **Regional Manager (RBO-1), SBI, A.O. KANPUR** for conciliation along with all details and copies of correspondence exchanged between him and the Regional Manager.
- iv) If the conciliation proceedings are terminated without settlement of the disputes, the contractor shall, within a period of 30 days of termination thereof shall give a notice to the concerned **Chief General Manager of the Bank** for appointment of an arbitrator to adjudicate the notified claims failing which the claims of the contractor shall be deemed to have been considered absolutely barred and waived.
- v) Except where the decision has become final, binding and conclusive in terms of the contract, all disputes or differences arising out of the notified claims of the differences arising out of the notified claims of the contractor as aforesaid and all claims of the Bank shall be referred for adjudication through arbitration by the Sole Arbitrator appointed by the **Chief General Manager of the Bank**. It will also be the objection to any such appointment that the Arbitrator so appointed is a Bank Officer and that he had to deal with the matters to which the Contract relates in the course of his duties as Bank Officer. If the arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever another sole arbitrator shall be appointed in the manner aforesaid by the **Chief General Manager of the Bank**. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.

It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed in respect of each dispute along with the notice for appointment of arbitrator.

It is also a term of this contract that no person other than a person appointed by **Chief General Manager of the Bank**, as aforesaid should act as arbitrator.

The conciliation and arbitration shall be conducted in accordance with the provisions of the Arbitration & Conciliation Act 1996 or any statutory modification or re-enactment thereof and the rules made there under.

It is also a term of the contract that if any fees are payable to the arbitrator these shall be paid equally by both the parties. However, no fees will be payable to the arbitrator if he is a Bank Officer.

It is also a term of the contract that the arbitrator shall be deemed to have entered on the

reference on the date he issues notice to both the parties calling them to submit their statement of claims and counter statement of claims. The venue of the arbitration shall be such place as may be fixed by the arbitrator in his sole discretion. The fees, if any, of the arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award (including the fees, if any of the arbitrator) shall be in the discretion of the arbitrator who may direct to any by whom and in what manner, such costs or any part thereof, shall be paid and fix or settle the amount of costs to be so paid.

### **38.0 Water Supply**

The contractor shall make his own arrangements for water required for the work and nothing extra will be paid for the same. This will be subject to the following conditions.

That the water used by the contractor shall be fit for construction purposes to the satisfaction of the Architect / Consultant.

The contractor shall make alternative arrangements for the supply of water if the arrangement made by the contractor for procurement of water in the opinion of the Architect/ Bank Engineer is unsatisfactory.

The contractor shall construct temporary well / tube well in SBI land for taking water for construction purposes only after obtaining permission in writing from the SBI. The contractor has to make his own arrangement for drawing and distributing the water at his own cost. He has to make necessary arrangements. To avoid any accidents or damages caused due to construction and subsequent maintenance of the wells. He has to obtain necessary approvals from local authorities, if required, at his own cost. He shall restore the ground to its original conditions after wells are dismantled on completion of work or hand over the well to the SBI without any compensation as directed by the SBI/ Architect/ Bank Engineer.

### **39.0 Power Supply**

The contractor shall make his own arrangements for power and supply / distribution system for driving plant or machinery for the work and for lighting purpose at his own cost. The cost of running and maintenance of the plants are to included in his tender prices. He shall pay all fees and charges required for the power supply and include the same in his tendered rates and hold the owner free from all such costs. He has to obtain necessary approval from the appropriate authorities, if required.

### **40.0 Treasure Trove etc.**

Any treasure trove, coin or object antique which may be found on the site shall be the property of SBI and shall be handed over to Bank immediately.

### **41.0 Method of Measurement**

Unless otherwise mentioned in the schedule of quantities or in mode of measurement, the measurement will be on the net quantities or work produced in accordance with up to date. Rules laid down by the Bureau of Indian Standards. In the event any dispute / disagreement the decision of the Architect / consultant shall be final and binding on the contractor.

### **42.0 Maintenance of Registers**

The contractor shall maintain the following registers as per the enclosed Performa at site of work and should produce the same for inspection of SBI/ Architect/ Bank Engineer whenever desired by them. The contractor shall also maintain the records / registers as required by the local authorities / Govt. from time to time.

- i) Register for Cement / Paint / Lead / Specific Materials
- ii) Register for Steel
- iii) Register for Secured Advance
- iv) Register for Bulkage of Sand
- v) Register for Silt Test

- vi) Register for Sieve Analysis for Fine Aggregate
- vii) Register for Sieve Analysis for Course Aggregate
- viii) Register for Slump Test.
- ix) Register for Concrete Cube Test.
- x) Register for Hindrance to Work.
- xi) Register for Consumption of Cement
- xii) Register for Running Account Bill
- xiii) Register for Labour

#### **43.0 Force Majeure**

- 43.1 Neither contractor nor SBI shall be considered in default in performance of their obligations if such performance is prevented or delayed by event such as but not to war, hostilities revolution, riots, civil commotion, strikes, lockout, conflagrations, epidemics, accidents, fire, storms, floods, droughts, earthquakes or ordinances or any act of god or for any other cause beyond the reasonable control of the party affected or prevented or delayed. However a notice is required to be given within 30 days from the happening of the even with complete details, to the other party to the contract, if it is not possible to serve a notice, within the shortest possible period without delay.
- 43.2 As soon as the cause of force majeure has been removed the party whose ability to perform its obligations has been affected, shall notify the other such cessation and the actual delay incurred in such affected activity adducing necessary evidence in support thereof.
- 43.3 From the date of occurrence of a case of force majeure obligations of the party affected shall be suspended during the continuance of any inability so caused. With the cause itself and inability resulting there from having been removed, the agreed time of completion of the respective obligations under this agreement shall stand extended by a period equal to the period of delay occasioned by such events.
- 43.4.1 Should one or both parties be prevented from fulfilling the contractual obligations by a state of force majeure lasting to a period of 6 months or more the two parties shall each other to decide regarding the future execution of this Agreement.

#### **44.0 Local Laws, Acts, Regulations:**

The contractor shall strictly adhere to all prevailing labour laws inclusive of contract labour (regulation and abolition act of 1970) and other safety regulations. the contractor shall comply with the provision of all labour legislation including the latest requirements of all the Acts, laws, any other regulations that are applicable to the execution of the project.

- i) Minimum wages Act 1948 (Amended)
- ii) Payment of wages Act 1936 (Amended)
- iii) Workmen's compensation Act 1923 (Amended)
- iv) Contact labour regulation and abolition act 1970 and central rules 1971 (Amended)
- v) Apprentice act 1961 (Amended)
- vi) Industrial employed (standing order) Act 1946 (Amended)
- vii) Personal injuries (Compensation insurance) act 1963 and any other modifications
- viii) Employees' provided fund and miscellaneous provisions Act 1952 and amendment thereof.
- ix) Shop and establishment act
- x) Any other act or enactment relating thereto and rules framed there under from time to time.

#### **45.0 Accidents**

The contractor shall immediately on occurrence of any accident at or about the site or in connection with the execution of the work report such accident to the Architect / consultant.

The contractor shall also such report immediately to the competent authority whenever such report is required to be lodged by the law and take appropriate actions thereof.

**Signature of Contractor & Seal**

## **SPECIAL CONDITIONS OF CONTRACT**

### **1.0 Scope of Work**

The scope of work is to carry out **RETROFITTING & STRUCTURAL REPAIR WORKS OF OLD BUILDING SME INDUSTRIAL ESTATE BRANCH, FAIZALGANJ, KANPUR, UTTAR PRADESH.**

### **2.0 Address of Site**

The site is located at **SME INDUSTRIAL ESTATE BRANCH, FAIZALGANJ, KANPUR, UTTAR PRADESH.**

### **3.0 Dimension and Levels**

All dimensions and levels shown on the drawing shall be verified by the contractor on the site and he will be held responsible for the accuracy and maintenance of the entire dimension and the levels. Figured dimensions are in all cases to be accepted and no dimension shall be scaled. Large-scale details shall take precedence over small – scale drawing. In case of discrepancy the contractor shall ask for clarification from the Architect/ Bank Engineer before proceeding with the work.

### **4.0 Notice of Operation**

The contractor shall not carryout any important operation without the consent in writing from the Architect/ Bank Engineer.

### **5.0 Construction Records**

The contractor shall keep and provide to the Architect/ Bank Engineer full and accurate records of the dimension and positions of all new work and any other information necessary to prepare complete drawings recording details of the work as constructed.

### **6.0 Safety of adjacent Structures and Trees**

The contractor shall provide and erect to the approval of the Architect / Consultant such supports as may be required to protect effectively all structures and protective guards to trees which may be endangered by the execution of the works or otherwise take such permanent measures as may be required by the Architect to protect the trees and structures.

### **7.0 Temporary Works**

Before any temporary works are commenced, the contractor shall submit at least 7 days in advance to the Architect/ Bank Engineer for approval complete drawings of all temporary works he may require for the execution of the works. The contractor shall carry out the modifications relating to strength, if required by the Architect/ Bank Engineer may require in accordance with the conditions of contract at his own cost. The contractor shall be solely responsible for the stability and safety of all temporary works an unfinished works and for the quality of the permanent works resulting from the arrangement eventually adopted for their execution.

### **8.0 Temporary Roads**

The contractor shall provide access roads to the site from the nearest main road at no extra cost and as directed by the Architect/ Bank Engineer. The contractor shall also responsible for proper maintenance of this access road and would take all care to see that existing services, if any, are maintained in working order at his own cost. The laying and maintaining the temporary roads within the site area shall be the contractor's responsibility and the contractor shall take such measures that are necessary and as directed by the Architect/ Bank Engineer.

### **9.0 Water, Power and Other Facilities**

The rate quoted by the contractor shall include all expenses that are required for providing all the water required for the work and the contractor shall make his own arrangements for the supply of good quality water suitable for the construction and good quality drinking water for their workers. If necessary, the contractor has to sink a tube well / open well and bring water by means of tankers at his own cost for the purpose. The SBI will not be liable to pay any charges in connection with the above.

The rate quoted in the tender shall include the expenses for obtaining and maintaining power connections and shall pay for the consumption charges.

The contractors for other trades directly appointed by the SBI shall be entitled to take power and water connections from the temporary water and power supply obtained by the contractor. However, the concerned contractor shall make their own arrangements to draw the supply and pay directly the actual consumption charges at mutually agreed rates between them. All municipal charges for drainage and water connection for construction purposes shall be borne by the contractor and charges payable for permanent connections, if any, shall be initially paid by the contractor and the SBI will reimburse the amount on production of receipts.

a) The SBI as well as the Architect / Consultant shall give all possible assistance to the contractors to obtain the requisite.

b) Permission from the various authorities, but the responsibility for obtaining the same in time shall be of the contractor.

#### **10.0 Office Accommodation**

- a) The contractor shall provide and maintain all necessary offices, workshops, stores, shelters, sanitary facilities, canteens and other temporary structures for themselves in connection with the work at the site own cost after getting the approval from the architect / consultant.
- b) All temporary buildings and facilities as mentioned above shall be removed on completion of the work or at any other earlier date as directed by the architect / consultant.

All the expenses for obtaining statutory approvals and maintenance of the above facilities as well as running expense shall be borne by the contractor at no extra cost. It is also the responsibility of the contractor to obtain statutory approvals for providing the above facilities.

#### **11.0 Facilities for Contractors' Employees**

The contractor shall make his own arrangement for the housing and welfare of his staff and workmen including adequate drinking water facilities. The contractor shall also make his arrangements at his own cost for transport where necessary for his staff and workmen to and from site of work at his own cost.

#### **12.0 Lighting of Works**

The contractor shall at all times provide adequate and approved lighting as required for the proper execution and supervision and inspection of works.

#### **13.0 Fire Fighting Arrangements**

- i) The contractor shall at all times provide suitable arrangements for the fighting at his own cost. For this purpose he shall provide requisite number of fire extinguishers and adequate number of buckets, some of which are to be always kept filled with sand and some with water. These equipments shall be provided at suitable prominent and easily accessible places and shall be properly maintained.
- ii) Any deficiency in the fire safety or unsafe conditions shall be corrected by the contractor at his own cost and to the approval of the relevant authorities. The contractor shall make the following arrangements at his own cost but not limited to the following :
  - a) Proper handling, storage and disposal of combustible materials and waste.



- b) Worked operations which can create fire hazards.
- c) Access for the firefighting equipment's.
- d) Types, number and location of containers for the removal of surplus materials and rubbish.
- e) Type size, number and location of fire extinguishers or other fire fighting equipment.
- f) General house keeping.

#### **14.0 Site Order Book**

A site order book shall be maintained at site for the purpose of quick communication between the Architect/ Bank Engineer. Any communication relating to the works may be conveyed through Records in the site order book. Such a communication from one party to the other shall be deemed to have been adequately served in terms of contract. Each site order book shall have machine numbered pages in triplicate and shall carefully maintained and preserved by the contractor and shall be made available to the Architect/ Bank Engineer as and when demanded. Any instruction which the Architect/ Bank Engineer may like to issue to the contractor or the contractor may like to bring the Architect/ Bank Engineer may like to issue to the Contractor or the Contractor may like to bring to the Architect/ Bank Engineer two copies of such instructions shall be taken from the site order book and one copy will be handed over to the party against proper acknowledgment and the second copy will be retained for their record.

#### **15.0 Site Meetings**

Site meetings will be held to review the progress and quality evaluation. The contractors shall depute a senior representative along with the site representative staff of approved sub-contractors and suppliers as required to the site meetings and ensure all follow up actions. Any additional review meetings shall be held if required by the Architect/ Bank Engineer.

#### **16.0 Disposal of Refuse**

The contractor shall cart away all debris, refuse etc. arising from the work from the site and deposit the same as directed by the Architect/ Bank Engineer at his own cost. It is the responsibility of the contractor to obtain from the locate authorities concerned to the effect that all rubbish arising out of contractor's activities at the construction site or any other off-site activities borrow pits has been properly disposed off.

#### **17.0 Contractor to Verify Site Measurement**

The contractor shall check and verify all site measurements whenever requested by other specialists contractors of other sub contractors to enable them to prepare their own shop drawings and pass on the information with sufficient promptness as will not in any way delay the works.

#### **18.0 Displaying the Name of the Work**

The contractor shall put up a name board of suitable size as directed by the Architect/ Bank Engineer indicating therein the name of the project and other details as given by the Architect/ Bank Engineer at his own cost remove the same on completion of work.

#### **19.0 Bar Bending Schedule**

The contractor shall prepare a detailed bar bending schedule for all reinforced concrete works and got them approved by the Architect/ Bank Engineer well in advance.

#### **20.0 As Built Drawings**

- i) For the drawing issued to the contractor by the Architect/Consultant. The Architect / Consultant will issue two sets of drawings to the contractor for the item for which some changes have been made. From the approved drawings as instructed by the SBI / SBIIMS/

Architect / Consultant. The Contractor will make the changes made on these copies and return these copies to the Architect/ Bank Engineer for their approval. In case any revision is required or the corrections are not properly marked the Architect/ Bank Engineer will point out the discrepancies to the contractor. The contractor will have to incorporate these corrections and /or attend to discrepancies either on the copies as directed by the Architect/ Bank Engineer and resubmit to him for approval. The Architect / Consultant will return one copy duly approved by him.

- ii) For the drawings prepared by the Contractor, the Contractor will modify the drawing prepared by him wherever the changes are made by the SBI Architect/ Bank Engineer. And submit two copies of such modified drawings to the Architect/ Bank Engineer for approval. The Architect/ Bank Engineer will return one copy of the approved drawing to the Contractor.

### **21.0 Approved Make**

The Contractor shall provide all materials from the list of approved makes at his own cost. The Architect/ Bank Engineer may approve any make / agency within the approved list as given in the tender after inspection of the sample / mock up.

### **22.0 Procurement of Materials**

The Contractor shall make his own arrangements to procure all the required materials for the work. All wastage's and losses in weight shall be to the contractors account.

### **23.0 Excise Duty, Taxes, Levies etc.**

The contractors shall pay and be responsible for payment of all taxes except GST, duties, levies, royalties, fees cess, or charges in respect of the works including but not limited to sales tax, tax on works contract excise duty, and octroi, payable in respect of materials, equipments plant and other things required for the contract. All of the aforesaid taxes except GST, duties, levies, fees and charges shall be to the contractors account and the SBI shall not be required to pay any additional or extra amount on this account. Variation of taxes, duty fees, levies etc if any, till completion of work shall be deemed to be included in the quoted in the quoted rates and no extra amount on this account. Variation of taxes, duties, fees, levies, etc if any till completion of work shall be deemed to be included in the quoted rates and no extra claim on this account will in any case be entertained. If a new tax or duty or levy or cess or royalty or octroi is imposed under as statue or law during the currency of contract the same shall be borne by the contractor.

### **24.0 Acceptance of Tender**

The SBI shall have the right to reject any or all tenders without assigning any reason. They are not to bound to accept the lowest or any tender and the tenderer shall have no right to question the acts of the SBI. However, the adequate transparency would be maintained by the SBI.

## GENERAL SAFETY CODE

1. First aid appliances including adequate supply of sterilized dressing and cotton wool shall be kept in a readily accessible place.
2. An injured person shall be taken to a public hospital without loss of time, in cases where the injury necessitates hospitalization.
3. Suitable and strong scaffolds should be provided for workmen for all works that cannot safely be done from the ground.
4. No portable single ladder shall be over 8 meters in length. The width between the side rails shall not be less than 30 cm (Clear) and the distance between two adjacent rungs shall not be more than 30 cm. When a ladder is used an extra mazdoor shall be engaged for holding ladder.
5. Every opening in the floor of a building or in a working platform be provided with suitable means to prevent to fall of persons or materials by providing suitable fencing or railing whose minimum height shall be one meter.
6. No floor, roof or other part of the structure shall be so overloaded with debris or materials as to render it unsafe.
7. Workers employed on mixing and handling material such as asphalt, cement mortar or concrete and lime mortar shall be provided with protective footwear and rubber hand-gloves.
8. Those engaged in welding works shall be provided with welder's protective eye-shields and gloves.
9. I) No paint containing leads or lead products shall be used except in the form of paste or readymade paint.  
 ii) The workers should supply suitable facemasks for use when the paint is applied in the form of spray or surface having lead paint dry rubbed and scrapped.
10. Overalls shall be supplied by the contractor to the painters and adequate facilities shall be provided to enable the working painters to wash during the periods of cessation of work.
11. Hoisting machines and tackle used in the works, including their attachments, anchorage and supports shall be in perfect condition.
12. The ropes used in hoisting or lowering material or as a means of suspension shall be of durable quality and adequate strength and free from defects.

### Scaffolds

i) Suitable scaffolds i.e Steel tubular scaffolds shall be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except in the case of short duration work which can be done safely from ladders. When a ladder is used, it shall be of rigid construction made either of good quality wood or steel. The steps shall have a minimum width of 450 mm and a maximum rise of 300 mm. Suitable hand holds of good quality wood or steel shall be provided and the ladder shall be given an inclination not steeper than 1/4 to 1(1/4 horizontal and 1 vertical).

ii) Scaffolding or staging more than 4 m. above the ground floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly bolted, braced or otherwise secured, at least 1 m. above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

**iii)** Working platforms, gangways and stairways shall be so constructed that they do not sag unduly or unequally and if the height of the platform, gangway or stairway is more than 4 m. above ground level or floor level, they shall be closely boarded and shall have adequate width and be suitably fenced as described in (ii) above.

**iv)** Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of Persons or materials by providing suitable fencing or railing whose minimum height shall be 1.0 m. Wherever there are open excavations in ground, they shall be fenced off by suitable railing and danger signals installed at night so as to prevent persons slipping into the excavations.

**v)** Safe means of access shall be provided to all working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 m. in length while the width between side rails in rung ladder shall in no case, be less than 290 mm. for ladder up to and including 3 m. in length. For longer ladders this width shall be increased at least 20 mm for each additional meter of length.

**vi)** A sketch of the ladders and scaffolds proposed to be used shall be prepared and approval of the Engineer obtained prior to construction.

### **Other Safety Measures**

**vii)** All personnel of the contractor working within the plant site shall be provided with safety helmets. All welders shall wear welding goggles while doing welding work and all metal workers shall be provided with safety gloves. Persons employed on metal cutting and grinding shall wear safety glasses.

**viii)** Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or the public.

### **Excavation & Trenching**

**ix)** All trenches, 1.25 m. or more in depth shall at all times be supplied with at least one ladder for each 30 m. in length or fraction thereof. The ladder shall be extended from bottoms of the trench to at least 1.0 m. above the surface of the ground. Sides of trenches which are 1.5 m. or more in depth shall be stepped back to give suitable slope or securely held by timber bracing so as to avoid the danger of sides collapsing. The excavated materials shall not be placed within 1.5 m. of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.

**x)** The contractor shall take all measures on the site of the work to protect the public from accidents and shall be bound to bear the expenses of defence of every suit, action or other proceedings at law that may be brought by any persons for injury sustained owing to neglect of the above precautions and to pay any such persons or which may with the consent of the contractor, be paid to compromise any claim by any such person.

### **Demolition**

**xi)** Before any demolition work is commenced and also during the process of the work:

**a)** All roads and open areas adjacent to the work site shall either be closed or suitably protected.

**b)** No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged. All practical steps shall be taken to prevent danger to persons employed from the risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.

### **Personal Safety Equipments**

**xii)** All necessary personal safety equipment as considered adequate by the Engineer should be kept available for the use of the person employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned.

- a) Workers employed on mixing asphaltting materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
- b) Those engaged in white washing and mixing or stacking of cement bags or any material which is injurious to the eyes shall be provided with protective goggles.
- c) Those engaged in welding works shall be provided with welder's protective eyesight lids.
- d) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
- e) When workers are employed in sewers and manholes, which are in use, the contractor shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into manholes and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public.
- f) The contractor shall not employ men below the age of 18 years and women, on the work of painting with products containing lead or any toxic material in any form. Wherever men above the age of 18 are employed on the work of such painting the following precautions should be taken:
  - i) No paint containing lead or lead products shall be used except in the form of paste or reaASST made paint. Paints like vinyle and epoxies having toxic fumes should be applied after following all precautions laid down by manufacturers.
  - ii) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.
  - iii) Overalls shall be supplied by the contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.

**xiii)** When the work is done near any public place where there is risk of drownings all necessary equipments should be provided and kept reaASST for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.

### **Hoisting Machines**

**xiv)** Use of hoisting machines and tackle including their attachments anchorage and supports shall conform to the following standards or conditions:

- 1.a) These shall be of good mechanical constructions sound material and adequate strength and free from patent defect and shall be kept in good repair and in good working order.
- b) Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from patent defects.
- 2. Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years shall be in charge of any hoisting machine including any scaffolding winch or give signals to operator.
- 3. In case of every hoisting machine and of every chain ring hook, shackle shovel and pulley block

used in hoisting or as means of suspension the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine having a variable safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

**4.** In case of departmental machines, the safe working load shall be notified by the Engineer. As regards contractor's machine, the contractor shall notify the safe working load of the machine to the Engineer whenever he brings any machinery to site of work and get it verified by the Engineer concerned.

**xv)** Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce to the minimum of the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots as may be necessary, should be provided. The workers should not wear any rings, watches and carry keys or other materials which are good conductors of electricity

**xvi)** All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.

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

**xviii)** To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the contractor shall be open to inspection by the Labour Officer, Engineers of the Department or their representatives.

**xix)** Workers handling construction chemicals shall be provided with safety equipments like, over gowns, hand gloves, goggles etc. as per the precautions prescribed by the construction chemical manufacturer.

**xx)** Notwithstanding the above clause from (i) to (xix), there is nothing in these to exempt the contractor from the operations of any other Act or Rule in force in the Republic of India.

## INDEXPROFORMAS OF VARIOUS TEST

TABLE	DESCRIPTION PAGE	NO.
1.	Record of Cement/Received/Used/Balance.	
2.	Proforma of Paint/Lead/CICO Register.	
3.	Bank for Reinforcement Bars Received.	
4.	Proforma for Register of Material of Site Account.	
5.	Proforma for Account of Secured Advance Register.	
6.	Proforma for Bulkage Test of Sand Register.	
7.	Proforma for Silt Test Register.	
8.	Proforma for Sieve Analysis of Fine Aggregate Register.	
9.	Proforma for Sieve Analysis of Coarse Aggregate Register.	
10.	Proforma for Slump Test Register.	
11.	Proforma of Cube Test Register.	
12.	Proforma for Hindrance to Work.	
13.	Proforma for Running A/c. Bill.	
14.	Account of Secured Advance if Admissible on Materials Held at Site by the Contractors	
15.	Memorandum for Payment.	

TABLE-IV

**PROFORMA FOR REGISTER OF MATERIAL AT SITE ACCOUNT**

Name of Work : Name of Article :  
 Name of Contractor : Estimated Requirement : Agreement No. : Issue Rate :

Date of Receipt	Received from/Issued to (with Ret. to So/Indent)	Receipt	Issue	Balance	Initials of Contractor	Initial of Bank's/Architect's representative	Remark
1	2	3	4	5	6	7	8



TABLE-V

**PROFORMA FOR REGISTER OF MATERIAL AT SITE ACCOUNT**

Name of Work :

Name of Contractor :

Agreement No. :

Description of Material	Qty. outstanding from previous Bill	Deduct Qty. utilised in works measured since previous bill	Qty. outstanding & Qty. brought to site since previous bill	Signature of Site Engineer	Signature of Contractor	Initial of Bank's/ Architect's representative	Remark
1	2	3	4	5	6	7	8

TABLE-XII

**PROFORMA FOR HINDRANCE TO WORK**

Name of Work : Date of Start of work :  
 Name of Contractor : Period of Completion :  
 Agreement No. : Dt. of Completion of work :

S.No.	Nature of Hindrance	Date of Occurrence of Hindrance	Date of which Hindrance was removed	Period of which Hindrance existed	Signature of Site Engineer	Signature of Bank / Architects Representative
1	2	3	4	5	6	7

TABLE - XIII

**PROFORMA FOR RUNNING A/C BILL**

- i. Name of Contractor / Agency :
- ii. Name of Work :
- iii. Sl.No. of this Bill :
- iv. No. & Date of previous Bill :
- v. Reference to Agreement No. :
- vi. Date of Written order to commence :
- vii. Date of Completion as per Agreement :

S.No.	Item Description	Unit	Rate (Rs.)	As per Tender	
				Quantity	Amount (Rs.)
1	2	3	4	5	

Upto Previous R.A. Bill		Up Date (Gross		Present Bill		Remarks
Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	
6		7		8		9

Note: 1. If part rate is allowed for any items, it \_\_\_\_\_ should be indicated with reasons

for \_\_\_\_\_ allowing such a rate. Net Value since previous bill  
 2. If ad-hoc payment is made, it should be mentioned specifically.

## CERTIFICATE

The measurements on the basis of which the above entries for the Running Bill No. -----  
 were made have been taken jointly on ----- and are recorded at pages -----  
 --- to ----- of measurement book No. -----.

-----

Signature and date  
 of Contractor

-----

Signature and date  
 of Architects  
 Representative (Seal)

-----

Signature and date  
 of Site Engineer

The work recorded in the above mentioned measurements has been done at the site satisfactorily as per  
 tender drawings, conditions and specifications.

-----

Architect  
 date of Site Engineer

-----

Signature and

TABLE - XIV

**ACCOUNT OF SECURED ADVANCE, IF ADMISSIBLE ON MATERIALS HELD AT SITE  
BY THE CONTRACTOR**

S.No.	Item	Quantity	Unit	Amount	Remarks
1	2	3	4	5	6

Total value of materials at Site.

Secured Advance @ ----- of above value - B  
=

CERTIFIED:

- (i) That the materials mentioned above have actually been brought by the Contractor to the site of the work and on advance on any quantity of any of this item is outstanding on their security.
- (ii) That the materials (are of imperishable nature) and are all required by the Contractor for use in the work in connection with the items for which rates of finished work have been agreed upon.

Dated Signature of  
Site Engineer  
Preparing the bill  
Rank -----

Date signature of  
Banks Architects----- (Name of the  
Architects)

-----

Dated Signature of the  
Contractor

TABLE - XV

**MEMORANDUM FOR PAYMENT**

R/A BILL NO.

- |  |           |
|--|-----------|
| 1. Total value of work done since previous bill (A)  | Rs. ----- |
| 2. Total amount of secured advance due since Previous Bill (B)   | Rs. ----- |
| 3. Total amount due since Previous Bill (C) (A+B)  | Rs. ----- |
| 4. PVA on account of declaration in price of Steel, Cement and other materials and labour as detailed in separate statements enclosed. | Rs. ----- |
| 5. Total amount due to the Contractor  | Rs. ----- |

**OBJECTIONS:**

- |      |  |             |   |
|------|--|-------------|---|
| i)   | Secured Advance paid in the previous   | Rs. -----   | R/A                                       |
| ii)  | Retention money on value of works as   | Rs. -----   | per accepted tenders upto date amount Rs. |
|      | Less already recovered   | Rs. -----   |   |
|      | Balance to be recovered  | Rs. -----   |   |
| iii) | Mobilization Advance, if any   |             |   |
| (a)  | Outstanding amount (principal interest) as on date                             | + Rs. ----- |   |
| (b)  | To be recovered in this bill   | Rs. -----   |   |
| iii. | Any other Departmental materials cost to be recovered as per contract, if any  | Rs. -----   |   |
| iv.  | Any other Departmental service charges to be recovered if any, as per contract | Rs. -----   |   |

(water, power etc.) enclose statement.

Total Deduction as per contract (F) Rs. -----

Adjustments, if any ----- Amount less received  
by Contractor in ----- R/A Bill (as per statement  
of  
Contractor) Rs. -----

P.V.A. Rs. -----

Total amount payable as per contract (E+F+G) Rs. -----

(Rupees ----- in words)

The bill amount to Rs. ----- (both figures and words) has been scrutinized by us after due checking of the measurements of work as required and is recommended for payment.

Date: -----

-----  
Signature of Architect  
with Seal

The bill amount to Rs. ----- certified by Consultants has been scrutinized by me after due test checking of measurements of works as required and is recommended for payment for an amount of Rs.....

Date : -----

Signature of Owners  
Engineer

### **STATUTORY DEDUCTION:**

i) Total Amount due (E) Rs. -----

ii) Less I.T. Payable Rs. -----

iii) Less S.T. Payable Rs. -----

Net Payable Rs. -----

This figures given in the Memorandum for payable has been verified and bill passed for payment ----- (in words and figures)

Date: -----

-----  
Signature of the M.D. & C.E.O.

## **SPECIFICATIONS**

### **1. General:**

- 1.1 Without forgoing the requirements of the Conditions of Tender and the Conditions of Contract the works in general shall confirm to the "Latest Specifications" published by CPWD, New Delhi and the "Specifications for Works" stated in this tender. In case of items not covered by the General Specifications referred above, reference shall be made to the appropriate I.S. Code. If there is any difference in the particular specifications of individual item of work and the description of item as given in the Schedule of Quantity, the latter shall prevail. In case of any work for which there is no specification in I.S. Specifications or in the specifications forming part of tender documents or in case there is any variation, such work shall be carried out in all respects in accordance with the instructions to be issued by the Architects. The term Department shall mean the Employer. Any reference to ISI shall also mean reference to its successor Bureau of Indian Standards. All corrections to "Latest Specifications" or revisions of I. S. shall be deemed to apply to this contract.
- 1.2 Materials bearing ISI certification mark shall be given highest preference for use in the works.
- 1.3 Where the Contractor is required to do, perform, execute (etc.) any work or service or the like, it shall be deemed to be at his own cost. Absence of terms providing supplying, installing, fixing, etc. shall not even remotely entitle the Contractor to any additional payment thereof.
- 1.4 The rates accepted in the Schedule of Quantities apply to all floors, heights, depths, leads, lifts, spans, sizes, shapes, locations, etc. unless a distinction has been included in the very Schedule.
- 1.5 The Specifications and the Schedules may have been divided into various sub-heads for convenience only. This does not limit applicability of one to the other nor it absolves the Contractor of his responsibility to complete any trade/item of work as reasonably inferred from one or more of such sub-heads.
- 1.6 The Schedule of Quantities is not necessarily based on "Schedule of Rates – Delhi 2013 or any of its later/earlier versions. Hence the Schedule of Quantities shall be read and construed according to explanations given herein and intentions gathered therefrom. A mere parallel drawn from the said Schedule of Rates shall therefore not form a basis for a variation and, or additional payment.
- 1.7 All work under this contract is deemed to be performed above subsoil water level. However, removal of water collected from rains and the like shall be treated as part of contractual risk/obligation.
- 1.8 Screws, bolts, nuts, washers, hold fasts, lugs, anchors, clamps, plugs, suspenders, brackets, straps and fasteners of the like are deemed to be included in the rates of various items unless the Schedule of Quantities expressed a different intention.
- 1.9 Resetting any displacements, making good holes/chases and such other incidental jobs are included in rates of respective items for which these are required.

### **2.0 Concrete Work (Plain or Reinforced):**

- 2.1 Centering, shuttering, staging, form work, strutting, propping (their provision and removal) shall not be paid for separately unless exclusion thereof is specifically described in the item.
- 2.2 The rates of concrete work do not include rendering or plastering but hacking and preparing surface for receiving the finishes shall be done as early as possible.
- 2.3 Any chamfers, grooves, drips, etc. which are generally and customarily required shall be provided in the concrete work integrally or otherwise without extra charges as directed by the Architect.

### **3.0 Steel Work:**

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- 3.1 The measurement of railing shall be the length of top wood/steel section as per situation along the centre line.
- 3.2 Painting in relation to steel work shall be two or more coats of approved synthetic enamel plus a coat or primer including preparation of surfaces, fillers etc. The priming coat shall be measured & paid separately in the relevant item.
- 3.3 Circular work, bends, stepping are not payable extra.
- 3.4 The steel work in single sections of R.S. Joists, flats, Tees Angles fixed independently with or without connecting plate, is described in these clauses.

**(a) Fabrication**

The steel section as specified shall be straightened and cut square to correct lengths and measured with a steel tape. The cut ends exposed to view shall be finished smooth. No two pieces shall be welded or otherwise jointed to make up the required length of a member.

All straightening and shaping to form, shall be done by pressure. Bending or cutting shall be carried out in such a manner as not to impair the strength of the metal.

**(b) Painting**

All surfaces which are to be painted, oiled or otherwise treated shall be dry and thoroughly cleaned to remove all loose rust. Surfaces not in contact but inaccessible after shop assembly, shall receive the full specified protective treatment before assembly. This does not apply to the interior of sealed hollow sections. Part to be encased in concrete shall not be painted or oiled. A priming coat of approved steel primer i.e. Red Oxide Zinc chrome primer conforming to IS: 2074 shall be applied before any member of steel structure are placed in position or taken out of workshop.

**(c) Welding**

Welding shall generally be done by electric arc process as per IS: 816 and IS: 823. The electric arc method is usually adopted and is economical. Where electricity for public is not available generators shall be arranged by the contractor at his own cost unless otherwise specified. Gas welding shall only be resorted to using oxyacetylene flame with specific approval of the Engineer-in-charge. Gas welding shall not be permitted for structural steel work. Gas welding requires heating of the members to be welded along with the welding rod and is likely to create temperature stresses in the welded members. Precautions shall therefore be taken to avoid distortion of the members due to these temperatures stresses.

The work shall be done as shown in the shop drawings which should clearly indicate various details of the joints to be welded, type of welds, shop and site welds as well as the types of electrodes to be used. Symbol for welding on plane and shops drawings shall be according to IS: 813.

As far as possible every efforts shall be made to limit the welding that must be done after the structure is erected so as to avoid the improper welding that is likely to be done due to heights and difficult positions on scaffolding etc. apart from the aspect of economy. The maximum dia of electrodes for welding any work shall be as per IS: 814 and appendix B' of IS: 823. Joint surfaces which are to be welded together shall be free from loose mill scale, rust, paint, grease or other foreign matter, which adversely affect the quality of weld and workmanship.

**4.0 Flooring:**

- 4.1 The rates of cement concrete flooring and marble chips flooring are exclusive of dividing strips for formation of panels.
- 4.2 Borders, margins, bands, nosings, etc. are not payable extra. Treads shall be measured as floors, risers as skirtings. However, areas of returns (finished thickness), nosing shall be added respective items.
- 4.3 No extra shall be paid for cutting of glazed tiles or for wastage thereof.
- 4.4 Marble/Kota stone slabs shall be of selected quality, hard & sound and shall be approved by

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the Architects. The thickness of the slabs shall be as specified in the description of the item. Tolerance of 2mm shall be allowed for the thickness. In respect of length & breadth of slabs (Where flooring to be laid) a tolerance of 5mm shall be allowed. Every slab shall be cut to the required size and shape, top waviness shall be removed, the sides (edges) shall be removed, the sides (edges) shall be table rubbed with coarse sand or machine rubbed before paving. All angles of the tiles shall be true equal and free from chipping and the surface shall be true and plane.

- 4.5 Marble slab/kota slab shall be cleaned, wetted and mopped before laying.
- 4.6 Polishing shall be done by machine in four different courses. Ist course shall be of rubbing with carborundum stone No. 45, the second with No. 120, and the third with No. 320 to get even and smooth surface with out pinholes. Where ever use of machine is not feasible to work, polishing shall be done by hand with No. 45, No. 80 and with No. 120 carborundum stone respectively. Lastly oxalic acid shall be dusted over the surface @ 33 gm per square meter sprinkled with water and rubbed hard with namdah block (pad of wooden rags).
- 4.7 Marble chips, kota stone, marble (all floors, skirting, risers, dado, counter tops, treads) shall finally be polished with approved floor wax polish as directed at no extra cost.
- 4.8 Marble (counter tops) shall be of full width and in single piece up to length of 1.5m. Granite for name-plate shall be in one single piece.

## **5.0 Finishing:**

- 5.1 Items of plastering apply to all locations including rough sides of walls, curved surfaces, all heights, etc. without limiting generally of para 1.4.
- 5.2 Preparation of surfaces including raking out joints, hacking, brushing, watering, etc. is included.
- 5.3 Drip mouldings shall not be payable extra.
- 5.4 Grooves shall be provided in plaster as directed by Architect at corners of ceiling slabs around the columns & beams at no extra cost.
- 5.5 Strips of G.I. chicken mesh 250mm wide shall be provided in plaster at all junctions (which are flush) between masonry /columns, masonry /beams.

## **6.0 Wood Work:**

- 6.1 The areas of doors & windows shutters shall be measured to the nearest cm in closed position covering the rebates of the frame but excluding the gap between the shutter and the frame. Over lap of two shutters shall not be measured. All work shall be measured for finished dimensions. No allowance shall be made for dimensions supplied beyond those specified. Length of each piece shall be measured overall nearest to 1 cm, so as to include projections for tenons, scraves or mitres, width and thickness shall be measured to the nearest mm.
- 6.2 Where painting, polishing has been included in the item the same shall be executed as per Architect's directions. Painting shall be two or more coats of approved synthetic enamel plus a coat of fire resistant primer to wood work as approved by Architect and shall conform to BS-476 part 7 for class I surface spread of flame. Preparations of surfaces, fillars, etc. are included. This primer shall also be applied before polishing (i.e. French Spirit Polish). The fire resistant primer shall be measured & paid separately in the relevant item.
- 6.3 All flush door shutters shall have teak lipping on all edges as directed with extra thickness of lipping of meeting edges of double shutter doors. Glasses 5.5mm thick or 4mm thick shall respectively weigh not less than 13.75 Kg/sqm. Or 10 Kg/sqm. nBends, stepping and circular shapes in railings are integral part of the rate. The widths of various rails & styles shall be as

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described in the items or shown in the drawing. All aluminum section & fittings used shall be ISI marked. All screws for fixing of fittings/fixtures shall be of matching finish. In case of composite units (M.S. frame + teak wood shutter) the hold fasts shall be added or fixed with counter sunk machine screws. Also the M.S. frames shall have necessary holes and other arrangement for receiving/fixing of fittings

#### **7.0 Plaster of Paris Punning (P. O. P.)**

If the plaster surface is to be finished with plaster of paris punning, the surface shall be combed slightly with the wire brushes or nails before it is completely set to form key for plaster of Paris punning. The surface shall be thoroughly cleaned of dust then only damped but not soaked before the application of plaster of paris punning. The Gypsum for preparing punning shall be approved quality. It shall be dry and free from lumps and shall be suitably packed in watertight bags or containers. Paste shall be prepared by adding required quantum of water and it shall be used before it sets. No dropping paste shall be used in the work. Punning shall be applied to the prepared surface with steel trowel to a thickness required to make the surface produce perfectly smooth and even surface working from top to bottom. It shall then be sand papered to give a smooth and even surface. Any unevenness shall be made good by applying putty, made of plaster of paris mixed with water, then sand papering the same after it is dry. Pilling in plaster shall be made good with plaster of paris mixed with colour to be used. The surface shall then be rubbed down again with a fine grade sand paper and made smooth. The surface shall be allowed to dry thoroughly before the regular coat of paint is applied. The measurement shall be in square meter.

#### **8.0 Plastic Emulsion Paint:**

Plastic emulsion paint shall be of approved manufacturer and shall generally confirm to IS-5411 (Part-I)-1969.

The colour and shade of the emulsion shall be got approved by the Architect. Double scaffolding shall be used, ladden if used shall be tied with old gunny bags at top to prevent damage or scratches to the walls. The instructions of the manufacturer shall be followed, in application of priming and finishing coats. Turpentine or any other solvent shall not be used for thinning the paint.

Minimum 3 coats of paint shall be applied inclusive of primer coat. If a proper and even surface is not obtained to the satisfaction of the Architects in 3 coats, Contract shall carry out additional coats of painting to approval at his expenses. Care shall be taken that dust or other foreign material does not settle or disfigure the various coats. The measurement shall be in square meter.

#### **9.0 Miscellaneous:**

The work of cupboard/cabinets shall be done as per drawings. The depth of cupboards shall be as shown in drawings. The work includes holdfasts and other accessories usually required for complete installation. All inner surfaces shall be painted & outer face polished as per Architects approval.

All exposed cut ends of boards shall be provided with hardwood lippings.

Kail wood to be used shall be of the best available quality.

The joints in cement concrete pavements/roads shall be formed as per design and pattern. The joints shall be cleaned and neatly filled with 'A' grade sealing compound. Side kerbs shall be made in situ to design and volume paid for in the same item. Required side forms shall not be paid separately.

For whitewashing, colour washing, distempering on sand faced plaster or on rough cast plaster with stone aggregate upto 10mm, only flat single surface will be measured and paid.

In the case of R.C.C. Jallies upto 50mm thick only single flat surface will be considered for each side of painting.

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## **ADDITIONAL SPECIFICATIONS FOR STRUCTURAL REHABILITATION WORKS**

### **1 - GENERAL**

1.1 **Submittals:** The contractor shall submit the required documents regarding the genuineness of materials used such as manufacturer's certification that the firm has manufactured the supplied materials, copy of paid bills etc.

1.2 **Labelling:** All containers shall be clearly marked with following information.

- Name of Manufacturer
- Manufacturer's product identification
- Manufacturer's instruction for mixing.
- Warning for handling and toxicity.
- Date of manufacturing & it's self life.

1.3 **Measurements Control:** Measurements for payment of the item of repair shall be done only after completion of all steps of execution listed in the particular specification.

#### **1.4 Product Delivery, Storage and Handling:**

- **Storage:** The contractor shall get approved from the CCS the storage space for epoxy/polymer/patented/other manufacture of materials to ensure that the storage temperature is maintained between 5° C and 38° C unless recommended otherwise by the manufacturer.
- **Delivery:** Contractor shall deliver all materials in sealed containers in packing as approved by CCS with labels legible and intact.
- **Handling:** All materials shall be handled in a safe manner and in a way to avoid breaking container seals.

1.5 **Environmental Requirements:** Contractor shall comply with manufacturer recommendations so as to comply with environmental conditions under which the repair materials may be applied.

1.6 **Personnel:** The contractor shall employ Principal Technical Representative & skilled site workers who shall have adequate qualifications and experience for the proper execution of such works and already performed works of this kind with success.

#### **• Principal Technical Representative**

(a) The Principal Technical Representative is the engineer representing the contractor in accordance with Clause 36 of the contract and whose credentials were submitted to, and approved by the CCS before start of work. He must be present on the construction site at all times during the work.

(b) The Principal Technical Representative ensures safe execution of the works according to the plans and, in particular, discharges the following tasks over and above his tasks.

- (i) Notifying the works to the employer and the consultant
- (ii) Arranging for and carrying out supervision.
- (iii) Using the envisaged, (quality) assured construction materials.
- (iv) Where relevant, ensuring adequate treatment of the concrete substrate and intermediate layers.

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- (v) Ensuring compliance with the technical conditions for the works and with proper production, processing, after-treatment, and formwork removal as stipulated by the CCS or the consultant.
- (vi) Communicating the most important results of internal supervision measures to the external supervising authority.
- (vii) Supervision measures in respect to preventive safety engineering and occupational medicine.

• **Skilled Site Personnel:**

- (a) Skilled workers shall be employed by the Contractor. They shall be equipped with special training in manual crafts and possessing knowledge, skills and practical experience in respect of concrete technology and other materials appropriate to the scope, type and difficulty of the repair measures. They must be present on each construction site at all times. His qualification for works according to these guidelines must be demonstrated to the external supervision agency by means of an appropriate certificate.
- (b) The Contractor must ensure that the skilled workers employed at site, are informed of and instructed in protection and repair measures at maximum intervals of 3 years so as to enable them to take all measures for the proper execution of the construction measure, including tests and internal supervision as per the latest prevalent technology.
- (c) The tasks of the skilled site personnel include
  - (i) Practical execution of the protection and repair measures according to the prescribed planning / execution documents (directions for execution).
  - (ii) Specifying and supervision any work delegated to other skilled site personnel, insofar as it affects the success of the measure.
  - (iii) Directing the other skilled site workers to whom execution of the construction measures has been entrusted and checking their manual craft skills.
  - (iv) Carrying out the tests required as part of internal supervision and recording and interpreting the results.

**1.7 Safety:**

- **Workers:** Contractor shall advise all workers working with epoxies to avoid contact with eyes and skin, inhalation of vapours, and ingestion. Necessary protective and safety equipments in the form of hand gloves, welders' goggles, shall be provided by the contractor and used on site.
- **Structural Safety:** Care shall be taken to ensure that vibrations are well within acceptable limits for structural safety and users of the building.

**1.8 Tools & Plants (T&P):**

- For the execution of protection and repair works, properly maintained plant and equipment permitting adequate treatment of the concrete substrate, proper execution of the work and determination of the required properties of the construction materials and construction measures must be present on the construction site. In particular, these are plant and equipment for
  - (a) Treatment of the concrete substrate
  - (b) Dosing of the base materials.
  - (c) Mixing of the base materials
  - (d) Processing and after-treatment
  - (e) Measurement and testing.

1.9 To ensure efficient and effective functioning, all plant and equipment must be checked on-site and at field material testing laboratory prior to first use and at appropriate intervals thereafter.

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1.10 Contractor will provide his own genset for running of machinery, lights etc. RAJASTHAN CGHS may, at its discretion and subject of availability, provide electricity for the work. In such case, contractor will install his own sub-meter and reimburse the electrical charges to RAJASTHAN CGHS as decided by CCS.

1.11 In case of chemical curing of cement work at any location, no deduction shall be made on account of non-requirement of wet-curing at that location.

## **2 - ENGINEERED STEEL TUBULAR DOUBLE SCAFFOLDING SYSTEM**

**2.1 PURPOSE:** To provide a scaffolding system with adjustable working platforms on the exterior of the building for the workmen to work upon any part of the area to be accessed safely and with ease for surface preparation, application of repairs and construction activity.

**2.2 Materials:** The standard proprietary tubular double scaffolding system of repute with all accessories, working platforms etc.

**2.3 Design:** It shall be designed for all the incidental dead, live and wind loads as per IS: 875 in steel tubular sections as per general design considerations governed by IS:800. The design of the scaffolding system shall cater to the safety features for the workmen.

**2.4 Fabrication and Erection:** Fabrication and erection shall be done as per the design brief and installation instructions of the proprietary firm. It shall be maintained in functional condition for the work duration.

**2.5 Measurements:** For the purpose of payments, length and height of double scaffolding on the exterior of building shall be measured correct to a centimeter and area worked out in square metres correct up to second place of decimal. For internal work, suitable fixed or mobile platform, self supporting scaffolding with working platforms shall be erected for which no payment shall be made.

**2.6 Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above including its removal after the work duration. The removed material shall remain the property of the contractor. 50% payment shall be released upon erection of scaffolding and balance 50% shall be released after dismantlement and making good the damages.

## **3 - PLYWOOD COVERING PANELS TO COVER WINDOWS ETC. DURING REPAIRS:**

**3.1 PURPOSE:** To protect the finished items against their spoiling/damage to finishes during the process of carrying out repairs in a building. The items could include finished windows, doors, glass curtain wall or other such items.

### **3.2 Materials:**

- Wooden Battens of size 50mm X 50mm (approximately) or as approved by CCS, free from warping, cracks etc. made from locally available timber.
- Plywood of suitable thickness, preferably 8 mm thick, as approved by CCS.
- Nails, screws etc. as per requirement.

### **3.3 Fabrication:**

- Size of covering panels shall be more than the size of windows etc. to be shielded/ protected, enough to be fixed to the walls without damaging the windows etc.
- Wooden battens shall be cut approximately to the size of panels of windows etc. to be protected. The joints of the wooden framework shall be lap joint or as approved by CCS.

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- Where the panel size is more than 2 square metres or as specified by the CCS, the stiffening shall be done with batten backing to impart stiffness enough to provide rigidity against undue deflection due to impact of falling debris, self load, etc.

- Plywood shall be fixed with nails/screws over the batten frames. The spacing of nails/screws shall be about 300mm c/c or as may be required at site.

3.4 **Fixing:** The plywood covering panel shall be suitably fixed without damaging the windows etc. being protected by such panels with nails/screws fixed in walls strong enough to resist the forces likely to be imparted during repair work. It shall be done in such a manner that it can be removed with ease without damaging the covered windows etc. after completion of repairs.

3.5 **Removal:** After completion of work, the covering panels shall be removed carefully, so as not to cause any damage to windows etc. covered. The damages, if any, shall be made good.

3.6 **Measurements:** The measurements shall be done correct to a centimeter for the dimensions of window etc. shielded /protected and area shall be worked out in square metre correct to second place of decimal.

3.7 **Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above including its removal after the work duration and making good the damage, if any, caused to windows etc. so protected. The removed material shall remain the property of the contractor.

#### **4 - TEMPORARY BARRICADING USING ANGLE IRON VERTICALS AND CGI SHEETS PANELS:**

4.1 **PURPOSE:** To provide a barricading on ground to physically define the boundaries of the site of construction/repair activity for restricted entry of only those involved with the construction work.

4.2 **Materials:** Available Corrugated G.I. Sheet minimum 24 G thick; Framing structural material at least MS Angle iron of size 40x40x5mm or equivalent)

#### **4.3 Fabrication & Erection:**

- Size of framing panel shall be decided depending upon site conditions and these could be approximately 2.0 metres long with height as 1.8 metre.

- It shall be made up at least of two verticals, each with additional length of about 600 mm for fixing in to ground firmly and two horizontals equal to the length of panel.

- It shall be made up by cutting the structural sections to size, shear punching holes in verticals and horizontals for nuts and bolts or making other suitable provision for receiving CGI sheet or other specified panelling material and connection of panel with adjoining panels.

- Fabrication of frame of an individual panel shall be by welding at corners, welding MS plate at base of verticals or any other acceptable practice approved by CCS.

- G. I sheet or other specified panelling material shall be suitably fixed. It shall preferably be done by means of nuts and bolts at its ends spaced at about 300 mm c/c transversely and at about 600 c/c longitudinally along corrugations. The corrugations of CGI sheet shall run along the shorter span of the panel.

- In case of newly fabricated panels, these shall be painted with red oxide zinc chromate primer on steel work and approved primer on other material and at least one coat of paint of approved shade. In case of used panels, one coat of paint of approved shade shall be applied over the existing paint. The portion of verticals to be embedded in ground shall be suitably protected against rusting by painting it with bitumen or other suitable paint.

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- The fabricated panels shall be suitably fixed vertically and firmly in to the ground to the satisfaction of Engineer-in charge by maintaining a uniform height of about 1.8 metres above GL and connecting each panel with the adjoining panels with nut and bolts or other suitable means.
- Suitable provision of frame/posts in the openings provided in barricading shall be made for receiving door shutter (payable separately) at locations as approved by CCS.

**4.4 Measurements:** The dimensions of barricading shall be measured correct to a centimeter and area shall be worked out in square metre correct to second place of decimal. No deduction shall be done for such openings made in the barricading, where door frame or posts have been separately provided to receive door shutter.

**4.5 Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above including its removal after the work duration. The removed material shall remain the property of the contractor.

## **5 - TEMPORARY PROTECTIVE FABRIC SCREENS:**

**5.1 PURPOSE:** To protect passersby from falling debris and also to protect the workmen and structure being repaired against direct exposure to sun.

**5.2 Materials:** For screening purpose jute cloth, woven PVC cloth, geo-textile or wire-mesh as specified and approved by CCS shall be used, which shall conform to their relevant BIS Code. Screen materials shall be fixed by suitable means comprising of M.S. Flats/ J-bolts /nails/clamps, etc with washer or any other suitable means on frames of existing scaffolding etc.

### **5.3 Procedure**

- Scaffolding, if required, comprising of verticals, horizontals and diagonal bracings of steel tubes shall be fixed over ground which is payable separately.
- One end of the screening material, brought to site in looms/rolls, shall be properly fixed over top horizontal member with suitable means and suspended so as to cover the required area.
- The vertical fall of screen shall be suitably fixed/firmed up at intermediate levels so as to keep it in position during the work duration.
- Next strip of the screening material shall be fixed with its sides stitched or suitably jointed or lapped with the previous ones as approved by CCS.
- Spacing of frame member of scaffolding shall be so selected that the sagging of screen shall not hinder the repair process.
- The contractor shall maintain the protective screens in acceptable conditions for the entire work duration as required by the CCS.

**5.4 Measurement:** Length and height of screen shall be measured correct to a centimeter and area shall be worked out in square metres, correct up to second place of decimal.

**5.5 Rate:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above including its removal after the work duration. The removed material shall remain the property of the contractor.

## **6 - PROPPING & SUPPORTING STRUCTURAL MEMBERS**

**6.1 PURPOSE:** To provide relief in stress and strains of structural members, which are deteriorated, overstressed, required to be repaired or strengthened, by transfer of dead and live loads safely through an alternate system to the founding medium.

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## 6.2 General

- In repairs and rehabilitation works, design of false work is essential for avoiding damage to the distressed structure.
- This is one of the most important operations in carrying out rehabilitation of a distressed structure. The success of structural repair depends mostly on ensuring that the parent material and the repair material of the structure participate jointly in resisting the applied loads due to self-weight and superimposed loads. Therefore, the quantum of relief given to distressed structural member determines success of the repair in the structural member.
- It is necessary that the self-load and imposed loads over the structural members being repaired are transferred to the false work and the adjoining existing structural members safely, taking in to account the capacity of such adjoining members and the false work. And thus, the structural member is relieved of strains and stresses before it actually receives the structural repairs.
- Particular attention is to be given to the shear capacity of the existing beams receiving load through false work, as it may lead to sudden and permanent damage to the structure being repaired.
- Standardised false work systems are preferred option. The design of false work is to follow the general principles for the design of a permanent structure and relevant codal provisions.
- Design brief covering all important operating instructions to the field engineers has to be prepared meticulously describing all issues crucial for the successful repair process.
- The specifications of formwork (Cantering and shuttering) contained in latest CPWD specifications shall otherwise generally apply except otherwise mentioned herein these specifications.

**6.3 Design Brief:** Following are the important points to be included in the design brief of false work.

- The plan of the structure.
- Design considerations clearly giving material properties of the false work.
- Dead and Imposed loads (including horizontal loads) on the false work.
- Type of foundation for false work and its capacity, including flooding possibility, if any.
- Reserve strength of supporting parent members.
- Drawing & Specifications of false work complete with required instructions.
- Adjustment arrangement at the time of repairs.
- Sequence of fixing and removal of false work including safe load transfer
- Sequence of repair and strengthening

## 6.4 Requirements of good false work

- It shall be strong enough to withstand all the dead and live loads and forces caused by dismantling, chipping, ramming, vibration of concrete and other incidental loads imposed over it including that of working platform and personnel during and after repair work.
- It shall be made sufficiently rigid by using adequate number of ties and braces, screw jacks or hard wood wedges wherever required to ensure actual relieving of the load from member and its transfer through props, supports and structurally sound structural members of the existing structure.
- Sole plates are secured and fixed against movement, forming level, camber as specified, if any.

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- Necessary plates, screw jacks, hard wood wedges shall be provided wherever required to make up any settlement in the props/supports.
- Ladders, platforms, guardrails for providing access to the workmen are secured with the other members.
- De-shuttering shall be done after the elapse of specified time and re-propping done if specified. The manner of de-shuttering shall avoid instability during removal of false work.

**6.5 Inspection of False Work:** Following are the checkpoints before allowing the next stage of false work to proceed:

- The compliance of notes given in the false work drawing and the specification of materials to be used in the work.
- Setting out of the work, founding medium for support and sole plates of the props.
- Sequence of erection keeping the stability of the false work in mind at every stage by ensuring proper connection of joints. It must be ensured that ties and /or bracing (longitudinal, lateral and inclined) have been joined near the nodes simultaneously to ensure stability of the false work.
- The plumb of vertical members to be ensured within specified limit.
- The false work executed shall conform to the approved design.
- Centering and shuttering is properly serviced after removal and before its next use.

## **6.6 Execution Procedure:**

- **Step-1:** Design the prop and support system using steel tubular sections with extension pieces or with built-up sections to ensure required relief to structural members from stresses due to loads coming over it, including the self-load of the member itself. No timber ballies etc. shall be used as props. However, timber runners/beams/planks of adequate section could be used for supporting structural beams, slabs as load distribution mechanism.

- **Step-2:** Prepare the design brief covering all-important operating instructions and shall be got approved from the CCS beforehand.

- **Step-3:** Arrange all propping and supporting elements as per approved design.

- **Step 4:**

(a) For Columns and beams: Identify and mark the members under structural distress, which are unable to sustain service load conditions and/or which are required to be ripped open for undertaking structural repairs or retrofitting.

(b) For Slabs: Identify and mark the points for propping and supporting on soffit of RCC slab requiring structural repairs, for transfer of loads to relieve it from stresses and simultaneously avoiding its collapse during the repair process. However, such points shall preferably be not be farther than 1.2m x 1.2m.

- **Step 5:**

(a) For Columns: Prop and support the column for the full height of building, to relieve its axial loads through its adjoining intersecting beams and/or slabs at all floor levels of the building using designed steel props adjustable with extension pieces, screw jacks etc with sole plates. This shall be done, even if only one storey length (intermediate, lowest or the uppermost storey) out of many storey lengths of the same column, had been identified for structural repairs. The loads relieved are required to be transferred directly through props and supports on to the building foundation system or to soil as per approved design of foundations. Under no circumstances, the column loads above the storey should be transferred by transfer through adjoining upper or lower intersecting beams alone.

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(b) For Beams: Prop and support the identified beams to provide relief in stresses & strains to the distressed beam by suitably supporting such RCC slabs, which are contributing load to the beam itself. The load relieving shall be done using designed steel props adjustable with extension pieces, screw jacks, hard wood wedges etc with sole plates at suitable intervals but shall generally not exceed 1.5 metre centre to centre as per design approved by CCS. To avoid any overstressing of any existing flexural members receiving the transferred load of the distressed beam, the steel prop and supports shall be taken and continued to the firm ground. For upper storey's, the steel props shall be taken at least two storey's below or as per the design approved by CCS

(c) For Slabs: Prop and support slabs at identified locations with steel props to provide relief in stresses & strains suitably as per approved design with bearing plates adjustable with extension pieces, screw jacks etc. To avoid any overstressing of existing flexural members receiving the load of the distressed RCC slab, the steel props and supports shall be provided just below the aforesaid identified points and shall be taken and continued to the firm ground or at least two slabs below as per the design approved by CCS.

- **Step-6:** Work shall be inspected before taking up structural repairs for safe load transfer to the founding medium by implementation of approved drawings/design of prop & support system.

6.7 **Measurements:** Number of props of specified capacity shall be measured for the purpose of payment.

6.8 **Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above including its removal after the work duration. The removed material shall remain the property of the contractor.

## **7 - REMOVAL OF PLASTER MANUALLY FROM MASONRY OR CONCRETE SURFACE USING CHISEL AND HAMMER AND DISPOSAL OF DEBRIS ETC.:**

7.1 **PURPOSE:** For removal of all type of loose /delaminated /damaged/weak cement plaster from surface of masonry or concrete.

### **7.2 Procedure:**

- **Step-1:** Safety shall be ensured in accordance with contract conditions and specifications.
- **Step-2:** Provide double scaffolding, protective screens etc. if necessary (To be paid separately)
- **Step-4:** Existing plaster to be to be identified for removal by tapping all areas and its boundary shall be marked with a colour marking (in an optimal rectangular shape), which shall be approved by CCS.
- **Step-5:** Make a cut normal to the surface all along the boundaries with power driven cutters. The depth of cut shall not exceed the thickness of plaster.
- **Step-6:** Remove the plaster manually with the help of chisel and hammers to completely expose the parent masonry or concrete surface, so as not to have any traces of such plaster left behind.

7.3 **Measurement:** The dimensions of removed plaster patch shall be measured correct to a centimeter and area shall be worked out in square metres correct to second place of decimal. The lead of disposal shall be measured in metres and rounded off to nearest multiple of 50 metres.

7.4 **Rate:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above.

## **8 - CHIPPING OF UNSOUND/WEAK CONCRETE MATERIAL:**

8.1 **PURPOSE:** To remove weak, loose or carbonated concrete over an area from its surface with pneumatically operated or power driven tools by chiselling, chipping etc.

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**8.2 Materials and T&P:** Power or pneumatically driven chisel, chipping tools complete with accessories, hand-tools like chisels, hammer, pH indicator (0.2% phenolphthalein solution) with pH range at least up to 10.5 and clinical injection syringe.

**8.3 Safety:** Safety shall be ensured in accordance with contract conditions and specifications.

#### **8.4 Procedure:**

- **Step-1:** Prop and support to relieve the structural member of stress and strains.
- **Step-2:** Scaffolding, if necessary for the exterior members, shall be done for working upon the area.
- **Step-3:** Working Platforms for interior members, if necessary, shall be erected suitably or provided as mobile.
- **Step-4:** Provide Protective Screen, if necessary.
- **Step-5:** Mark off the area to be repaired using straight lines between corners. The marked area shall have 90° corners with the sides parallel or normal to the direction of the reinforcement. The marked boundaries for the repair area should be a minimum of 50 mm outside the perimeter of the spall. For a single spall, the repair area should have a minimum width of 100mm in any direction. If a number of spalls are closely located to each other, these spalls should be included in a single area marked for repair.
- **Step-6:** Cut shall be made along the marked boundary, normal-to-the surface. It should be made with a diamond cutter blade. However, when diamond cutting is not practical, the normal cut can be made with a power driven chisel. Minimum depth of cut shall be 10 mm. In situations where the diamond saw could cut into the reinforcing steel due to inadequate concrete cover, the boundary edge should be formed manually by means of chisel and impact hammers. A cover meter could be used to estimate the depth of cover.
- **Step-7:** Chipping to remove all the unsound and weak concrete material shall be done carefully from the damaged portions of structural members by adopting mechanical or manual means up to the required depth to produce sound concrete surface to a near uniform depth for the repair area.

Tolerance: The chipping tolerances shall be  $\pm 5\text{mm}$

Chiselling: Hand Tools are typically applicable for concrete removal for smaller, moderate and areas of limited access. Removal should begin at the interior of the repair area and progress toward the boundaries, using suitable hammer. Power Driven Chisels/Hammers are normally applicable for chiselling smaller thicknesses up to about 50 mm. Pneumatic Hammers are normally applicable for chiselling larger thicknesses in excess of 50 mm Mechanical Milling (single drum, rotary cutter head with Tungsten-carbide bits ) is applicable for large areas where the concrete cover is to be removed. Care must be taken to avoid contact with the reinforcing steel as both the reinforcement and the cutter drum could be damaged. Rounded And Feathered Edges should be hand cut to form normal-to-the-surface boundaries. All the edges and cavities shall be square shouldered.

- **Step-8:** Test for carbonation shall be carried out at embedded or exposed reinforcement locations, by spraying phenolphthalein indicator on concrete in contact and in the immediate vicinity of reinforcement soon after its chipping. As otherwise, chipped concrete surface in contact with air is likely to get carbonated soon after its coming in contact with atmospheric carbon dioxide.
- **Step-9:** A full-depth chiselling and removal of concrete all round reinforcement shall be carried out, in case the concrete in contact and in immediate vicinity of the reinforcement is carbonated.
- **Step-10:** Inspection and soundness testing, after concrete removal & cleaning, for weaknesses and delaminating of exposed surfaces shall be visually carried out. If required, additional removal will be done.

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- **Step-11:** Cleaning of debris and dust shall be carried out from within the chiselled/ chipped area and its disposal as per direction of the CCS.

**8.5 Measurements:** The dimensions of the area chipped off for RCC slabs, beams and columns shall be measured separately. The average thickness shall be determined by taking an average of five thickness readings recorded with one reading each at corner and at the point of intersection of wires stretched diagonally from corner points of the rectangular area chipped. The extra/less thickness than specified for slabs, beams and columns shall be recorded in millimeters. Corresponding areas of slab, beam and columns shall be separately worked out in square meters correct to second place of decimal. The lead of disposal shall be measured in metres and rounded off to nearest 50 metres.

**8.6 Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above except those involved in steps 1, 2, 4, 8 and 9.

## **9 - REMOVING CONCRETE ALL AROUND REINFORCEMENT INCLUDING FROM ITS BEHIND:**

**9.1 PURPOSE:** To create an average clear air gap equal to nominal size of coarse aggregate plus 5 mm all around embedded reinforcement, in contact with carbonated concrete for rust removal & passivating its surface with fresh alkaline passivating coat and concrete/ mortar.

**9.2 Materials and T&P:** Power or pneumatically driven chiselling, abrading, chipping tools complete with accessories, hand-tools like chisels, hammer, pH indicator i.e. 0.2% solution of phenolphthalein indicator for pH range preferably up to 11.5 or at least up to 10.5, clinical injection syringe.

**9.3 Safety:** Safety shall be ensured in accordance with contract conditions and specifications.

### **9.4 Procedure:**

- **Step-1:** Prop and support, if not done already, to relieve the structural member of stress and strains.
- **Step-2:** Scaffolding & working platforms for the exterior members, if not already done and if necessary, shall be erected for working upon the area.
- **Step-3:** Working Platforms for interior members, if not already done and if necessary, shall be erected suitably or provided as mobile.
- **Step-4:** Provide Protective Screen, if not already done and if necessary.
- **Step-5:** Test for carbonation shall be carried out at embedded or exposed reinforcement locations, by spraying phenolphthalein indicator on freshly chipped concrete in contact and in the immediate vicinity of reinforcement.
- **Step-6:** A full-depth chiselling and removal of concrete all round reinforcement shall be carried out, if the concrete in contact and in immediate vicinity of the reinforcement is carbonated. The concrete around reinforcement shall be removed so as to have a near uniform air gap of about 5 mm plus the nominal size of coarse aggregate to be used in repair concrete/mortar. However, the air gap shall not be less than 15 mm in any case. Power/pneumatic driven tools/chisels shall be used for such portions of carbonated concrete around reinforcement, which could not be removed manually, to achieve a near uniform required air gap all around including behind the reinforcement. Power Driven Chisels/Hammers are normally applicable for chiselling smaller depths up to about 50 mm. Pneumatic Hammers are normally applicable for chiselling larger depth in excess of 50 mm.
- **Step-7:** Cleaning of debris and dust shall be carried out from within the chiselled /chipped area and its disposal as per direction of the CCS.

**9.5 Measurements:** The reinforcing bars cleaned of concrete shall be grouped in two diawise categories, i.e. upto and including 12 mm and the other in excess of 12 mm. For each of such

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categories of bars, length cleaned of concrete all around, shall be separately measured for cleaning manually and using standard power/pneumatically driven abrading/chiselling tools. The length shall be measured in metres correct up to second place of decimal.

9.6 **Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above except those involved in steps 1, 2 and 4.

## **10 - CLEANING REINFORCEMENT OF TOTAL RUST INCLUDING FROM BEHIND REINFORCEMENT:**

10.1 **Materials and T&P:** Chiselling, abrading, chipping, hammering, wire brushes, paint brush, abrading cloth, etc hand tools complete with accessories, tested and approved chemical rust remover.

10.2 **Safety:** Safety shall be ensured in accordance with contract conditions and specifications.

### **10.3 Procedure:**

- **Step-1:** Cleaning by manual method-

Remove the rust manually from all round the surface along the length of reinforcement, using hand tools like chisels, hammers, wire brushes, abrading cloth/paper, etc. This shall be continued manually along the length of the rusted reinforcement till such time that the steel surface is cleared of all rust that could be removed manually.

- **Step-2:** Cleaning by chemicals –

Remove the Rust by using tested chemicals, if directed by CCS, due to unsatisfactory results of manual rust removal. Chemical rust remover shall be brush applied over the reinforcement surface thoroughly all around the circumference and along the full length of rusted reinforcement. After 24 hours (or as prescribed by manufacturer) of its application, the surface shall be cleaned with wire brush and all loose particles removed. It shall be washed with water thoroughly and allowed to dry.

10.4 **Measurements:** The length of reinforcing bars cleaned of rust all around, shall be separately measured for cleaning manually and using alkaline chemical rust remover. The length shall be measured in metres correct up to second place of decimal.

10.5 **Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above.

## **11 - CLEANING REINFORCEMENT AND EXPOSED CONCRETE SURFACE OF LOOSE AND FOREIGN MATERIALS BY MEANS OF SAND BLASTING:**

11.1 **PURPOSE:** To clean the prepared concrete surface of all-loose, lightly sticking materials, including the foreign materials, loose concrete, aggregates etc so as to provide a good bond with the applied repair material and to clean the reinforcement surface of any minor rust remaining after manual and chemical cleaning to achieve shining bright metal.

11.2 **Materials and T&P:** Coarse sand conforming to Zone I or II as per IS: 383, Air compressor of a minimum 35 Kilowatt capacity, spray gun for sand, all related accessories for sand blasting, hand tools like wire brushes, chisels, etc

### **11.3 Testing of Materials and T&P:**

- The sand shall be tested to conform to the specification.
- The air compressor shall be tested to perform to the required standards as laid down in specifications of shotcreting.

11.4 **Safety:** Safety shall be ensured in accordance with contract conditions and specifications.

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**11.5 Procedure:**

- **Step-1:** Specified tested coarse sand shall be collected at site in required quantity for sand blasting.
- **Step-2:** Make available mechanical power driven air compressor in working condition at site with all required accessories for carrying out sand blasting as well as air blasting operations.
- **Step-3:** Coarse sand shall be sprayed under pressure over the exposed surface so as remove all loose and foreign material and to cause an intense abrading of the reinforcement and removal of rust from entire surface of reinforcement to achieve shining bright surface. The sand blasted surface shall be subsequently cleaned with oil free air blast.

**11.6 Measurements:** Length and breadth of the area cleaned by sand blasting shall be recorded correct to a centimeter and area worked out in square metres correct to second place of decimal.

**11.7 Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above.

**12 - SPECIFICATION FOR PROVIDING DRILLING AND INSERTING NIPPLES ALONG CRACK LINES:**

**12.1 PURPOSE:** To fix injection nipples and seal the remaining portion of honey combed or cracked concrete /masonry for grout injection.

**12.2 Materials and T&P:** 12 mm diameter approved PVC/aluminium /Galvanised Iron nipples, Chisel, hammer, power driven tool for chase cutting & drilling, hand operated blow out pump, sealing putty of polyester/epoxy/polymer modified mortar etc. and all related accessories and materials.

**12.3 Testing:** The sealing putty and the nipples shall be tested to conform to the manufacturers specifications. The power driven tools shall be test driven and their drill/cutting bits shall be tested for effectiveness before taking up the repair operation.

**12.4 Procedure:**

- **Step-1:** Follow the guidelines for Safety, Quality Assurance, Environmental Protection, Personnel, Supervision, Product delivery, Storage and Handling etc. given in contract documents.
- **Step-2:** Identify the Cracks and mark the area for injection grouting.
- **Step-3:** Prop & support the structural member, if required, to relieve it of stress and strains.
- **Step-4:** Open up cracked surface by making 'V' notch or groove of size 12 mm x 12mm.
- **Step-5:** Remove plaster, if required, to identify and mark the honey combed area.
- **Step-6:** Drill holes at least 25 mm diameter and 40mm deep along crack lines at spacing of 300 mm or thickness of the structural member, whichever is less. In honey combed area @ 9 nos per sqm. as directed by CCS and up to 30 mm to 40 mm depth.
- **Step-7:** Remove coarse debris and dust in opened up cracks and drilled holes by blowing oil free compressed air, if available with air compressor, otherwise with hand operated blow out pump. Concrete surfaces required to be grouted shall be free from all loose and unsound materials by means of mechanical abrasion using stiff wire brushes, after removing all loose areas with chisel and hammer. Area shall be made free from any deleterious materials, such as oil dust dirt etc. by means of oil free jet of compressed air. All prepared concrete surfaces shall be thoroughly inspected and got approved by the contractor.
- **Step-8:** Insert 12mm dia specified injection nipples in holes drilled along crack lines and fix them by sealing only its sides with epoxy or polymer modified mortar.

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- **Step-9:** Seal the crack or the honey combed surface between the nipples by polymer modified mortar as may be approved by Engineer-in charge. The polymer used shall be of approved grade and applied as per specifications mentioned separately elsewhere. The polymer-modified mortar shall be moist cured for 1-3 days and allowed to gain strength before actual grouting commences.

**12.5 Measurements:** For payment purposes, number of nipples fixed shall be separately measured for concrete and masonry work.

**12.6 Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above except those involved in above mentioned steps 3 and 5.

### **13 - SEALING OF CRACKS BY INJECTION OF APPROVED GROUT:**

**13.1 PURPOSE:** To inject the specified grout into honeycombed or cracked concrete/ masonry

#### **13.2 Materials and T&P:**

- Cementitious Grout shall have following components:
  - (a) Cement: The cement used shall be ordinary Portland cement of the specified grade and conforming the relevant BIS code of Practice.
  - (b) Sand: The sand (if required) shall be sharp washed well graded generally falling in Zone IV of IS 383
  - (c) Water: Water used for grout shall conform to the requirements of IS 456.
  - (d) Admixture: If required, admixture shall be used only after the approval of CCS, who shall be furnished with all the required literature pertaining to its efficacy. The mixture shall meet the requirement of IS 456 and IS 9103.
  - (e) Polymer: It shall be as specified and shall conform to ASTM-C-1059.
- Hand/power operated grouting pressure pump/gun with pressure gauge. The grouting equipment shall be capable of supplying, mixing, stirring and pumping grout to the satisfaction of the CCS. The equipment shall have the capacity to inject grout at a pressure upto 7 kg per square centimeter measured at the grout connections. It shall be capable of mixing and pumping of cement sand grout 1:2 with water cement ratio ranging from 0.5 to 1.
- Air compressor with all related accessories for carrying compressed air to the required location. Hand operated blow out pump may be allowed by CCS for small crack depths/areas.
- Calibrated Spring Balance (for accurately weighing different components of materials in required proportions),
- Mechanical blender for mixing
- Spray equipment/brush for application of polymer modified/ bonding cement slurry

#### **13.3 Execution:**

- **Step-1:** Follow the guidelines for Safety, Quality Assurance, Environmental Protection, Product delivery, Personnel, Supervision, Storage and Handling, etc given contract documents.
- **Step-2:** Full quantity of manufactured material (e.g. specified resin, hardener, polymer, cement, etc as may be required) shall be received at site in factory sealed containers with labels legible and intact provided that the shelf life so permits. Otherwise substantial quantity as could be consumed within the storage period shall be received as per quantity approved by CCS. Full quantity shall be worked out as theoretically required for consumption in the whole work.

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- **Step-3:** If directed by CCS, collect random samples of materials for test and send to approved laboratories so as to ensure that they satisfy the physical and mechanical properties. The grout pump and the pressure gauge shall be tested before taking up the repair operation.

- **Step-4:** Identify the Cracks and mark the area for injection grouting.

- **Step-5:** Surface Preparation: The appropriate propping/supporting, surface preparation and crack sealing as per site requirements shall be completed, which may sequentially cover one or more of the following items of work:

(a) Prop & support the structural member to relieve it of stress and strains.

(b) Provide grouting nipples.

- **Step-6:** Blow the compressed air followed by washing with water through nipples located at the highest level and downwards to ensure removal of even fine dust particles from the cracked surface, which could obstruct the free flow of grout material and impede its bonding with cracked surface (and drying with air blast wherever epoxy injection grout is to be used).

- **Step-7:** Saturate the cracked surface in the vicinity of crack/honeycombed concrete/ masonry with water (but without excess water), only if the cementitious grout is to be injected. Otherwise, this step may be skipped.

- **Step-8:** Prepare the injection grout as under:

(a) EPOXY GROUT: Epoxy component shall be mixed in a clean container free from harmful residue or foreign particles. Epoxy component shall be thoroughly blended in a mechanical mixer to a uniform and homogeneous mixture. Small batches (upto 1 litre) however may be allowed for manual mixing using spatulas, palletes, knives, etc.

(b) CEMENT SLURRY: Mixes consisting of cement, water, sand and admixture like fluidifiers (of approved type) in the proportions directed by the CCS who will, from time to time make changes to suit the conditions encountered in the particular grout work. The water cement ratio shall be varied to meet the characteristics of each hole as revealed by the grouting operations and will range between 0.5 and 1.0.

Shrinkage compensating cement slurry mixed to a lump free creamy consistency shall be made by thoroughly blending in a mechanical mixer and shall be continuously stirred mechanically to keep the cement particles in suspension to retain uniform consistency till the grout is injected. Only small batches (upto 1 litre) be allowed by manual mixing with spatulas, palletes, knives, etc.

(c) SBR/ACRYLIC POLYMER CEMENT SLURRY: Shrinkage compensating cement mixed with polymer and water, in specified proportion. For other details it would be similar to preparation of cement slurry as given in preceding paragraph above.

- **Step-9:** Inject the approved & specified grout into the cracks by means of suitable gun or pump at a pressure of 1- 2 kg./cm<sup>2</sup> for epoxy grout and 4-7 kg./cm<sup>2</sup> for cementitious grout. In case of vertical cracks injection shall be started at the lowest nipple and continued until the injected grout begins to flow out at the next higher nipple. Whereas in other cases of horizontal locations, the injection shall be started from one nipple and continued until the injected grout begins to flow out at the other nipple.

The first nipple shall then be closed off and injection continued at the second until the grout flows out at the third. The process shall be repeated until the whole of the crack has been sealed. As soon as the system is cured, the nipples shall be cut.

In case of Honeycombed Area, each grout hole shall be grouted individually. Grouting pressures to be used in the work will vary with the conditions encountered and different areas and the pressure used shall be between 1 to 4 kg/cm<sup>2</sup>. The sequence of injection shall be as per the direction of CCS

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**13.4 Measurements:** The weight of cement consumed in grouting shall be measured in Kilograms upto two decimal places. The payment will be made on the basis of weight of cement consumed. The quantity of cement in grout material wasted/ discarded/ hardened shall not count for payment and shall be recorded for deduction at the end of each operation. The measurements shall be separately recorded for concrete and masonry work.

**13.5 Rates:** The rates shall cover cost of all materials (except emulsified liquid acrylic polymer), labour and T&P involved in all the operations described above except those covered by step-5. Cost of emulsified acrylic polymer, if required, shall be paid separately.

#### **14 - SPECIFICATION FOR PROVIDING AND INSERTING SHEAR KEY BARS:**

**14.1 PURPOSE:** Shear key bars are used for providing a structural connection of the applied repair material with the substrate/parent surface for transfer of forces occurring at the interface.

##### **14.2 Materials and T&P:**

- Epoxy cartridges and specified lengths and diameter of steel reinforcement.
- Standard Power driven drilling/hammering equipment
- Hand operated blow out pump, brushes, epoxy dispenser, epoxy cartridge holder, disposable PVC mixing nozzle for epoxy, and any other incidental accessories and T&P items.

##### **14.3 Procedure**

- **Step 1:** Mark the locations of shear keys and get the same approved for structural connection from the CCS.
- **Step 2:** Drill holes to specified depth and diameter in concrete at marked locations for the specified dia of shear key bars.
- **Step 3:** The drilled hole in dry state shall be cleaned with round brushes and by blowing air through a tube inserted in the hole and connected to hand operated blow out pump.
- **Step 4:** Inject epoxy from the foil pack with the help of epoxy dispenser, epoxy cartridge holder and disposable PVC mixing nozzle inserted inside the drilled hole to fill it from bottom of the hole and upwards.
- **Step 5:** Insert the reinforcing bar and allow the epoxy adhesive to cure.

**14.4 Measurements:** Measurements shall be done in number of specified bars introduced.

**14.5 Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above.

#### **15 - REINFORCEMENT FOR RCC WORK ETC. :**

**15.1 PURPOSE:** To provide reinforcement in repair concrete for structural purposes, controlling effects of thermal variation or holding shotcrete/gunite material in position. The reinforcement material may comprise specified grade and quality with or without zinc coating.

**15.2 Material & T&P:** Specified reinforcing material, necessary hand or power driven tools for cutting, bending, binding, transportation, handling and placement, etc. Reinforcement bars if used shall conform to I.S. 432 (Part-I) or I.S. 1786. Welded wire fabric where used shall conform to I.S. 1566.

**15.3 Procedure:** The general requirements, placing in position, measurement etc. shall be generally followed as in CPWD specifications excepting those specifications provided in the following clauses.

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- **Step-1:** Follow the guidelines for Safety, Quality Assurance, Environmental Protection, Product delivery, Personnel, Supervision, Storage and Handling, etc given in contract documents.
- **Step-2:** Testing of Material: The requisite number of test specimens of specified reinforcing material shall be collected from each batch of manufacture or supply received (whichever is less) for these to be tested for conformance to the specified requirements before use on the work.

- **Step-3:** Execution:

The required reinforcement as per detailed drawings in the form of round bars or welded wire fabric in such a way so as to cause the least interference with placement of repair material.

**Overlaps:** Lapped reinforcing bars shall not be tied together. They shall be separated by at least 50 mm wherever possible. Wire mesh shall be lapped by 1-1/2 squares in all direction. Minimum requirement of lap length of bars shall be as specified in I.S. 456.

**Clearance around reinforcement:** Sufficient clearance shall be provided around the existing exposed and additional reinforcement to permit complete encasement with sound repair material.

**Cover:** Minimum cover to reinforcement shall be as per I.S. 456. As far as possible the bars shall be arranged so as to permit shooting from opposite side.

**Fixing:** Reinforcement shall be fixed to existing shear key bars and depth gauges driven into the concrete with wires and secured rigidly so that the vibration resulting from the deposition of repair material shall not impair or displace them.

**Where gunite /shotcrete to be done in more than one layer:** In such cases, the additional reinforcement should be so fixed that it is encased in succeeding layer. No additional reinforcement is required to be fixed in first layer of gunite.

**Mesh reinforcement** shall be fixed in the manner so that it is firmly held at least 12 mm away from the parent concrete surface as well as from the final finished surface. It shall be ensured that it is stiffened enough and cannot belly out during the guniting / jacketing / concrete overlays with consequent lack of cover. It shall be done by tying with parent concrete surface through shear key bars or depth gauges. GI-wire mesh fabric will add sacrificial "Zinc" coating & shall reduce corrosion process in the reinforcement. The wire mesh spacing shall be as specified in the drawings.

**15.4 Measurements:** For the purpose of measurement for payment, length of specified reinforcing bars/ wires shall be measured correct to a centimeter and that of wire fabric, length and width shall be measured correct to a centimeter to work out area in square metres correct to second place of decimal. Overlaps shall be accounted for in the length/area measurements.

For each batch of supply of steel reinforcement or the wire fabric, weight coefficients shall be worked out per meter length for bars and wires and per square meter for wire fabric. The weight coefficients shall be calculated correct to third place of decimal in each batch by weighing three randomly taken samples from the lot of supply and taking an arithmetical mean of the weights per unit length/area. The total weight shall be worked out in Kilograms correct to second place of decimal

**15.5 Rates:** Rates shall cover the costs of all labour, material and T&P involved in all operations detailed above.

## **16 - ALKALINE PASSIVATING BOND COAT OVER REINFORCEMENT:**

**16.1 PURPOSE:** To protect steel reinforcement with a passivating alkaline layer provided all around its circumference along the length with strong adhesive to bond with applied repair concrete or mortar.

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**16.2 Materials and T&P:** Specified alkaline passivating & bonding materials e.g. CPCC material, epoxy, epoxy phenolic IPN-RB or specified polymer and cement, mixing water, necessary T&P for mixing and applying bond coat e.g. brush, mechanical mixer, mechanical stirrer, etc.

- Epoxy Adhesives shall conform to ASTM C-882.
- Polymer Latex shall conform to ASTM C-1059.
- Cement shall be ordinary Portland cement conforming to IS: 269.
- Patented materials e.g. CPCC or epoxy-phenolic IPN-RB as per licensee's specifications

### **16.3 Execution:**

- **Step-1:** Follow the guidelines for Safety, Quality Assurance, Environmental Protection, Product delivery, Personnel, Supervision, Storage and Handling, etc given in contract documents.
- **Step-2:** Full quantity of manufactured repair materials shall be received at site in factory sealed containers with labels legible and intact, if the shelf life so permits. Full quantity shall be worked out as theoretically required for consumption in the whole work.
- **Step-3:** Prepare the surface for treatment.
- **Step-4:** Thoroughly inspect all the concrete surfaces prior to applications of passivating/ bond coat and get approved from the CCS.
- **Step-5:** Test the materials by taking random samples and testing in approved laboratories so as to check whether they satisfy the physical and mechanical properties.
- **Step-6:** Make available at site all necessary mechanical equipment as under:
  - (a) Calibrated Spring Balance (for accurately weighing different components of materials in required proportions),
  - (b) Mechanical blender for mixing
  - (c) Brush for application of specified and approved passivating/bond coat.
- **Step-7: Material Mixing:** Components of the passivating/ bond coat mix shall be weigh batched and mixed in specified proportions in a clear container free from harmful residue or foreign particles. The components shall be thoroughly blended with a mechanical mixer to a uniform and homogeneous mixture. Small batches (upto 1 litre) may however be allowed by manual mixing using spatulas, palette, knives etc.
- **Step-8: Material Application:** The alkaline passivating & bonding material shall be applied to prepared reinforcement substrate after tying in new reinforcement wherever specified in the form of bars or welded wire fabric. It shall be applied to reinforcement surfaces by stiff nylon bristle brush. The coating material shall be worked well all round the periphery and along its exposed length using a stiff brush ensuring that no pinholes are remaining. The second coat, if required, the same shall be applied as per manufacturer's recommendation after the first coat is touch dry.

**16.4 Measurements:** The area of RCC patch inside which the reinforcement is treated with passivating coat shall be measured in square metres for payment.

Measurements shall be separately recorded for the supplies of material received, actual quantity of material consumed from time to time.

**16.5 Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above except those involved in step-3.

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## **17 - BONDING COAT FOR HARDENED CONCRETE WITH REPAIR CONCRETE/ SHOTCRETE/ CEMENT MORTAR :**

17.1 **PURPOSE:** To provide adequately strong adhesion of parent concrete with applied repair concrete or mortar.

17.2 **Materials and T&P:** Specified bonding materials e.g. epoxy or polymer and cement, mixing water, necessary T&P for mixing and applying bond coat e.g. brush, spray gun, mixer, mechanical stirrer, etc.

- Epoxy Adhesives shall conform to ASTM C-882
- Polymer Latex shall conform to ASTM C-1059.
- Cement shall be ordinary Portland cement conforming to IS: 269.

### **17.3 Execution:**

• **Step-1:** Follow the guidelines for Safety, Quality Assurance, Environmental Protection, Product delivery, Personnel, Supervision, Storage and Handling, etc given in contract documents.

• **Step-2:** Full quantity of manufactured repair materials shall be received at site in factory sealed containers with labels legible and intact, if the shelf life so permits. Otherwise substantial quantity as could be consumed within the shelf life shall be received as per quantity approved by Engineer- in-Charge Full quantity shall be worked out as theoretically required for consumption in the whole work

• **Step-3:** Prepare the surface for treatment.

• **Step-4:** Saturate the surface with water but shall be free of excess surface water, debris and dust, where cementitious bond coat is to be applied. Otherwise, surface to remain dry and clean of debris and dust.

• **Step-5:** Thoroughly inspect all the concrete surfaces prior to applications of adhesive and get approved from the CCS.

• **Step-6:** Test the materials by taking random samples and testing in approved laboratories so as to check whether they satisfy the physical and mechanical properties.

• **Step-7:** Make available at site all necessary mechanical equipment as under:

- (a) Calibrated Spring Balance (for accurately weighing different components of materials in required proportions),
- (b) Mechanical blender for mixing
- (c) Spray equipment/brush for application of epoxy/ polymer modified/ bonding cement slurry

• **Step-8 Bond Coat Mixing:** Components of the bonding coat mix shall be weigh batched and mixed in specified proportions in a clear container free from harmful residue or foreign particles. The components shall be thoroughly blended with a mechanical mixer to a uniform and homogeneous mixture. Small batches (upto 1 litre) may however be allowed by manual mixing using spatulas, palette, knives etc.

• **Step-9 Bond coat application** for jacket concrete/ shotcrete/ Mortar placement: The specified adhesive shall be applied to concrete surface at atmospheric temperatures below 40°C for epoxy adhesive and below 30°C for polymer modified cement or cement-sand slurry adhesive. Bonding coat shall be applied by spray equipment or stiff nylon bristle brush as approved by CCS. The bonding material shall be worked well into the surface of the parent body ensuring that no pinholes are visible.

Polymer modified bonding cement slurry shall be applied to a thickness not in excess of 2 mm.

If necessary, a second coat shall be applied at right angles to the first to ensure complete coverage and absence of pin holes.

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All concrete surface shall be well protected beyond limits of surface receiving adhesive against spillage.

- **Step-10 Repair Material Application:** Fresh plastic concrete/ shotcrete/ mortar shall be applied while adhesive is still tacky and well within the pot-life/ setting period. If adhesive cures to the extent of losing its tack or has set before plastic concrete/shotcrete/mortar is placed, the same shall be removed or slightly abraded and second coat of adhesive applied. Freshly placed plastic concrete shall be thoroughly consolidated to ensure full bonding of new concrete with the substrate.
- **Step-11:** Bond of repair shall be tested in accordance with specifications given hereinafter.

#### **17.4 Field Quality Performance Requirement:**

Bond of repair with parent concrete:

- **Evaluate bonding** of fresh concrete/ shotcrete/ mortar to existing concrete after the fresh material has cured for not less than 7 days by sounding and tapping fresh concrete with a blunt metal instrument to the satisfaction of CCS. Suspect inadequate bonding, if a hollow sound is detected in any area. In case of conflicted location contractor shall extract one core from the repaired surface area at the end of 28 days.
- **Conduct one core test at random** for checking the bond, for every 100 square metre or part thereof. The contractor shall core each area after 28 days of application of concreting/ shotcreting/ repair mortar application for determination of bonding adequacy.
- **Core drilling shall be done through applied repair material** and into the existing concrete. Core diameter shall be not less than three times the nominal size of the coarse aggregate used in repair material or as required by the CCS. Length of cylindrical cores shall preferably be twice the core diameter or twice the thickness of applied repair material or as instructed by CCS but in any case not less than the dia of the core.
- **Cores shall be visually inspected** by CCS for evidence of poor workmanship.
- **Cores shall be tested in tension** to evaluate the quality of bond between new concrete/shotcrete/mortar and the parent concrete. If the failure is in the parent concrete the bond of new repair material shall be deemed to be satisfactory.
- **Failure at the bond line or in the repair material** shall be concluded as lack of proper bond or inadequate strength of repair mortar
- **Dismantle such areas of work** failed in bond or repair material and re-prepare the surface after chipping off new concrete/mortar work and abrading the epoxy/ polymer/cement slurry interface. Nothing for testing concrete for bond between old and new concrete shall be paid separately.

**17.5 Measurements:** The concrete surface, over which bond coat has been applied, shall be measured correct to a centimeter and area of surface worked out in square meters correct to second place of decimal.

Measurements shall be separately recorded for the supplies of material received, material consumed and area over which bond coat applied from time to time.

**17.6 Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above but shall not cover those involved in step 3 & 10.

#### **18 - CEMENT BASED POLYMER MODIFIED MORTAR:**

**18.1 PURPOSE:** To carry out structural repairs to prepared patches of spalled concrete with an alkaline impervious repair material comprised of polymer admixed cement-sand mortar.

**18.2 Materials and T&P:** Polymers in emulsion or powder forms as may be specified conforming to ASTM C1059, Ordinary Portland Cement of 43 grade conforming to relevant BIS code, Sand

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conforming to Zone-II or Zone-III grade of IS: 383, Mixing water conforming to IS: 456-2000, mortar mixer with mechanical water dozer, spatulas, trowels, etc.

### 18.3 Procedure:

- **Step-1:** Follow the guidelines for Safety, Quality Assurance, Environmental Protection, Product delivery, Personnel, Supervision, Storage and Handling, etc given in contract documents.
- **Step-2:** Full quantity of specified polymers shall be received at site in factory sealed containers with labels legible and intact provided that the shelf life so permits. Otherwise substantial quantity as could be consumed within the shelf life shall be received as per quantity approved by CCS. Full quantity shall be worked out as theoretically required for consumption in the whole work.
- **Step-3 Testing of Material:** The requisite number of test specimens of mortar shall be cast from each batch of manufactured or supplied materials received (whichever is less). These are to be tested for conformance to the specified requirements before use on the work. Polymer modified cement mortar with cement: sand proportion by weight as (1:3 ) shall have the following properties

Minimum compressive strength -20N/sq.mm after 28 days at 27°C

- **Step-4:** Identify and mark the area for Polymer modified mortar repair.
- **Step-5 Surface Preparation:** The appropriate propping/supporting, surface preparation and crack sealing as per site requirements shall be completed, which may sequentially cover one or more of the following items of work:
  - (a) Prop & support the structural member to relieve it of stress and strains.
  - (b) Removal of existing surface plaster/treatment shall be done.
  - (c) Chipping unsound/weak concrete material shall be done.
  - (d) Removing concrete all around embedded rusted reinforcement shall be done.
  - (e) Removing and cleaning reinforcement of rust from its surface to give it a shining bright metal shall be done.
  - (f) Sealing the cracked or honeycombed concrete with injection grouting shall be done.
  - (g) Providing and inserting mild steel shear key bars shall be done with minimum 3 nos per square meter of surface area of substrate, which may also be used as depth measuring gauge.
  - (h) Additional fresh reinforcement, if required, shall be tied with required overlaps or welded.
  - (i) The rust, if any, persisting over the existing exposed reinforcement or the new reinforcement shall be removed mechanically or chemically.
  - (j) Cleaning of lightly sticking materials and foreign matter from the exposed concrete surface and steel reinforcement by suitable means shall be done.
- **Step-6:** Clean the dust and saturate the prepared surface of concrete and reinforcement with a clean oil free air blast and water fit for construction.
- **Step-7:** Inspection of concrete surface prior to adhesive application shall be thoroughly inspected and got approved by the CCS. Surfaces shall be ensured to be free from any deleterious materials such as oil, dust, dirt etc. using oil free air blast.
- **Step-8:** Alignment & thickness Control- Ground wires shall be fixed at reference points to measure and control the thickness of overlay. Shear keys fixed earlier could also function as depth gauges. Adequate ground wires shall be installed to establish thickness and surface planes of the

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overlay build up. Ground wires shall be tight and true to line and placed in such a manner that they may be further tightened.

- **Step-9:** Apply Passivating & bonding coat over the cleaned existing and new reinforcement.
- **Step-10:** Apply bond coat on the cleaned concrete substrate.
- **Step-11: Mix and Prepare Polymer Modified Mortar** to have a uniform consistency and texture by adding cement sand and polymer as weigh batched ingredients of the design mix, a specified proportion of water through water dozer.

Use of pre packed ready to use components supplied by manufacturers in containers may be allowed subject to approval of CCS. In case where prepacked ready to use materials are to be used, the contractor shall submit the manufacturer's certificate verifying conformance to material specification as specified, manufacturer's mixing and application procedure for approval by CCS.

Plastering with cement based polymer modified mortar shall be done immediately after applying the bonding slurry to the prepared surfaces, preferably in coats of approximately 10mm thickness as greater thickness may lead to delaminating /collapse. However, coats shall be applied in fairly rapid successions within 15 to 30 minutes. After applications of mortar the surface shall be finished using a wooden float.

- **Step-12:** Moist cure the polymer modified mortar surface for 1-3 days followed by air curing at ambient temperature or as per manufacturer's specification, if specified otherwise. Use of flowing water or pounding of water shall not be done for curing. Steam curing shall not be permitted.
- **Step-13:** Test the Surface of 7-day cured concrete overlay for soundness by tapping or sounding with hard blunt surface.

**18.4 Inspection & Quality control:** The mortar application work shall be continuously inspected by a qualified supervisor who shall check materials, application of mortar, curing stoppage of work during low temperatures (minimum working temperature being 8°C in most of the polymer modified mortar or as per manufacturer direction) and high winds etc. Each completed work of mortar shall be systematically sounded with a hammer to check for drummy areas after hardening.

In suspect areas or whenever directed by CCS, the contractor shall drill the cores from the finished work and in to the host concrete after 28 days of mortar application. The cores shall be examined for evidence of poor workmanship by the CCS, and if he is satisfied that either the bonding work or the subsequent layer of mortar are not of the required workmanship, the contractor at the instruction of CCS shall dismantle such areas of work as required by the CCS and re-do the same after re-preparing the surface by chipping off mortar work and abrading the bonding slurry interface.

**18.5 Measurements:** Pre-measurement of dimensions of plaster patches shall be measured correct to a centimeter and area worked out in square metres correct to second place of decimal. The pre-measurement of the average thickness shall be done by taking an average of five thickness readings recorded with one reading each at corner and at the point of intersection of wires stretched diagonally from corner points of the rectangular area chipped.

**18.6 Rates:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above. The payment for acrylic polymer used shall be made separately.

## **19 - CURING OF PLASTERED AND/OR RCC SURFACES ETC. :**

**19.1 PURPOSE:** To ensure satisfactory hydration of cement by retaining or replenishing the mixing water lost due to natural drying and evaporation process for a specified period through exposed cementitious surfaces of the freshly placed cement mortar/ concrete.

**19.2 General:** Importance of wet curing to all items of work involving use of cement can not be over emphasised. It is important to note that the measurement and payment of all relevant items involving use of cement such as shotcrete, plaster, RCC etc. is subject to the precondition of successful execution of the item of curing. Any surface experiencing discontinuity of dampness of

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surface with any patch having dried out during the specified period of curing, it shall be prominently marked with lime or other suitable prominent colour. Measurement and payment of such portion shall neither be made under the item of curing nor under the relevant items of shotcrete, plaster or RCC etc but rejected & redone.

**19.3 Materials and T&P:** Curing compound, brush or hand operated spraying gun and all other related accessories for application on Concrete/Plastered Surface.

#### **19.4 Procedure:**

- **Step-1:** Follow the guidelines for Safety, Quality Assurance, Environmental Protection, Product delivery, Personnel, Supervision, Storage and Handling, etc given in contract documents.
- **Step-2:** Full quantity of specified manufactured material shall be received at site in factory sealed containers with labels legible and intact provided that the shelf life so permits. Otherwise substantial quantity as could be consumed within the shelf life shall be received as per quantity approved by CCS. Full quantity shall be worked out theoretically for consumption in the whole work.
- **Step-3**

##### **(a) Moist Curing:**

Cover all exposed surface of concrete, when the concrete begins to harden i.e. two to three hours after compaction with moist gunny bags or any other material approved by the CCS.

Keep the exposed surfaces continuously damp after its final setting (i.e. after a maximum of 8 hours of concreting) by ponding with a sheet of water or by covering with a layer of sacks, canvass, hessian or similar water absorbent materials constantly kept wet by water sprinkling for at least 7 days, where ordinary portland cement is used and 10 days, where portland pozzolana cement is used from the date of placing of concrete. For concrete work with other types of cement, curing period shall be as per manufacturer's recommendations or as directed by the CCS.

##### **(b) Using Curing compound:**

**Testing of Materials:** It must be ensured that curing compound should neither affect the strength nor the surface of concrete. It shall not leave any undesirable stains on surface to affect the bond of plaster or other finishes to be applied later. It should be soluble in water, so that it can be removed by splashing or washing with water without scrubbing the surface.

**Test for Efficacy:** The testing of curing compounds shall be done from each lot of curing compound received at site by casting two sets of 15 cm cubes with each set having 6 cubes. One set shall be moist cured by covering with damp gunny bags and subsequently by immersing under water and the other set by applying curing compound on top after 2 to 3 hours of casting and subsequently on de-moulding apply on the remaining faces all around. The cubes shall be kept in an environment similar to which the actual structure is exposed for a period of 7 days after its casting. Three concrete cubes each from both sets shall be tested after 7 days for their crushing strength as per test procedure specified in clause 5.4.9.1 of CPWD specification 2009 Vol-II under identical condition. The average crushing strength of cubes cured with curing compound shall be not less than 95% of the crushing strength of cubes cured under damp or immersion curing.

**Test for Staining:** The set of three sample cubes applied with curing compound, remaining after 7-day cube crushing strength test, shall be washed with water with soft brush scrubbing with nylon bristles and allowed to dry for a period of seven days in an atmosphere with relative humidity not exceeding 40% at ambient temperature. The other set of three cubes cured for seven days under damp or immersion conditions shall also be kept for another seven days under identical humidity and temperature conditions. The surface of the two sets of such cubes shall be compared by closely observing for any visible stain and texture that may detrimentally affect its bond with subsequently applied plain plaster or aesthetic appearance. Such observations shall be recorded in three categories as no effect, slight effect and moderate effect. The curing compound shall be considered as acceptable in the 'no effect' category and unacceptable in the 'moderate' category. The decision

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of CCS, which shall be final and binding, based on the likely use of finished surface of concrete/plaster shall determine the acceptability of the 'slight effect' category.

Concrete curing compounds, after testing satisfactorily for efficacy, may be used in lieu of moist curing with the permission of the CCS. Such compounds shall be applied to all exposed surfaces of the concrete by spraying or brushing within two to three hours of casting and well within an hour of removal of formwork.

**19.5 Measurements:** Dimensions of exposed surface of concrete wet cured shall be measured correct to a centimeter and areas worked out in square metres correct to second place of decimal.

**19.6 Rate:** The rates shall cover cost of all materials, labour and T&P involved in all the operations described above.

## **SPECIFICATIONS FOR SERVICES**

### **1.0 General**

- 1.1 The drawings for services are diagrammatic but shall be followed as closely as actual construction permits. Any deviations from the drawings shall be in conformity with architectural and structural drawings. The dimensions designated by the manufacturers shall take precedence over the drawings.
- iv) At completion of work the Contractor shall submit one set of tracings and two sets of prints of "As-Built-Drawings". These drawings shall, among others, include invert levels, pipe runs, diameters, location of valves, access panels, layout of equipment, piping connections and such other information for maintenance & future extensions. Guarantees given by manufacturers shall be assigned to the Employer along with names & addresses of manufacturers, suppliers and information about spare parts.
- v) All site test shall be carried out with prior intimation to the Bank Engineer / Architect. All defects shall be rectified and tests conducted again to the satisfaction of the Bank Engineer / Architect. In addition to the test required by the specifications, the Contractor shall also conduct tests required by the Architect and by the Municipal or other Authorities.
- vi) All work shall be executed by competent and licensed persons. The contractor shall maintain liaison with Municipal and other controlling Authorities. He shall obtain their approvals and certificates as required by the bye – laws at appropriate stages.
- vii) No cutting / chasing shall be done in load bearing structural members without prior approval of the Asstt. Engineer. Sleeves and openings shall be provided during the progress of construction in preference to cutting at later date.
- viii) The Architect may require typical mock up(s) to be installed in advance for approval. Undamaged materials from the mock up shall be allowed to be reused in the work.
- ix) Unless otherwise described in the item CI / SCI pipes and fittings shall be a spigot and socket type.
- x) G.I. pipe spouts shall be paid as per item of G.I. pipes (internal work). Cutting and making good is included. The free ends may be skew-cut.
- xi) Wherever use of G.I. pipes is called for the same shall be medium class (class – B)

### **2.0 Materials :**

- 2.1 The materials shall conform to the specifications and in absence thereof to Indian Standards. The products should bear the ISI Mark.
- 2.2 The makes of materials for use in this work are broadly approved as per list given below. The Contractor shall, however, get particular makes and samples approved before ordering:
- 2.3 Notwithstanding any interim or final approval the Contractor remains responsible for satisfactory performance of all fittings & fixtures. The liability of the Contractor is not limited by any approval of the make of materials.

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## **SPECIFICATIONS OF SPECILISED ITEMS**

### **MICROCONCRETE**

1. Micro Concrete – Mix Micro concrete powder with water in the ration of 3.25-3.5 lts (to make trowel-able consistency) of water for every 25kg bag of micro concrete. (up to thickness of 80mm).
2. When thickness exceeds 80mm, extend micro concrete with up to 25% 5-12mm down SSD (Saturated surface dry) aggregate.
3. Pour micro concrete into formwork or apply by hand on impacted areas.

### **RUST REMOVER**

1. Apply rust remover with the help of brush over entire damaged corroded reinforcement.
2. After letting it air cure for 24 hrs, brush off the rust from the bars with the help of hard wire brush and sand paper. Remove all materials by water jet and clean surface before any subsequent treatment.

### **EPOXY ZINC PRIMER**

1. Mix component A and component B of zinc rich rust remover.
2. After uniform color is achieved apply with the help of brush/roller over entire exposed steel surface.
3. Let the compound air cure.
4. Keep away from eyes/mouth.

### **EPOXY BONDING AGENT**

1. Mix component A and component B of epoxy bonding agent.
2. After uniform color is achieved apply with the help of brush/roller over entire surface to receive new concrete.
3. After application, apply fresh concrete over old concrete when the bonding agent is still tacky within a time period of 4-6 hrs.
4. If the procedure is delayed, recoat before laying fresh concrete or mortar.

### **POLYMER MODIFIED CONCRETE FOR PATCH REPAIR**

1. Mix single component polymer modified concrete with water in the ratio of 2.5-2.75 lts of water per 25kg bag of concrete to make a thick pasty consistency.
2. Apply with the help of hand over entire surface to be treated and level with trowel.
3. Cure the surface for 28 days with water at regular intervals or apply curing agent.

### **EPOXY INJECTION GROUTING**

1. Cleaning the surface carefully to remove dust/dirt/grime etc.
2. Drill holes into the damaged areas of 8-10 mm dia @ 300mm c/c or as required with power drill.
3. Fixing Non return Valve (NRV) nozzle into these holes and sealing with fast-setting compound.
4. Mixing two component epoxy resin part A and part B in specified proportion properly so that consistent color is obtained.
5. Placing of injection hose over the nozzle and fixing it which is connected to the epoxy grouting pump. The pump shall inject epoxy resin with a pressure of 2.5 kg/sq.cm into these nozzles until the nozzle rejects the flow.
6. Separating the hose from the nozzle and subsequently remove the nozzles from the holes. Seal the holes with repair mortar.

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**LIST OF APPROVED BRANDS / MAKES**

<b>MATERIAL</b>	<b>MANUFACTURER/BRAND NAME</b>
Cement (PPC/ OPC) Grade 43/53	Ambuja, Ultratech, Binani , LARSEN & TOUBRO
White Cement	Birla White, J.K.White
Anti termite	Thiddan (35 E.C.), Dursban – 20 TC, Trishul, PEST CONTROL INDIA LTD
Chemicals/ Polymers Waterproofing compound	Dr. Fixit ,Fosroc ,Sika ,BASF, CICO
Rust Cleaner for Reinforcement	BASF/FOSROC/PIDILITE/ NINA/ SUNANDA
Anti Corrosive primer for Reinforcement	BASF/FOSROC/PIDILITE/ NINA/ SUNANDA
Anchorage material for mixing Rebars	BASF/FOSROC/PIDILITE/ NINA/ SUNANDA
Injection Grouting	BASF/FOSROC/PIDILITE/ NINA/ SUNANDA
Bonding agent/ Repair mortar	BASF/FOSROC/PIDILITE/ NINA/ SUNANDA
Polymer for plastering over repaired mortar	BASF/FOSROC/PIDILITE/ NINA/ SUNANDA
Flush doors, commercial block Boards, Ply etc.	Greenply, Merino, Archid, Centuary
Structural Steel	SAIL, TATA, Jindal ,Rathi Steel, Kamdhenu or any other approved brand
Reinforcement Tor steel	Tata, SAIL, Kamdenu, Rathi, RINL, KAMDHENU
Block board/Plywood	<b>Green ply, Century, Archid and other approved makes</b> Only.
Particle Board	Deco Board, Eco board, Novapan or Appr. eq.
Veneer	Green, Duro, Archid, Century.
M.D.F. Board	Duratuff, GreenPanel Max, Nuwood (EXTERIOR EWP GRADE)
Gypsum Ceiling	India Gypsum
Mineral Fibre Tile Ceiling	Armstrong, India Gypsum,
Laminate	Greenlam, sunmica, Merino, Archid, Centuary
Insulation Wool	U.F. Twiga, Crown, Lloyd
Locks with CP brass	Godrej, Ozone, Dorma, Hettich
Hinges and hardware	Earl Bihari, Hettich, Ozone,Kaff OR eq. approved
Soft Board	Sitatex or equivalent
Paints	Asian , Berger, Nerolac, ICI
Surface texture wall coating	Unitile, Heritage, OIKOS, Asian, Acro paints

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Ceramic Tiles	Kajaria, Bell, Johnson, Orient, Nitco
Vitrified Tiles	Kajaria, Bell, Johnson, Orient, Nitco
Soil waste & R .W.P.	RIF/BC/SRIF
G I fitting	KS ENG. Works/R-mark, K-Mark, Jindal, Tata, Jindal
G I Pipes	Tata/JINDAL Hissar
Stone ware pipes and gully traps	Perfect/Bura
Steel sinks	Neelkant, Jyna, Nirali
Fire Retardant Coating	Viper or Equivalent
Wood Preservative	ASCU PS-2 or equivalent
Vertical/Venetian Blinds	Vista levellor/MAC, Hunter Duglus

## BILL OF QUANTITY

### 16.2.1.1 PREAMBLE:-

TO BE READ ALONG WITH DRAWINGS.

1. RATES TO BE QUOTED BOTH IN FIGURES AND WORDS.
2. ALL PAGES TO BE SIGNED AND STAMPED BY THE TENDERER.
3. THE RATE OF THE ITEMS SHALL BE APPLICABLE FOR ANY FLOOR LEVEL/ ANY NUMBER OF FLOORS, OR ANY QUANTITY, RATES INCLUDES TO CARRY MATERIAL AT ANY LEVEL/ FLOORS IN A MULTISTORIED BUILDING OF 15 FLOORS.
4. THE SPECIFICATION OF THE ITEMS SHALL BE AS PER LATEST INDIAN STANDARD CODES UNLESS OTHERWISE SPECIFIED.
5. ALL MATERIALS SHALL BE AS PER APPROVED LIST AND SHOULD BE OF 1st QUALITY UNLESS OTHERWISE SPECIFIED.
6. THE RATES ARE INCLUSIVE OF ALL DUTIES AND TAXES OF ALL GOVERNMENT, MUNICIPAL OR ANY OTHER STATUTORY BODY APPLICABLE FROM TIME TO TIME.
7. RATES SHALL BE FOR ITEMS COMPLETE IN ALL RESPECTS AS PER DRAWING, INSTRUCTIONS AND APPROVAL OF THE ARCHITECT.
8. THE QUANTITIES ARE APPROXIMATE AND TENTATIVE WHICH MAY VARY DURING COURSE OF EXECUTION. THE RATES QUOTED AGAINST PARTICULAR ITEM SHALL NOT BE CHANGED WITH VARIATION IN QUANTITIES.
9. MAKING OF ANY CUTOUT / OPENING FOR ELECTRICAL / AIR – CONDITIONING WIRING / FITTING IN ANY OF THE ITEM OF FALSE CEILING, PARTITIONS, PANELING MASONRY WORK ETC. AND FINISHING EDGES JAMBS / CILLS / SOFFITS OF THE OPENING SHALL NOT BE PAID EXTRA.
10. THE TENDERER SHALL VISIT THE SITE AND SHALL SATISFY HIMSELF AS TO CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. HE SHALL ALSO CHECK, ASCERTAIN THE LOCATIONS OF ANY EXISTING STRUCTURES OR EQUIPMENT OR ANY OTHER SITUATION

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WHICH MAY AFFECT THE WORK. NO EXTRA CLAIM AS A CONSEQUENCE OF IGNORANCE OR ON GROUND OF INSUFFICIENT DESCRIPTION WILL BE ALLOWED AT A LATER DATE.

11. THE QUOTED PRICE FOR ITEMS SHALL INCLUDE ALL ACCESSORIES, CONSUMMABLES ETC. AS REQUIRED TO MAKE THE ITEM COMPLETE IN ALL RESPECTS, COMPATIBLE WITH OTHER RELATED / ASSOCIATED ITEMS AND FULLY FUNCTIONAL.
12. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY ERROR, DIFFICULTY IN EXECUTION / DAMAGES INCURRED OWING TO DISCREPANCY IN DRAWINGS WHICH HAS BEEN OVERLOOKED BY HIM AND HAS NOT BEEN BROUGHT TO THE NOTICE OF THE ARCHITECT.
13. THERE ARE NUMBER OF ITEMS GIVEN IN THE TENDER WHERE IN BASIC RATES INCLUDING ALL TAXES EXPECTED HAS BEEN MENTIONED IN THE TENDER. THESE ITEMS SHALL BE PURCHASED BY THE CONTRACTOR FROM THE MARKET ONLY AFTER THE APPROVAL OF QUALITY AND RATES BY THE ARCHITECT.
14. ALL HIDDEN SURFACES OF BOARD / PLY / WOOD WORK TO BE PAINTED WITH ANTI BACTERIAL PAINT FROM NAV AIR INTERNATIONAL FR 881 (VIPER) (WHITE COLOUR AS PER MANUFACTURER'S SPECIFICATIONS ON WOOD / BOARD).
15. CONTRACTOR SHALL APPOINT TECHNICALLY QUALIFIED FULL TIME SITE SUPERVISOR TO MONITORING THE DAY TO DAY PROGRESS OF WORK AT SITE ON THEIR OWN COST.

**(Refer annexed file/section in e-tender portal for detailed Bill of Quantities)**

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