



**PREMISES DEPARTMENT
FGM OFFICE LUCKNOW**

**TENDER DOCUMENT FOR
REPAIR / FACE-LIFTING OF EXISTING COMPOUND WALL INCLUDING
EXTERNAL CAMPUS LIGHTING OF
BANK'S BUILDING AT HAZARATGANJ, LUCKNOW**

PART I – TECHNICAL BID

Ref:No : FGMOL:PRM:2026-27:01
Date : 09.06.2026

Issued to:

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.....
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Last date for submission of Bid	25.06.2026 upto 15:00 HRS at Indian Bank, FGM Office , Premises Department, 1st floor, New building, Hazaratganj, Lucknow - 226001
Date of Opening of Technical Bid	25.06.2026 .06.2026 at 15:HRS at Indian Bank, FGM Office , Premises Department,1st floor, New building, Hazaratganj, Lucknow - 226001
Date of Opening of Financial Bid	To be intimated separately to the Firms Qualifying in Technical Bids

ARCHITECT :
M/s Gupta and Associates
9B-42, Mohankunj Vrindavan Colony,
Lucknow 226029.

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FGM OFFICE –
LUCKNOW NOTICE
INVITING TENDER

Indian Bank, FGM Office LUCKNOW invites sealed bids under Two Bid System containing Part-I (Technical Bid) & Part –II (Financial Bid) from Established Civil Contractors complying minimum qualification criteria for Civil Works as per Tender and having full time local office in Uttar Pradesh for “REPAIR / FACE-LIFTING OF EXISTING COMPOUND WALL INCLUDING EXTERNAL CAMPUS LIGHTING OF BANK’S BUILDING AT HAZARATGANJ, LUCKNOW. The Tender Documents can be downloaded from the Bank’s website (www.indianbank.in) under Tender Column.

1	Name of work	Repair / Face-Lifting Of Existing Compound Wall Including External Campus Lighting Of Bank’s Building At Hazaratganj, Lucknow
2	Estimated cost of work	Rs.41.49 Lakhs
3	Period of completion	90 days to be reckoned from 7 th day from the date of issue of the Work Order or handing over of site whichever is later
4	Validity of Tender	120 Days from the date of opening of financial bid
5	Defects Period Liability	12 Months from the date of virtual completion of work
6	Earnest Deposit Money	Rs. 41500/- (Rupees Forty One Thousand five hundred Only) by way of DD in favour of Indian Bank payable at LUCKNOW. *Firms registered with MSME / NSIC with valid certificates issued by GOI are exempted from Turnover & eligibility only. No exemption on EMD..
7	Initial Security Deposit (ISD)	After acceptance of Work Order, Contractor shall submit ISD of 2% of the Bid / Contract Amount within 7 days in the form of DD in the name of “Indian Bank” payable at LUCKNOW.
8	Retention Money (RM)	6% of the Bill Amount (RA Bill / Final Bill) excluding Taxes
9	Total Security Deposit (TSD) = ISD + RM	8% of the Bid Amount (ISD – 2% & RM – 6%)
10	Release Of Money Retention	50% of Total security deposit will be returned on completion of following: • After 15 days of the payment of the final bill. - AND • Taking over certificate by Bank - AND • Tenderer’s removal of his materials, equipment, labour force, temporary sheds/stores etc. from the site. (except for a small presence required if any for the Defect Liability Period and approved by the Indian Bank. Balance 50% of retention money shall be released within 30 days after satisfactory completion of defect liability period and defects free as per the contract clauses.
11	Interim Payment	Minimum value of work for Interim Payment is Rs.15 Lakhs or as decided by Bank. The interim payment / adhoc payment shall be 75% of the works executed /Bill value at site. Maximum of 2 interim bills are allowed during the entire course of the work. However, Bank is not bound to make the payment against the interim bill raised by Contractor.
12	Liquidated Damages	1% per week of the Contract Value subject to maximum total of 10% of final Contract value
13	Tender Documents	Tender documents can be obtained from the Bank’s website



		(www.indianbank.in) under Tenders column from to up to 15:00 HRS
13	Last date for the submission of Bids	25.06.2026 upto 15:00 HRS at Indian Bank, FGM Office , Premises Department, 1st floor, New building, Hazaratganj, , LUCKNOW – 226001
14	Date of opening of Technical Bid	25.06.2026 at 15:30 HRS at Indian Bank, FGM Office, Premises Department, 1st floor, New building, Hazaratganj, Lucknow - 226001
15	Date of Opening of Financial Bid	To be intimated separately to the Firms Qualifying in Technical Bids
16	Minimum Eligibility Criteria	1. Should be in same line of activity minimum for the past 7 years in carrying out similar nature of works ending 31/12/2025. <i>Please furnish Work Order / Client's Completion Certificate / Empanelment Letter issued by PSBs / PSUs / Central Government / State Government to confirm the same.</i> 2. Should have Registered Office in Uttar Pradesh <i>Please furnish requisite document as proof.</i> 3. Should have carried out similar work of value in the last 5 years (ending 31/12/2025). At least : • At least one similar works of value not less than Rs.33.20 Lakhs each (OR) • At least two similar works of value not less than Rs.20.75 Lakhs each (OR) • At least three similar works of value not less than Rs.16.60 Lakhs each Copy of TDS Certificate & Work Order / Completion Certificate showing value of work satisfying the above eligibility criteria is to be enclosed. Similar works means: Civil Construction Work and related to BOQ items only for any Public Sector Banks/ Public Sector Units/ Central or State Government Departments 4. Should be empaneled in at least 1 Public Sector Banks / Public Sector Units / Central or State Governments <i>Please furnish copy of valid empanelment letters as documentary proof</i> 5. Should have valid GST No. 6. They should not have incurred loss in the last 3 financial years (Please attach 3 years (2022-23, 2023-24, 2024-25) Profit & Loss statement duly authorized by Chartered Accountant). 7. Should have an minimum average annual turnover of Rs.12.45 Lakhs during the last three financial years (2022-23, 2023-24, 2024-25) 8. Should have minimum solvency of Rs.16.60 Lakhs issued by a Scheduled Commercial Bank on or after 31.01.2026 9. Should be registered with Income Tax Authority The bidders must satisfy the above criteria and furnish the relevant documents as proof. If the Vendors fails to provide relevant



		documents and
		meet the minimum eligibility criteria as mentioned above, Bank would disqualify the bidder without assigning any reason whatsoever.

Note:

1. Tenderers are required to submit the bid in 2 parts namely Technical bid and financial bid. The Technical bid is to be submitted in sealed cover along with, Necessary documents prescribed in the Bids, Forms and EMD. The Financial bid shall be submitted in a separate sealed cover. The Technical and Financial bids are to be put in a master envelope (3rd Cover) and sealed and super-scribed 'Repair / Face-Lifting Of Existing Compound Wall Including External Campus Lighting Of Bank's Building At Hazaratganj, Lucknow' and addressed to the Zonal Manager, Indian Bank, FGM Office , Premises Department, 1st floor, New building, Hazaratganj, Lucknow - 226001.
2. It is highly advisable to the tenderers to visit the site before submitting the bid. Date of Site Visit must be within working hours i.e between 10:00 am to 5:00 pm on all working days from 09.06.2026 to . Bank is not liable to make any payment to Tenderers either for inspection of site or for preparation to submit the tender / bid.
3. Conditional tenders, late tenders, tenders without EMD or EMD not enclosed with Technical Bids, will be summarily rejected. Any tender received open, late or not meeting all the tender conditions / Bids not filled up in Pen are liable to be rejected.
4. Earnest money & Initial Security Deposit will not carry any interest.
5. The Companies who are registered with Micro, Small & Medium Enterprises and also those having valid NSIC certificate under Government Store Purchase Programme having certificate clearly indicating the amount of "Quantitative Capacity Per Annum" (amount of Quantitative Capacity Per Annum shall be more than the estimated cost of work) are exempted from the submission of Tender document fee/EMD on submission of requisite proof in the form of valid certification from MSME and NSIC.
6. If any information furnished by the applicant is found incorrect at a later stage, he shall be liable to be debarred from taking up the work in Indian Bank.
7. The Bank reserves the right to verify the particulars furnished by the applicant independently.
8. Short-listing of contractors will be finalized after inspection of works and obtaining confidential reports (if required) from previous employers for only those firms who fulfill the aforesaid Pre- qualification criteria and that specified in Technical bid.
9. Bank is not bound to accept the Lowest (L1) bidder and reserves the right to accept or reject any or all the tenders without assigning any reason whatsoever.
10. Submission of this tender document by a bidder implies that he/she has read this notice and other contract / documents and has made himself aware of the scope, specifications, conditions, liabilities and duties bearing on the execution of the contract.
11. Return of EMD of remaining bidders who were unsuccessful in the bidding process will be done within a reasonable time say not exceeding 14 days from the date of acceptance of tender submitted by the L1 bidder.
12. Each and every page of the tender documents and correspondences accompanying the tender shall have to be duly signed and stamped by the Bidder / Authorised Signatory before submission.
13. The rates quoted by the bidder shall be based only on the specifications and conditions of the tender documents.
14. Clarifications, if any, pertaining to this bids may be referred to Indian Bank, Premises Department, FGM Office LUCKNOW through E-mail Id – [fgmo.lucknow@ indianbank.co.in](mailto:fgmo.lucknow@indianbank.co.in)

**DEPUTY GENERAL MANAGER
FGM OFFICE, LUCKNOW**



FORM OF TENDER

The Deputy General Manager
Indian Bank
FGM Office LUCKNOW
1st floor, New building,
Hazaratganj,
LUCKNOW – 226001
Dear Sir,

**SUB: Invitation of Tender for Repair / Face-Lifting Of Existing Compound Wall Including
External Campus Lighting Of Bank's Building At Hazaratganj, Lucknow'**

Having duly examined the tender documents including the specifications, bill of quantities relating to the works specified in the under written memorandum and having visited / inspected the site of the said works and having acquired all the requisite information relating there to as affecting this tender, I/We hereby offer to execute the above works at the respective rates which I/We have quoted for the items in the Schedule of Quantities.

I/We further agree to complete the work within the stipulated time as specified in the Tender Document.

I / We understand that Indian Bank is not bound to accept the lowest tender or bound to assign any reasons for rejecting our bid.

In the event of this bid being accepted, I/We agree to enter into and execute the necessary contract required by you. I/We do hereby bind myself/ourselves to forfeit the aforesaid Earnest Money Deposit in the event of our refusal or delay in signing the Contract Agreement.

I / We understand that Indian Bank may award the work to more than one Contractor and I / We shall make no claims whatsoever if Indian Bank accept only a part of my / our tender.

I / We unconditionally agree to Indian Bank's conditions as stipulated in the Documents.

I/We agree to keep our bid open for **120 (one hundred twenty) days** from the date of opening of financial bids.

I / We agree that incase of my / our failure to execute the work in accordance with the specifications and instructions received from the Bank during the course of the work, Bank reserves the right to terminate my work order and recover all the dues to the Bank from the payment receivable by me. Further, I may also be barred from participating in any type of bid invited by Bank or its subsidiaries in future.

Thanking you,

Yours faithfully,

[To be signed by the Authorized Representative
of Firm who has the Power to do
so]

Place

:

Date :

Name:

Address:

Seal:

**Pre-Qualification Criteria for Repair / Face-Lifting Of Existing Compound Wall
Including External Campus Lighting Of Bank's Building At
Hazaratganj, Lucknow'**

The intending bidders shall fulfill the following minimum **Criteria for pre-qualification (PQ)** bidding for the above jobs: -

1. EXPERIENCE :

- 1.1 Tenderer should be in the same line of activity minimum for the past 7 years in carrying out similar nature of works ending 31/12/2025. Please furnish work order / Completion Certificate / Empanelment Letter issued by PSBs / PSUs / Central Govt. or State Govt. Departments.
- 1.2 Tenderer should have carried out similar work of value in the last 5 years ending 31/12/2025 as mentioned below :

Sr. No.	Eligible Work	Value – Rs. In Lakhs without Taxes
1	Three similar completed works each costing not less than (equal to 40% cost of estimated amount)	16.60
2	Two similar completed works each costing not less than (equal to 50% cost of estimated amount)	20.75
3	One similar completed works costing not less than (equal to 80% cost of estimated amount)	33.20

In the Last five years ending 31.12.2025, Similar work means Civil Construction Work (Commercial Buildings / Office Buildings / Residential Buildings / Institutional Buildings, etc) and related to Schedule of Quantities items only. Bidders have to make sure that all the relevant documents should be submitted as required for Pre-Qualification. Submission of Short-fall documents after opening of bids will not be allowed. Copy of TDS Certificate and Work Completion Certificate showing value of work satisfying the above eligibility criteria is to be mandatorily enclosed.

- 1.3 The firm must be empaneled in at least 1 Public Sector Banks / Public Sector Units / Central or State Government Departments
2. **TURNOVER:** Average annual turnover from the works for the last three financial years ending 31st March 2025 should not be less than Rs. 12.45 Lakhs as per the audited balance sheet.
3. **PROFIT / LOSS:** - Tenderer should be a Net Profit making firm and should not have made losses in the last three continuous financial years. Certificate(s) from Chartered Accountant / Statutory auditors specifying the net worth of the Applicants, as at the close of the preceding financial year, must be enclosed with tender documents
4. **SOLVENCY CERTIFICATE:** - The contractor should have a latest solvency of minimum amount of **Rs. 16.60 Lakhs** duly issued by any Scheduled Commercial Bank obtained on or after **31.01.2026**.
5. **The firm should have registered office in Uttar Pradesh and should have valid GST No.**

Other conditions:

1. Interested parties meeting the above Tender criteria can download the tender document from Bank website www.indianbank.co.in and submit experience profile, proof of meeting the above criteria, attested copies of completion / work in progress certificates from the clients, audited certified balance

sheet for the last 3 financial years, EPF , ESIC / GST Registration, Empanelment Letters as Contractor with various PSBs, PSUs, State PWDs, CPWD, MES & Other Government Departments

Application not accompanied by any of the above documents and EMD will be rejected without assigning any reason whatsoever.

2. No Joint Venture or consortium of firms shall be allowed.
3. The contractor should have **adequate tools and equipment** required for proper execution of work in the prescribed time
4. The contractor should have **sufficient number of technical and administrative personnel** for proper execution of contract. The contractor should submit a list of their employees.
5. Indian Bank reserves the right to verify the authenticity of the documents submitted by the contractors. Indian Bank also reserves the right to reject any or all applications, split the works or cancel the process without assigning any reason whatsoever may be.

DEPUTY GENERAL MANAGER
FGM OFFICE, LUCKNOW

GENERAL INSTRUCTIONS

1. Definition of terms / interpretation:

- Employer/Owner/Bank /Indian Bank/ Accepting Authority shall mean Indian Bank with their Corporate Office at No. 254-260, Avvai Shanmugam Salai, Royapettah, Chennai – 600 014 inter-alia having their FGM Office at 1st floor, New building, Hazaratganj, LUCKNOW – 226001 and any of its employees representative authorized on their behalf.
- Throughout these bidding documents, the terms “bid” and “tender” and their derivatives (“bidder”/“tenderer”), “biddered /tendered”, “bidding”/“tendering”, etc. are Synonymous.
- Day means calendar day. Singular also means plural
- “Contractor” means the person whose Tender has been accepted by the Employer and the legal successors in title to such person, but not (except with the consent of the Employer) any assignee of such person.
- Tenderer: The term ‘Tenderer’ shall mean the individual or firm or company whether incorporated or not, undertaking the work and shall include legal representative(s) of such individuals or persons composing such firm or company or successors of such firm or company as the case may be and permitted assigns of such individual or firm or company.

2. Eligible Tenderers

This Invitation to Tender bid is open to all experienced and reputed Civil Work Contractors whether Individual or Sole Proprietor, Partnership firm, Private limited, or Public limited Company who satisfy the qualifying criteria. Joint ventures are not accepted.

3. Submission of Tender

The Tender must be submitted in Original or as per details given here under. The rates shall be filled in the schedule given in Part – II of the Tender Document

Tender should be submitted in two parts in separately sealed envelopes as described below :

- PART – I : TECHNICAL BID
- PART – II : FINANCIAL BID

The Technical bid is to be submitted in sealed cover along with, Necessary documents prescribed in the Bids, Forms and EMD. The Financial bid shall be submitted in a separate sealed cover. The Technical and Financial bids are to be put in a master envelope (3rd Cover) and sealed and super-scribed ‘**Repair / Face-Lifting Of Existing Compound Wall Including External Campus Lighting Of Bank’s Building At Hazaratganj, Lucknow**’ and addressed to the Deputy General Manager, Indian Bank, FGM Office , Premises Department, 1st floor, New building, Hazaratganj, LUCKNOW – 226001.

4. Qualifying Criteria

As given in Page No 7 & 8 of this Tender Document

Additional Information –

Even though the tenderers meet the above qualifying criteria, they are liable to be disqualified if they have :

- a) Made misleading or false representation in the forms, statements and attachments in proof of the qualification requirements;

- b) Records of poor performance such as abandoning the work, not properly completing the contract, inordinate delays in completion, penalty, litigation history or financial failures etc.
- c) Their business banned by any Central or State Govt. Department / Public Sector Undertakings / Public Sector Bank's
- d) Not submitted all the supporting documents or not furnished the relevant details as per the prescribed format.
- e) Any one of the partners (in case of partnership firm) or any Directors in case of pvt ltd., or public ltd firm being convicted by a Court of law.

5. Site Visit

- a) The tenderer is advised to visit (upon prior approval), and examine the Site of Works and its surroundings and obtain for itself on its own responsibility and cost all information that may be necessary for preparing the bid and entering into a contract for construction the Works as mentioned in tender document.
- b) The tenderer and any of its personnel with authority letter will be granted permission by the Employer / Owner to enter upon its premises and lands for the purpose of such visit (upon prior approval), but only upon the express condition that the tenderer, its personnel, and agents, will release and indemnify the Employer/Owner and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
- c) Before submitting the Bid, the Tenderer shall be deemed to have satisfied himself by actual inspection of the site and locality of the works, Traffic conditions / restrictions, Availability of parking space, Transportation of materials that all conditions liable to be encountered during the execution of the works are taken into account and that the rates entered in the Price Bid document are adequate and all inclusive for the completion of work to the entire satisfaction of the Employer/Owner.

6. Bid Opening

- a) Part-I of the Bid (Technical Bid) will be opened at the address and the date and time intimated in the Notice Inviting tender (NIT) mentioned in "Tender document" in presence of Tenderers or authorized representatives of Tenderers who wish to attend the opening of Bids.
- b) Bank will give advance intimation to all the technically qualified bidders about the date and time of opening of financial bids.

7. Process to be Confidential

Information relating to the examination, clarification, evaluation and comparison of bids, and recommendations for Tender shall not be disclosed to tenderers or any of their persons not officially concerned with such process until the Tender process is finalized.

8. Examination & Evaluation of Bids

- a. The Employer shall examine the bids to determine whether they are complete, whether the documents have been properly signed and whether the bids are generally in order, and all documents as per tender document have been submitted.
- b. Prior to the detailed evaluation, Employer shall determine whether each bid is of acceptable quality, is generally complete and is substantially responsive to the tender documents. For purposes of this determination, a substantially responsive bid is one that confirms to all the documents as specified in

The Tender document without material deviations, objections, Conditionality or reservation.

- A material deviation, objection, conditionality or reservation is one;
 - That affects in any substantial way the scope, quality or performance of the contract.
 - That limits in any substantial way, inconsistent with the bidding documents, the Employers' rights or the successful Tenderer's obligations under the tender document or
 - Whose rectification would unfairly affect the competitive position of other Tenderers who are presenting substantially responsive bids.
- c. If a bid is determined to be not substantially responsive, it shall be rejected by the Employer.
 - d. The bids, which are determined as substantially responsive, shall be evaluated based upon the criteria as given in qualifying criteria.
 - e. No Tenderer is permitted to canvass to Employer on any matter relating to this Bid. Any Tenderer found doing so is liable to be disqualified and his/their bid is liable to be rejected.
 - f. The Employer / consultants may visit few of the works completed / ongoing by the tenderers, whom they claim satisfying the eligibility criteria (As a part of tender process).
9. Overwriting should be avoided. Correction, if any should be made by neatly crossing out, initialing, dating and rewriting. Pages of the Tender documents are numbered. Additional sheets, if any, added by the contractor, should also be numbered by him.
 10. Any information furnished by the applicant found to be incorrect either immediately or at a later date, would render him liable to be debarred from Tender / tendering / taking up of work in Indian bank. If such applicant happens to be pre-qualified/ enlisted contractor, his name shall be removed from the pre-qualified list of contractors.
 11. All information called for in the enclosed forms should be furnished against the relevant columns. If for any reason, information is furnished on a separate sheet, this fact should be mentioned against the relevant column. Even if no information is to be provided in a column, a 'NIL' or 'NO SUCH CASE' entry should be made in that column. If for any particulars, Query is not applicable in case of the applicant, it should be stated as "Not Applicable". The applicants are cautioned that not giving complete information called for in the application forms or not giving it in clear terms or making any change in the prescribed forms or deliberately suppressing the information may result in the applicant being rejected. Applications/Tender document submitted through Email will not be entertained. The Application/Tender document received after the due date and time of submission shall not be considered.
 12. The officials of Indian Bank & Consultants may visit any of the ongoing & completed works enlisted in Tender documents submitted by bidders and In case of misleading or false representation or Record of poor performance, abandoning work, not properly completing the contract, Penalized During work, etc. were seen/Found during the Site visit of the ongoing & completed works will be caused the disqualification of the bidder

PROFORMA - I

GENERAL INFORMATION OF THE FIRM

1	Name of the Applicant / Firm / Organization	
2	Registered Address of the Firm (Please attach address proof as supporting document as Annexure - I)	
3	CONTACT DETAILS Landline No - Mobile No - FAX No – Email Id -	
4	EMD Details (i) Amount (Rs.) - (ii) Demand Draft No. - (iii) Name of the Bank - (iv) Date – (Please submit EMD Details as Annexure – II. If exempted, please submit requisite proof in the form of copy of self-attested valid certification from MSME and NSIC.)	
5	Year of Establishment (Enclose certified copies of documents as evidence – Annexure – III)	
6	Constitution of Firm (Enclose certified copies of documents as evidence – Annexure – IV)	Sole Proprietorship / Partnership / Private Ltd. / Public Ltd / Any other (Please specify)
7	Name of the Proprietor/ Partners / Directors of the Organization / Firm with Qualification (Enclose certified copies of documents as evidence – Annexure – V)	
8	Name/s of Authorized Signatory/ Directors / Partners with Designation and Contact No.	



9	Mode of Authorization (Enclose certified copies of documents as evidence – Annexure – VI)	Resolution / Partnership Deed / Registered Power of Attorney / Proprietor / Any Other (Please specify)
10	Details of Registration with Registrar of Companies/ Registrar of Firms. (Enclose certified copies of documents as evidence – Annexure - VII)	
11	Whether registered as MSME Organization? If so, provide the date of registration, validity & License No (Enclose certified copies of documents as evidence – Annexure - VIII)	
11	Whether empanelled with Public Sector Banks / Public Sector Undertakings / Central Govt Department / State Govt. Departments or any other Government Organization and if so, in which class and since when? (Enclose Empanelment letters issued by the Organizations – Annexure - IX)	YES / NO
12	Number of years of experience in this field. (Enclose evidence to meet the eligibility criteria as Annexure – X)	
13	Yearly turnover of the Organization during last 3 years (Year Wise) and furnish audited Balance Sheet Statement and Profit & Loss A/c. (Audited) for the last 3 years. (Enclose certified copies of documents as evidence – Annexure - XI)	2022-23 : Rs..... 2023-24 : Rs..... 2024-25 : Rs..... Average : Rs.....
14	Banker's Details – (Please attach copy of cancelled cheque as proof – Annexure - XII) (i) Banker's Name : (ii) Account No. : (iii) Type of Account : (iv) IFSC :	



15	Solvency Certificate from the Bankers (Must satisfy minimum criteria as mentioned in NIT) (Enclose certified copies of document as evidence – Annexure – XIII)	
13	Registration with the Government Authorities (Enclose certified copies of documents as evidence – Annexure – XIV) If firm is exempt from ESI & EPF registration as per extant guidelines, fill N.A. and an undertaking is to be submitted stating the same.	
	a) Income Tax (PAN) No. ii) Goods & Service Tax (GST) No. iii) Labour License iv) ESI v) EPF	
14	Whether last three years IT returns filed FY 2022-23 (AY 2023-24) FY 2023-24 (AY 2024-25) FY 2024-25 (AY 2025-26) (Enclose certified copies of IT Return – As evidence – Annexure – XV)	
15	Name & Value of Major Works Completed during the last 7 years.	Please fill up the details in the format enclosed as Form - A & enclose copies of work order and satisfactory completion certificates issued by Client, etc with this tender as Annexure – XVI. Please enclose documentary proof to satisfy minimum eligibility criteria as mentioned in NIT
16	Name & Value of Major Works under execution	Please fill up the details in the format enclosed as Form - B & enclose copies of work order issued or agreement signed with the Client with this tender as Annexure – XVII
17	Details of Key Personnel Permanently employed.	Please fill up the details in the format enclosed as Form – C and enclose the details as Annexure – XVIII
18	Details of Equipment owned by Company	Please fill up the details in the format enclosed as Form – D and enclose the details as Annexure - XIX

19	Furnish the names of -3- responsible persons along with their designation, address, contact no., etc., for whose organization, you have completed the above-mentioned jobs and who will be in a position to certify about the quality as well as performance of your organization.	Please fill up the details in the format enclosed as Form – E and enclose the details as Annexure - XX
20	Information relating to whether any litigation is pending before any Arbitrator for adjudication of any litigation or else any litigation was disposed of during the last five years by an arbitrator. If so, the details of such litigation are required to be submitted.	Please fill up the details in the format enclosed as Form – F and enclose the details as Annexure - XXI
21	Has the applicant or any constituent partner in case of partnership firm/ Company, ever abandoned the awarded work before its completion? If so, give the name of the project and give reasons thereof.	
22	Has the applicant or any constituent partner in case of partnership firm / Company, ever been debarred/black listed for tendering in any organization at any time? If so, give details Kindly submit the Self Declaration in this regard as Annexure – XXII	

DECLARATION –

1. All the information furnished by me/us here above is correct to the best of my knowledge and belief.
2. I/We have no objection if enquiries are made about the work listed by me/ us in the accompanying sheets/ annexures.
3. I/We agree that the decision of Indian Bank in selection of tenderers will be final and binding to me/ us.
4. I/We hereby confirm that our firm/agency/company has not been disqualified / debarred / blacklisted by any Governments, Semi-governments, PSUs, Banks including any of the Offices / Branch of Indian Bank Pan India during last 5 year from the date of application.
5. I/We hereby confirm that all information, particulars, copies of certificates and testimonials in connection with my/our empanelment are correct and genuine. I am / We are, therefore, liable to face appropriate actions as deemed fit by the Indian Bank in the event of any of the information, particulars, copies of certificates and testimonials are not found correct and genuine. I/We have read the instructions appended to the proforma and I/we understand that if any false information is detected at a later date, the empanelment shall be cancelled at the discretion of the Indian Bank.

PLACE –

DATE –

SIGNATURE OF CONTRACTOR

NAME & DESIGNATION – SEAL OF ORGANISATION -

FORM - A

LIST OF MAJOR WORKS COMPLETED IN LAST 7 YEARS

S.NO	NAME OF CLIENT	NATURE OF WORK	ESTIMATED VALUE	DATE OF START	PERIOD OF COMPLETION	DATE OF COMPLETION	FINAL VALUE OF THE PROJECT	REASONS FOR THE VARIATION (IF ANY)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

(Add Separate Sheet if required) NOTE –

- The supporting documents like Work Order & Completion Certificate issued by the Clients shall be enclosed.

Name of Authorized Signatory

Sign & seal of the applicant



FORM - B

LIST OF MAJOR WORKS UNDER EXECUTION

S.NO	NAME OF CLIENT	NATURE OF WORK	ESTIMATED VALUE	PRESENT POSITION	SCHEDULE DATE OF COMPLETION	REMARKS IF ANY
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(Add Separate Sheet if required)						

NOTE –

1. The supporting documents like Work Order issued by the Clients shall be enclosed.

Name of Authorized Signatory

Sign & seal of the applicant



FORM - C

DETAILS OF KEY PERSONNEL (PERMANENT EMPLOYEE), GIVING DETAILS ABOUT THEIR TECHNICAL QUALIFICATION & EXPERIENCE INCLUDING THEIR IN-HOUSE ESTABLISHMENT

S.NO	NAME	QUALIFICATION	EXPERIENCE	PARTICULARS OF WORK DONE	EMPLOYED IN YOUR FIRM SINCE	ANY OTHER INFORMATION

(Add separate sheet if required)

Notes:

1. Information has to be filled up specifically in this format.
2. Indicate other points, if any, to show your technical competence to indicate any important point in your favor.

Name of Authorized Signatory

Sign & seal of the applicant

FORM – D
DETAILS OF TOOLS PLANT AND EQUIPMENT LIKELY TO BE USED IN CARRYING OUT THE WORK (IF APPLICABLE)

Sl. No.	Name of the Equipment/ Instrument	Nos	Capacity or Type	Age	Condition	Ownership status			Current location	Remarks
						Presently owned	To be purchased	Leased		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

Name of Authorized Signatory

Sign & seal of the applicant



FORM - E

**DETAILS OF THREE RESPONSIBLE CLIENTS / PERSONS TO WHOM THE
MAJORWORKS CARRIED OUT BY THE APPLICANT**

S. No.	Name of the Official	Organization & Address	Contact Numbers	E-mail ID

(Add separate sheet if required)Notes:

1. Information has to be filled up specifically in this format.
2. Indicate other points, if any, to show your technical competence to indicate any important point in your favour.

Name of Authorized Signatory

Sign & seal of the applicant

FORM - F

DETAILS OF LITIGATION / ARBITRATION CASES RESULTING FROM THE CONTRACTS EXECUTED IN THE LAST FIVE YEARS OR CURRENTLY UNDER EXECUTION

Year	Award for or against Applicant	Name of Client	Cause of Litigation & Matter of Dispute	Disputed Amount	Actual Awarded Amount

(Add separate sheet if required)

Notes:

1. Information has to be filled up specifically in this format.
2. Indicate other points, if any, to show your technical competence to indicate any important point in your favour.

Name of Authorized Signatory

Sign & seal of the applicant



SOLVENCY CERTIFICATE FORMAT

This is to certify that to the best of our knowledge and information
M/s.....(Firm Name) having their
address at
....., is a reputed firm / company with a good
financial standing.

The firm / company can be treated as good upto a sum of
Rs.....(Rupees in words .. Only).

It is clarified that this information is furnished without any risk and responsibility on our part in
any respect whatsoever more particularly either as guarantor or otherwise. This certificate is
issued at the specific request of the customer.

Seal and Signature of Bank's Official

Note: -

1. **Solvency Certificate should be issued on letter head of the Scheduled Commercial Bank.**
2. In case of partnership firm, certificate should include names of all partners as recorded with the Bank.



FORMAT OF WORK COMPLETION CERTIFICATE FOR WORKS MENTIONED IN FORM – A

(TO BE ISSUED ON LETTER HEAD OF ORGANIZATION)

Date –

TO WHOMSOEVER IT MAY CONCERN

This is to certify that M/s, having their registered office at who were awarded the work of have successfully executed and completed the work as detailed below:

1	Work Order No & Date	:	
2	Name of Work	:	
3	Brief Scope of Work	:	
4	Location of Work	:	
5	Value of Work as per Work Order	:	
6	Date of Commencement of Work	:	
7	Revised Value as per execution	:	
8	Completion Period	:	
9	Date of Actual Completion of Work	:	
10	Whether any Penalty / Liquidated Damages imposed. If Yes, please give the reasons	:	
11	Whether the contractor employed qualified Engineer/Overseer during execution of work	:	
12	Quality of work (indicate grading)	:	Outstanding / Very Good / Good / Satisfactory / Poor
13	Did the contractor go for arbitration? If Yes, then :		
	i) Total amount of claim	:	
	ii) Total amount awarded	:	
14	Comments on the capabilities of the Contractor		Please tick one of the multiple options
	a) Technical Proficiency :	:	Outstanding / Very Good / Good / Satisfactory / Poor
	b) Financial Soundness	:	Outstanding / Very Good / Good / Satisfactory / Poor
	d) Mobilization of Man Power	:	Outstanding / Very Good / Good / Satisfactory / Poor
	d) General Behaviour	:	Outstanding / Very Good / Good / Satisfactory / Poor

Signature of Reporting Officer* with Office Seal

* Officer not below the rank of Assistant Engineer or an Officer in a equivalent or higher rank for works carried out in Government Department / PSU's, Officer not below the rank of Sr. Manager of the Concerned Department / Branch Head in PSBs. For works carried out for Private companies, Copy of TDS has to be submitted for proving the credentials/contract amount.

(Report must be submitted in Client's Official Letter Head and to be addressed to the enlistment authority : The Zonal Manager, Indian Bank, FGM Office , 15/287, Hazaratganj, Bada Chauraha, LUCKNOW - 226001)

- The experience certificate can also be in the format of issuing organization. However, the bidder should ensure that all the details sought by the bank is available in that experience certificate.



FORMART FOR SELF DECLARATION TO BE SUBMITTED ON FIRM'S LETTER HEAD

SELF DECLARATION - NO BLACKLISTING

It is hereby certified that, I/ We hereby declare that presently our Company/ firm _____ is having unblemished record and is not declared ineligible on account of corrupt & fraudulent practices either indefinitely or for a particular period of time by any State/ Central Government/ PSU/Autonomous Body.

We further declare that presently our Company/ firm _____ is not Blacklisted / debarred and not declared ineligible for any other reasons by any State/ Central Government/ PSU/ Autonomous Body on the date of Bid Submission.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, my/ our security may be forfeited in full and the tender if any to the extent accepted may be cancelled.

The Organization will immediately inform to Bank in case of any change in the situation any time here in after

Thanking you,
Yours faithfully,

(Signature of Authorized
Signatory) Name –
Designation
– Seal –

Date

–

Place

-

SPECIAL INSTRUCTIONS TO TENDERERS

1. Time of Completion, Extension of Time & Progress Chart

Time of Completion:

The entire work is to be completed in all respects within the stipulated period of **90 days**. The work shall deem to be commenced within 7th day from the date of issue of Work order or date of handing over of site, whichever is earlier. Time is the essence of the contract and shall be strictly observed by the Tenderer.

The work shall not be considered as complete until the Architect have certified in writing that this has been completed and the Defects Liability Period shall commence from the date of such certificate.

The contractor may plan and execute all the works around the clock without causing disturbance to the existing occupants of the premises. The plan of carrying out the works should be given at least one week in advance.

Extension of Time:

If in the opinion of the Indian Bank/Architect, the works be delayed (a) by reason of any exceptionally inclement weather, or (b) by reason of instructions from the Indian Bank in consequence of proceedings taken or threatened by or disputes, with adjoining or neighboring owners or (c) by the works, or delay, of other Tenderers or tradesmen engaged or nominated by the Indian Bank and not referred to in the specification or (d) by reason of authorized extra and additions or (e) by reason of any combination of strikes or lock-out affecting any of the building trades or from other causes which the Indian Bank may consider being beyond the control of the Tenderer, the Indian Bank at the completion of the time allowed for the contract shall make fair and reasonable extension of time for completion in respect there for. In the event of the Indian Bank failing to give possession of the site upon the day specified above the time of completion shall be extended suitably.

In case of such strikes or lockouts, as are referred to above, the Tenderer shall, immediately give the Indian Bank, written notice thereof. Nevertheless, the Tenderer shall use his best endeavors all that to prevent delay, and shall do all that may be reasonably required to the satisfaction of the Indian Bank to proceed with the works and on his doing so, it will be ground of consideration by the Indian Bank for a extension of time as above provided. The decision of the Indian Bank as to the period to be allowed for an extension of time for completion hereunder(which decision shall be final and binding on the Tenderer) shall be promulgated at the conclusion of such strike or lock-out and the Indian Bank shall then, in the event of an extension being granted, determine and declare the final completion date. The provision with respect to payment of liquidated damages shall in such case, be read and construed as if the extended dated fixed by the Indian Bank were substituted for and the damage shall be deducted accordingly.

Progress of Work:

During the period of work execution, the Tenderer shall maintain proportionate progress on the basis of a Programme Chart submitted by the Tenderer immediately before commencement of work and agreed to by the Indian Bank / Consultants. Tenderer should also include planning for procurement of scarce material well in advance and reflect the same in the Programme Chart so that there is no delay in completion of the project.

2. Defects Liability Period (DLP)

- (a) It must be realized that this period is for exposure of "latent defects" such as settlements, shrinkages or expansion cracks, undue weathering and wear due to faulty material and

workmanship.

(b) The DLP commences from the certified date of Virtual Completion issued by the Architect.

DLP – 1 year from the Date of issue of Virtual Completion Certificate for the work by Consultants.

(c) Whenever the Indian Bank is of the view that the defects in the workmanship and/or materials used are likely to be apparent only over a long period, the Defect Liability Period may be extended as deemed fit.

3. Date of Commencement

Normally, Date of commencement shall be either **7 Days** from the Work order issued to the Tenderer or the day on which Tenderer is instructed to take possession of the site, whichever is earlier.

4. Date of Completion

Date of completion shall be 90 Days for the execution of the work.

5. Period of Final Measurement

The period of final measurement after completion shall be made taken into account the complexity of the work and staff available for carrying out measurements.

All hidden works shall have already been measured as the work progressed in presence of Tenderers, Indian Bank, Architect and respective specialized consultants to check up the quality and method of installation. It should be noted that unless a longer period is stipulated, the condition of contract generally lays down two months (maximum) from the date of completion of the contract as the period of final measurement. Even though the maximum period of two months is mentioned, it shall be endeavored to complete the measurements as expeditiously as possible.

6. Period of Honoring Interim Certificate

The period shall be ten days from the date of receipt of the certificate from the Architect along with measuring Book only signed by the Tenderer, Architect and Client.

7. Period of Honoring Final Certificate

The period shall be one month from the date of receipt of the final bill certificate from the Consultant along with Measuring book duly signed by Tenderer, Consultant and Client and statutory Certificates wherever necessary along with as built drawings of the works executed. No due certificate from self as well as from the sub agencies involved by the main contractor should be produced to the Bank at the time of submitting final bill by the main contractor.

8. Initial Security Deposit

The tenderer will have to deposit an amount of 2% of Contract amount in the form of Demand Draft from Scheduled Commercial Bank in India drawn in favour of "Indian Bank," payable at LUCKNOW within 7 days from the date of receipt of work order as an Initial Security Deposit(ISD).The Indian Bank is not liable to pay any interest on the ISD. If the tenderer fails to provide ISD within stipulated times, it will be presumed that agency is not interested in the work and suitable action will be taken as per the tender terms.

9. Retention Money

The retention amount at 6% from the Gross value of each R/A or Final bills excluding GST. No interest will be paid on the Security Deposit under any circumstances will be held by the Indian Bank apart from ISD of 2%

10. Release of Retention Money

50% of Total security deposit will be returned on completion of following:

- After 15 days of the payment of the final bill.
AND
- Taking over certificate by Bank
AND
- Tenderer's removal of his materials, equipment, labour force, temporary sheds/stores etc. from the site. (except for a small presence required if any for the Defect Liability Period and approved by the Indian Bank).

Balance 50% of retention money shall be released within 30 days after satisfactory completion of defect liability period and defects free as per the contract clauses.

11. Receiving, Opening and Recording of Tenders

Part-A (Technical bid) & Part-B (Price bid) has to be submitted through off -line mode only.

Part-A tender will be opened at 15:00 hours on 06.06.2026. In case of postal delivery, the tenderer has to ensure that the tender is received before the due date and time. The Indian Bank will not be responsible for the damage in transit and delay in receipt of tender if any.

After technical evaluation, intimation will be given to all qualifying bidders about the date, time of opening of Price bid.

GENERAL CONDITIONS OF CONTRACT

Except where provided for in the description of the individual items in the schedule of quantities and in the specifications and conditions laid down hereinafter and, in the Drawings, the work shall be carried out as per standard specifications and under the direction of Bank / Architect

1. Interpretation

In construing these conditions, the specifications, the schedule of quantities, tender and Agreement, the following words shall have the meaning herein assigned to him except where the subject or context otherwise requires:

- **Indian Bank:** with their Corporate Office at No. 254-260, Avvai Shanmugam Salai, Royapettah, Chennai – 600 014 inter-alia having their FGM Office at 1st floor, new building, Hazaratganj, LUCKNOW – 226001 and any of its employees representative authorized on their behalf.
- **Tenderer:** The term 'Tenderer' shall mean the individual or firm or company whether incorporated or not, undertaking the work and shall include legal representative(s) of such individuals or persons composing such firm or company or successors of such firm or company as the case may be and permitted assigns of such individual or firm or company.
- **Site:** The site shall mean the site where the works are to be executed including any building and erections thereon allotted by the Indian Bank for the Tenderer's use.
- **Drawings:** The work is to be carried out in accordance with drawings, specifications, the schedule of quantities and any further drawings which may be supplied or any other instruction, which may be given by the Indian Bank during the execution of the work.

All drawings relating to work given to the Tenderer together with a copy of schedule of quantities are to be kept at site and the Consultants shall be given to such drawings or schedule of access whenever necessary.

In case any detailed Drawings are necessary, Tenderer shall prepare such detailed drawings and or dimensional sketches there for and have it confirmed by the Indian Bank/ Consultants/PMC as case may be, prior before taking up such work.

The Tenderer shall ask in writing for any clarifications.

- (a) "The Works" Shall mean the work or works to be executed or done under this contract.
- (b) "Act of Insolvency" shall mean any act as such as defined by the Presidency Towns Insolvency act or in Provincial Insolvency Act or any amending Statutes.
- (c) "The Schedule of Quantities" shall mean the schedule of quantities as specified and forming part of this contract.
- (d) "Priced Schedule of Quantities" shall mean the schedule of quantities duly priced with the accepted quoted rates of the Tenderer.

2. Tenders

a) Technical Bid

The entire set of tender paper issued to the tenderer should be submitted fully signed on the every page. Signature will indicate the acceptance of the tender papers by the tenderer.

b) Price Bid - The price should be quoted in the Price Bid format attached to this bid

The schedule of quantities shall be filled in as follows:

- (a) The "Rate" column to be legibly filled in ink both English figures and English words.
- (b) Amount column to be filled in for each item and the amount for each sub head as detailed in the "Schedule of Quantities".
- (c) All corrections are to be initialed.

No modifications, writings or corrections can be made in the tender papers by the tenderer, but may at his option offer his comments or modifications in a separate sheet of paper attached to the original tender papers.

The Indian Bank reserves the right to reject the lowest or any tender and also to discharge any or all of the tenders for each section or to split up and distribute any item of work to any specialist firm or firms, without assigning any reason.

The tenderers should note that the tender is strictly on the item rate basis and their attention is drawn to the fact that the rates for each and every item should be correct, workable and self-supporting. If called upon by the Indian Bank/ Consultants detailed analysis of any or all the rates shall be submitted. The Indian Bank/ Consultants shall not be bound to recognize the Tenderer's analysis.

The works will be paid for as "measured work" on the basis of actual work done and not as "lump sum" contract, unless otherwise specified.

All items of work described in the schedule of quantities are to be deemed and paid as complete works in all respects and details including preparatory and finishing works involved, directly, related to and reasonably detectable from the drawings, specifications and schedule of quantities and no further extra charges will be allowed in this connection. In the case of lump-sum charges in the tender in respect of any item of works, the payment of such items of work will be made for the actual work done on the basis of lump-sum charges as will be assessed to be payable by the Indian Bank.

The Indian Bank has power to add to, omit from any work as shown in drawings or described in specifications or included in schedule of quantities and intimate the same in writing but no addition, omission or variation shall be made by the Tenderer without authorization from the Indian Bank. No variation shall vitiate the contract.

3. Agreement

The successful Tenderer is required to sign agreement as may be drawn up to suit local conditions and shall pay for all stamps and legal expenses, incidental thereto.

4. Permits and Licenses

Permits and licenses for release of materials which are under Government control will be arranged by the Tenderer. The Indian Bank will render necessary assistance, sign any forms or applications that may be necessary.

The Indian Bank/ Architect shall be indemnified against all Government or legal actions for theft or misuse of cement, M.S. rods and any controlled materials in the custody of the Tenderer. It may be clearly

understood that no compensation or additional charges can be claimed by the tenderer for non-availability of such materials in due time on this account or according to his own requirements.

5. Government and Local Rules

The Tenderer shall conform to the provisions of all local Bye-laws and Acts relating to the work and to the Regulations etc., of the Government and Local Authorities and of any company with whose system the structure is proposed to be connected. The Tenderer shall give all notices required by said Act, Rules, and Regulations and Bye-laws etc., and pay all fees / fines payable to such authority / authorities for execution of the work involved. The cost, if any, shall be deemed to have been included in his quoted rates, taking into account all liabilities for licenses, fees for footpath encroachment and restorations etc., and shall indemnify the Indian Bank against such liabilities and shall defend all actions arising from such claims or liabilities.

6. Taxes and Duties

The tenderers must include in their tender prices quoted for all duties royalties, cess and sale tax or any other taxes or local charges if applicable. GST will be payable extra as applicable. No extra claim on this account will in any case be entertained.

The tenderer shall keep necessary books of A/C & other documents for the purpose of this condition as may be necessary and shall allow inspection of the same by duly authorized representative of the Indian Bank and or the Engineer-in-charge and further shall finish such other information / document as the Indian Bank may required from time to time.

7. Quantity of Work to be executed

The quantities shown in the schedule of quantities are intended to cover the entire work as indicated in the bill of Quantities but the Indian Bank reserves the right to execute only apart or the whole or any excess thereof without assigning any reason therefore. Variation in the value is however not expected to be more than 10%.

8. Other Persons Engaged by the Indian Bank

The Indian Bank reserves the right to execute any part of the work included in this contract or any work which is not included in this contract by other Agency or persons and Tenderer shall allow all reasonable facilities and use of his scaffolding for the execution of such work. The main Tenderer shall extend all cooperation in this regard.

9. Earnest Money and Security Deposit

The tenderer will have to deposit an amount of **Rs. 46,000/- (Rupees Forty Six Thousand Only)** in the form of Demand Draft from scheduled commercial bank in India drawn in favour of " Indian Bank," payable at LUCKNOW.

The bidder must pay the amount of Earnest Money as mentioned in the NIT by Bank Demand Draft payable to Indian Bank. No interest on Earnest Money deposited by the bidder shall be allowed. The bidder should attach the Bank Draft along with the technical bid failing which the bid will not be considered. No other mode of payment shall be accepted. The Earnest Money Deposit of unsuccessful bidder shall be refunded within two weeks of award of contract to the successful bidder or within one week of actual commencement of work whichever is earlier and in any case not later than three months. The Earnest Money Deposit of the successful bidder shall be refunded on the acceptance by the Employer of the Contractor's Demand Draft towards Initial Security Deposit. The EMD of the bidder,

whose bid is accepted, shall be forfeit in full in case he does not start the work by stipulated date mentioned in the award letter.

Apart from EMD & ISD, **the retention amount shall be deducted from progressive running bills at 6% on the gross value of each running bill paid will be held by the Indian Bank apart from ISD until the total security deposit equals 8% of project cost.**

10. Payment to contractors

- i. For claiming this payment, the following documents are to be submitted:
 - a. **R.A. Bill:** - R.A Bills payment will be released by Indian Bank within 10 days of the certification of Bill by Architect.
 - b. **Final Bill:** - Final Bill payment will be released by Indian Bank within 30 days of the certification of final Bill by Architect.
- ii. All the bills will be certified by the Architect and the same will be accepted by Indian Bank.
- iii. No payment will be made without Architect's certificate.

11. Tenderer to provide everything necessary

The Tenderer shall provide everything necessary for the proper execution of the work according to the intent and meaning of the drawings, schedule of quantities and specifications taken together whether the same may or may not be particularly shown or described therein provided that the same can reasonably be inferred there from and if the Tenderer finds any discrepancies therein he shall immediately and in writing, refer the same of the Indian Bank/ Consultants whose decision shall be final and binding.

The Tenderer shall provide himself for ground and fresh water for carrying out of works at his own cost. The Indian Bank shall on no account be responsible for the expenses incurred by the Tenderer for hired ground or fresh water obtained from elsewhere.

The rates quoted against individual items will be inclusive of everything necessary to complete the said items of work within the contemplation of the contract, and beyond the unit price no extra payment will be allowed for incidental or contingent work, labour and/or materials inclusive of all taxes and duties whatsoever except for specific items, if any, stipulated in the tender documents.

The Tenderer shall supply, fix and maintain at his own cost, for the execution of any work, all tools, tackles, machineries and equipment's and all the necessary centering, scaffolding, staging, planking, timbering, strutting, shoring, pumping, fencing, boarding, watching and lighting by night as well as by day required not only for the proper execution and protection of the said work but also for the protection for the public and safety of any adjacent roads, streets, walls, houses, buildings, all other erections, matters and things and the Tenderer shall take down any remove any or all such centering, scaffolding, planking, timbering, strutting, shoring, etc., as occasion shall be required or when ordered so to do, and shall fully reinstate and make good all matters and things disturbed during the execution of the works to the satisfaction of the Indian Bank/ Consultants.

The Tenderer shall also provide such temporary road on the site as may be necessary for the proper performance of the contract, and for his own convenience but not otherwise. Upon completion, such roads shall be broken up and levelled where so required by the drawings unless the Indian Bank shall otherwise direct. The Tenderer shall at all times give access to workers employed by the Indian Bank or any men employed on the buildings and to provide such parties with proper sufficient and if required, special scaffolding, hoists and ladders and provide them with water and lighting and leave or make any holes, grooves etc., in any work, where directed by the Indian Bank as may be required to enable such

workmen to lay or fix pipes, electrical wiring, special fittings etc. The quoted rates of the tenderers shall accordingly include all these above mentioned contingent works.

12. Tools, Storage of Materials, Protective Works and Site Office Requirements

The Tenderer shall maintain a site office with site engineer to receive instruction notices or communications etc. All drawings/charts maintained on the site are to be carefully mounted on boards of appropriate size and covered with a coat of approved varnish. They are to be protected from ravages of termites, ants, and other insects.

The Tenderer shall provide at his own cost all artificial light required for the work and to enable other Tenderers and sub-Tenderers to complete the work within the specified time.

The Tenderer shall use the toilets identified by the Indian bank for use of their workmen and keep the same in a clean and sanitary condition to the satisfaction of the Indian bank / Public Health Authorities and shall cause such latrines and soil to be cleared away whenever necessary and shall make good all the works disturbed by these conveniences.

Every precaution shall be taken by the Tenderer to prevent the breeding of mosquitoes on the works during the construction, and all receptacles; cisterns, water tanks etc., used for the storage of water must be suitably protected against breeding of mosquitoes.

The Tenderer shall indemnify the Indian Bank against any breach of rules in respect of anti-malarial measures.

The Tenderer shall not fix or place any placards or advertisement of any description or permit the same to be fixed or placed in or upon any boarding, gantry, building structure other than those approved by the Indian Bank.

Protective Measures: The Tenderer from the time of being placed in possession of the site must make suitable arrangements for watching, lighting and protecting the work, the site and surrounding property by day, by night, on Sundays and other holidays.

Tenderer shall indemnify the Indian Bank against any possible damage to the building, roads, or members of the public in course of execution of the work. The Tenderer shall provide necessary temporary enclosures, gates, entrances, etc., for the protection of the work and materials and for altering and adopting the same as may be required and removing on completion of the works and making good all works disturbed.

Storage of materials: The Tenderer shall provide and maintain proper sheds for the proper storage and adequate protection of the materials etc. and other work that may be executed on the site including the tools and materials of sub- Tenderers and remove same on completion. Cement should be stored one feet above the ground level and have raised floor.

Tools: The theodolite levels, steel and metallic tapes and all other surveying instruments found necessary on the works shall be provided by the Tenderer for the due performance of this contract as instructed by the Site Engineer. All measuring tapes shall be of steel and suitable scaffolding and ladders that may be required for safely taking measurement shall be supplied by the Tenderer.

The masteries and the supervisors on the works shall carry with them always a one meter or two meter steel tape, a measuring tape of 3 meters, a spirit level, a plumb bob and a square and shall check the work to see that the work is being done according to the drawing and specifications. The Site Engineer will use any or all measuring instruments or tools belonging to the Tenderers as he chooses for checking the works executed or being executed on the contract. The Tenderer should cover in his rates for making

provisions for all reasonable facilities for the use of his scaffolding, tools and plant etc. by sub-Tenderers for their work.

13. Notice and Patents of Appropriate Authority and Owners

The Tenderer shall confirm to the provisions of any Acts of the Legislature relating to the work, and to the Regulations and Bye- laws of any authorities, and/or any water, lighting and other companies, and/or authorities with whose systems the structures were proposed to have connection and shall before making any variations from the drawings or specification that may be associated to so conform, give the Indian Bank/ Consultants written notices specifying the variations proposed to be made and the reasons for making them and apply for instruction thereon. The Indian Bank/ Consultants on receipt of such intimation shall give a decision within a reasonable time.

14. Clearing Site and Setting out Works

The site shown on the plan shall be cleared of all obstructions, loose stone, and materials rubbish of all kinds. All holes or hollows whether originally existing or produced by removal of loose stone or materials shall be carefully filled up with earth well rammed and leveled off as directed at his own cost. The Tenderer shall set out the works and shall be responsible for the true and perfect setting out of the work and for the correctness of the positions, levels, dimensions and alignment of all parts thereof. If at any time, any error shall appear during the progress of any part of the work, the Tenderer shall at his own expenses rectify such error, if called upon to the satisfaction of the Indian Bank. The Tenderer shall further set out the works to the alternative positions at the site until one is finally approved and the rates quoted in his tender should include for this and no extra on this account will be entertained.

15. Tenderer Immediately to Remove All Offensive Matters

The Tenderer shall keep the foundations and works free from water and shall provide and maintain at his own expenses electrically or other power- driven pumps and other plant to the satisfaction of the Indian Bank for the purpose, until the building is handed over to the Indian Bank. The Tenderer shall arrange for the disposal of the water so accumulated to the satisfaction of the Indian Bank and local authority and no claims will be entertained afterwards if he does not include in his rates for the purpose.

16. Access

Any authorized representative of the Indian Bank shall at all reasonable times have free access to the works and/or to the, workshops, factories or other places where materials are being prepared or constructed for the work and also to any place where the materials are lying or from where they are being obtained, and the Tenderer shall give every facility to the Indian Bank or their representatives necessary for inspection and examination and test of the materials and workmanship. Except the representatives of the Indian Bank, no person shall be allowed at any time without the written permission of the Indian Bank.

17. Materials, Workmanship, Samples, Testing of Materials

All the works specified and provided for in the specifications or which may be required to be done in order to perform and complete any part thereof shall be executed in the best and most workman like manner with materials of the best and approved quality of the respective kinds in accordance with the particulars contained in and implied by the specifications and as represented by the drawings or according to such other additional particulars, and instructions as may from time to time be given by the Indian Bank/ Consultants during the execution of the work, and to his entire satisfaction.

If required by the Indian Bank/ Consultants the Tenderer shall have to carry out tests on materials and workmanship in approved materials testing laboratories or as prescribed by the Indian Bank/ Consultants at his own cost to prove that the materials etc. Under test conform to the relevant I.S. Standards or as specified in the specifications. The necessary charges for preparation of mould (in

case of concrete cube) transporting, testing etc., shall have to be borne by the Tenderer. No extra payment on this account should in any case be entertained. All works to be carried out generally as per BIS Specifications. Branded items, i.e., BIS compliant items specified in the tender shall not be tested separately. However the other items if approved by Indian bank are subjected to testing as per tender specifications.

All the materials (except where otherwise described) stores and equipment required for the full performance of the work under the contract must be provided through normal channels and must include charge for import duties, sales tax, octroi and other charges and must be the best of their kind available and the Tenderers must be entirely responsible for the proper and efficient carrying out of the work. The work must be done in the best workmanlike manner. Samples of all materials to be used must be submitted displayed to the Indian Bank/ Consultants when so directed by the Engineer/ Consultants and written approval from Indian Bank/ Consultants must be obtained prior to placement of order.

During the inclement weather the Tenderer shall suspend concreting and plastering for such time as the Indian Bank/ Consultants may direct and shall protect from injury all work when in course of execution. Any damage (during constructions) to any part of the work for any reasons due to rain, storm, or neglect of Tenderer shall be rectified. by the Tenderer in an approved manner at no extra cost. Should the work be suspended by reason of rain, strike, lock -outs or any other cause, the Tenderer shall take all precautions necessary for the protection of work and at his own expenses shall make good any damage arising from any of these causes.

The Tenderer shall cover up and protect from damage, from any cause, all new work and supply all temporary doors, protection to windows, and any other requisite protection for the execution of the work whether by himself or special tradesmen or sub-Tenderer and any damage caused must be made good by the Tenderer at his own expenses.

18. Removal of Improper Work

The Indian Bank shall during the progress of the work have power to order in writing from time to time the removal from the work within such reasonable time or times as may be specified in the order of any materials which in the opinion of the Indian Bank / Consultants are not in accordance with specification or instructions, the substitution or proper re-execution of any work executed with materials or workmanships not in accordance with the drawings and specifications or instructions. In case the Tenderer refuses to comply with the order the Indian Bank shall have the power to employ and pay other agencies to carry out the work and all expenses consequent thereon or incidental thereto as certified by the Indian Bank/ Consultants shall be borne by the Tenderer or may be deducted from any money due to or that may become due to the Tenderer. No certificate which may be given by the Consultant / Architect shall relieve the Tenderer from his liability in respect of unsound work or bad materials.

19. Site Engineer/Project Management Consultant:

The term "Site Engineer/PMC" shall mean the person/agencies appointed and paid by the Indian Bank to superintend the work. The Tenderer shall afford the Site Engineer/PMC every facility and assistance for examining the works and materials and for checking and measuring work and materials. The Site Engineer/PMC shall have no power to revoke, alter, enlarge or relax any requirements of the Tenderer or to sanction any day work, additions, alterations, deviations or omissions or any extra work whatever, except in so far as such authority may be specially conferred by a written order of the Indian Bank.

The Site Engineer/PMC shall have power to give notice to the Tenderer or to his foreman, of non-approval of any work or materials and such work shall be suspended or the use of such materials shall be discontinued until the decision of the Indian Bank is obtained. The work will from time to time be examined by the Consultants, Engineer from the Premises Department of the Indian Bank and the Site

Engineer if any. But such examination shall not in any way exonerate the Tenderer from the obligation to remedy any defects which may be found to exist at any stage of the work or after the same is complete. Subject to the limitations of this clause the Tenderer shall take instructions only from the Consultants/Indian Bank or his representative.

20. Tenderer's Employees

The Tenderer shall employ technically qualified and competent supervisors for the work who shall be available (by turn) throughout the working hours to receive and comply with instructions of the Indian Bank/ Consultants. The Tenderer shall engage at least one experienced Engineer as site-in-charge for execution of the work. The Tenderer shall employ in connection with the work persons having the appropriate skill or ability to perform their job efficiently. The Tenderer shall employ local labourers on the work as far as possible. No labourer below the age of eighteen years and who is not an Indian National shall be employed on the work.

Any labourer supplied by the Tenderer to be engaged on the work on day-work basis either wholly or partly under the direct order or control of the Indian Bank or his representative shall be deemed to be a person employed by the Tenderer.

The Tenderer shall comply with the provisions of all labour legislation including the requirements of

- a) The Payment of Wages Act 1936
- b) Indian Bank's Liability Act 1938
- c) Workmen's Compensation Act Contract Labour (Regulation & Abolition) Act, 1970 and Central Rules 1971.
- d) Apprentices Act 1961
- e) Minimum Wages Act 1948
- f) Any other Act or enactment relating thereto and rules framed there Under from time to time.

The Tenderer shall keep the Indian Bank saved harmless and indemnified against claims if any of the workmen and all costs and expenses as may be incurred by the Indian Bank in connection with any claim that may be made by any workmen.

The Tenderer shall comply at his own cost with the order of requirement of any Health Officer of the State or any local authority or of the Indian Bank regarding the maintenance of proper environmental sanitation of the area where the Tenderer's laborers are housed or accommodated, for the prevention of small pox, cholera, plague, typhoid, malaria and other contagious diseases. The Tenderer shall provide, maintain and keep in good sanitary condition adequate sanitary accommodation and provide facilities for pure drinking water at all times for the use of men engaged on the works and shall remove and clear away the same on completion of the works. Adequate precautions shall be taken by the Tenderer to prevent nuisance of any kind on the works or the lands adjoining the same.

The Tenderer shall arrange to provide first-aid treatment to the labourers engaged on the works. He shall within 24 hours of the occurrence of any accident at or about the site or in connection with execution of the works, report such accident to the Indian Bank and also to the Competent Authority where such report is required by law.

21. Dismissal of Workmen

The Tenderer shall on the request of the Indian Bank Immediately Withdrawal / remove from works any person employed thereon by him, who may in the opinion of the Indian Bank be unsuitable or incompetent or who may misconduct himself. Such Withdrawal / Remove shall not be the basis of any claim for compensation or damages against the Indian Bank or any of their officer or employee.

22. Assignment

The whole of the works included in the contract shall be executed by the Tenderer and the Tenderer shall not directly or indirectly transfer, assign or underlet the contract or any part, share or interest therein

nor, shall take a new partner, without written consent of the Indian Bank and no subletting shall relieve the Tenderer from the full and entire responsibility of the contract or from active superintendence of the work during their progress.

23. Damage to Persons and Property Insurance Etc.

The Tenderer shall be responsible for all injury to the work or workmen to persons, animals or things and for all damages to the structural and/or decorative part of property which may arise from the operations or neglect of himself or of any sub-Tenderer or of any of his or a sub-Tenderer's employees, whether such injury or damage arise from carelessness, accident or any other cause whatsoever in any way connected with the carrying out of this contract. The clause shall be held to include inter-alia, any damage to buildings whether immediately adjacent or otherwise, and any damage to roads, streets, foot paths or ways as well as damages caused to the buildings and the works forming the subject of this contract by rain, wind or other inclemency of the weather. The tenderer is also responsible for the damages/injury/accidents caused to any public in general / vehicles in general and pay necessary compensation or settlement or whatsoever in this regard.

The Tenderer shall indemnify the Indian Bank and hold harmless in respect of all and any expenses arising from any such injury or damages to persons or property as aforesaid and also in respect of any claim made in respect of injury or damage under any acts of compensation or damage consequent upon such claim.

The Tenderer shall reinstate all damage of every sort mentioned in this clause, so as to deliver the whole of the contract works complete and perfect in every respect and so as to make good or otherwise satisfy all claims for damages to the property or third parties.

The Indian Bank shall be at liberty and is hereby empowered to deduct the amount of any damages, compensations, costs, charges and expenses arising or accruing from or in respect of any such claim or damages from any sums due or to become due to the Tenderer.

24. Insurance

The Tenderer shall arrange to take "Tenderers all risk insurance policy including third party liability", covering the entire period of contract till virtual completion of the contract (including extended period if any) for the entire scope of works for a risk cover not less than the contract value. The third party insurance shall be for a sum of **Rs. 1 Lakh** per accident.

The Tenderer shall effect the insurance necessary and indemnify the Indian Bank entirely from all responsibility in this respect. The insurance must be placed with a company approved by the Indian Bank and must be effected jointly in the name of the Tenderer and the Indian Bank and the policy lodged with the latter. The scope of insurance is to include damage or loss to the work and workman due to carelessness accident, including fire, earthquake and floods etc., damage or loss to the contract itself till this is made over in a complete state. Insurance is compulsory and must be effected from the very initial stage.

The Tenderer shall also be responsible for anything which may be excluded from damage to any property arising out of incidents, negligence or defective carrying out of this contract. Unless otherwise instructed the Tenderer shall insure the works and keep them insured until the virtual completion of the contract against loss or damage by fire and /or earthquake, flood. The insurance must be placed with a company approved by the Indian Bank, in the joint names of the Indian Bank and the Tenderer for such amount and for any further sum if called to do so by the Indian Bank, the premium of such further sum being allowed to the Tenderer as an authorized extra.

The Tenderer shall as soon as the claim under the policy is settled or the work reinstated by the

Insurance Company should they elect to do so, proceed with due diligence with the completion of the works in the same manner as though the fire has not occurred and in all respects under the conditions of the contract. The Tenderer in case of rebinding or reinstatement after fire shall be entitled to extension of time for completion as the Indian Bank may deem fit.

25. Accounts, Receipts & Vouchers

The Tenderer shall, upon the request of the Indian Bank furnish them, with all the invoices, accounts, receipts and other vouchers that they may require in connection with the works under this contract. If the Tenderer shall use materials less than what he is required under the contract, the value of the difference in the quantity of the materials he was required to use and that he actually used shall be deducted from his dues. The decision of the Indian Bank shall be final and binding on the Tenderer as to the amount of materials the Tenderer is required to use for any work under this contract.

26. Measurement

All the Measurements should be taken in the presence of Bank officials/ Consultants. And the measurements shall be countersigned by the Bank officials.

27. Payments

All bills shall be prepared by the Tenderer in the form prescribed by the Indian Bank / Consultants. **Normally the interim bill shall be prepared subject to achieving the minimum bill value of Rs. 15 Lakhs.** The bills in proper forms must be duly accompanied by detailed measurements in support of the quantities of work done and must show deductions for all previous payments, retention money, etc.

The Indian Bank/ Consultant shall issue a certificate after due scrutiny of the Tenderers' bill stating the amount due to the Tenderer from the Indian Bank and the Tenderer shall be entitled to payment thereof, within the period of honoring certificates named in these documents. In case of delay due to some reasons in the processing of such bills for payment, an advance of 75% of the billed Amount may be paid on the request of the Tenderer for the smooth progress of the work. The amount stated in an interim certificate shall be the total value of work properly executed and 75% of invoiced value of material brought to site for permanent incorporation into the work up to the date of the bill less the amount to be retained by the Indian Bank as retention money vide clause

9 of the Special Instructions To Tenderers, less TDS, and less installments previously paid under these conditions, provided that such certificate shall only include the value of said material and goods as and from such time as they are reasonably, properly and not prematurely brought to or placed adjacent to the work and then only if adequately protected against weather or other casualties.

The Indian Bank will deduct retention money as per tender conditions. If the Indian Bank has supplied any materials or goods to the Tenderer, the cost of any such materials or goods will be, progressively deducted from the amount due to the Tenderer in accordance with the quantities consumed in the work.

All the interim payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually, done and completed, and shall not preclude the requiring of bad, unsound, and imperfect or unskilled work to be; removed and taken away and reconstructed, or re-erected or be considered as an admission of the due performance of the contract, or any part thereof in any respect or the accruing of any claim, nor shall, it conclude, determine or affect in anyway the power of the Indian Bank under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract. The final bill shall be submitted by the Tenderer within one month of the date fixed for completion of the work or of the date of certificate of completion furnished by the Site Engineer and payment shall be made after checking the work completely.

Indian Bank reserves the right to withhold in part or full payment of bills in case of non-compliance / violation of any terms and conditions stipulated in the agreement. The tenderer shall neither suspend the work nor claim for extension of time for non payment /withholding of payment on this account and no interest is also payable on the payment withheld / due.

28. Final Payment

The final bill shall be accompanied by a certificate of completion from the Architect & Payments of final bill shall be made after deduction of Retention Money, which sum shall be refunded after the completion of the Work and Defects Liability Period as mentioned in the Clause No 10 of Special Instructions to Tenderers after receiving the Indian Bank's/ Consultants' certificate that the Tenderer has rectified all defects to the satisfaction of the Indian Bank/ Consultants. The acceptance of payment of the final bill by the Tenderer would indicate that he will have no further claim in respect of the work executed.

The contractor has to submit Photographs of Work Executed & duly Certified by the Consultant to the Bank along with final bill documents. Along with Every bill the contractor has to submit the photographs of the work executed.

29. ENHANCEMENT IN RATES AND QUANTITY VARIATION

The tender rates shall be fixed, firm and applicable for any increase or decrease in the tendered quantities. The Employer / Consultant can increase or decrease any quantities to any extent or even delete particular item as per the site requirements and the contractor shall not be paid anything extra on this account. Nothing extra will be paid by the Indian Bank on account of omission /deletion of items or decrease in the quantity of items. The Bank shall not entertain any claim whatsoever from the contractor on this account. The price of all additional items / non-tendered items will be worked out on the basis of rates quoted for similar items in the contract wherever existing. If similar items are not available, the rates for such items will be derived as per standard method of rate analysis based on prevalent fair price of labour, material and other components as required with 15% towards contractor's profit and overheads.

30. UNQUOTED ITEMS

The bidders to offer their competitive rates for each and every item listed in the Schedule of rates, the bidders who have not quoted for all the items as required in the SORs shall be liable for rejection. In case a bidder who has left certain items unquoted and if they happen to be overall lowest on evaluation, then their offers shall be considered subject to the unquoted items being taken as NIL cost. The bidder shall also give a clear undertaking to the effect that they shall execute the said items (unquoted) free of cost. In the event the bidder refuses the above conditions and insists on additional cost for the unquoted items, then such an offers shall be rejected as invalid.

For Extra works at the time of work in progress the contractor should submit the reasonable rate with the rate analysis and after approval given by the Consultant/ Bank that amount will be given.

31. ABNORMAL RATES

The Contractor is expected to quote rate for each item after careful analysis of costs involved for the performance of the complete item consisting all specifications and conditions of the contract. If it is noticed that the rates quoted by the tenderer for any items are unusually high (or) unusually low it will be sufficient cause for rejection of the tender unless the owner is convinced about the reasonableness of the rate on scrutiny of the analysis for such rate to be furnished by the tenderer on demand. Not with standing anything there in stand, the rate once accepted by the owner shall be final and shall not be subject to any claim either on account of un-workability of rates or on any other ground whatsoever.

32. SUBSTITUTION

Should the Tenderer desire to substitute any materials and workmanship, he/they must obtain the approval of the Indian Bank/ Consultants in writing for any such substitution well in advance. Materials designated in this specification indefinitely by such term as "Equal" or "Other approved" etc. Specific approval of the Indian Bank/ Consultants has to be obtained in writing.

33. Preparation of Building Works for Occupation and Use on Completion

The whole of the work will be thoroughly inspected by the Tenderer and deficiencies and defects put right. On completion of such inspection the Tenderer shall inform the Indian Bank that he has completed the work and it is ready for inspection. On completion the Tenderer shall clean all windows and doors including the cleaning and oiling if necessary, of all hardware, inside and outside, all floors, stair-cases, and every part of the building. He will leave the entire building neat and clean and ready for immediate occupation and to the satisfaction of the Indian bank.

34. Clearing Site on Completion

On completion of the works the Tenderer shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and the works clean and in a workman like condition to the satisfaction of the Indian Bank/Consultants.

The main /Principal contractor is only responsible for the cleanliness of the site/building irrespective of numbers of sub agencies deployed by them to carryout various other works in the tender.

35. Defects after Completion

The Tenderer shall make good at his own cost and to the satisfaction of the Indian Bank all defects, shrinkage, settlements or other faults which may appear within 12 months after completion of the work. In default the Indian Bank may employ and pay other persons to amend and make good such damages, losses and expenses consequent thereon or incidental thereto shall be made good and borne by the Tenderer and such damages, loss and expenses shall be recoverable from him by the Indian Bank or may be deducted by the Indian Bank, in lieu of such amending and making good by the Tenderer, deduct from any money due to the Tenderer a sum equivalent to the cost of amending such work and in the event of the amount retained being insufficient, recover that balance from the Tenderer from the amount retained under General Rules and instruction General Condition of Contract Clause 28 together with any expenses the Indian Bank may have incurred in connection therewith.

36. Escalation

The rate quoted shall be firm throughout the tenure of the contract (including extension of time, if any, granted) and will not be subject to any fluctuation due to increase in cost of materials, labour, GST , etc. unless specifically provided in these documents.

37. Idle Labour

Whatever the reasons may be no claim for idle labour, additional establishment cost of hire and labour charges of tools and plants would be entertained under any circumstances.

38. Suspension

If the Tenderer except on account of any legal restraint upon the Indian Bank preventing the continuance of the work or in the opinion of the Indian Bank shall neglect or fail to proceed with due diligence in the performance of his part of the contract or if he shall more than once make default, the Indian Bank shall have the power to give notice in writing to the Tenderer requiring the work to be proceeded within a reasonable manner and with reasonable dispatch, such notice purport to be a notice under this clause.

After such notice shall have been given the Tenderer shall not be at liberty to remove from the site of the works or from any ground contiguous thereto any plant or materials to subsist from the date of such notice being given until the notice shall have been complied with. If the Tenderer fails to start the work within seven days after such notice has been given to proceed with the works as therein prescribed, the Indian Bank may proceed as provided in clause 39 (Termination of Contract by Indian Bank).

39. Termination of Contract by Indian Bank

If the Tenderer being a company go into liquidation whether voluntary or compulsory or being a firm shall be dissolved or being an individual shall be adjudicated insolvent or shall make an assignment or a composition for the benefit of the greater Para, in number of amount of his

creditors or shall enter into a Deed or arrangement with his creditors, or if the Official Assignee in insolvency, or the Receiver of the Tenderer in insolvency, shall repudiate the contract, or if a Receiver of the Tenderer's firm appointed by the court shall be unable, within fourteen days after notice to him requiring him to do so, to show to the reasonable satisfaction of the Indian Bank that he is able to carry out and fulfill the contract, and if so required by the Indian Bank to give reasonable security therefore. or if the Tenderer shall suffer execution to be issued, or shall suffer any payment under this contract to be attached by or on behalf of and of the creditors of the Tenderer, or shall assign, charge or encumber this contract or any payments due or which may become due to the Tenderer, there under, or shall neglect or fail to observe and perform all or any of the acts matters of things by this contract, to be observed and performed by the Tenderer within three clear days after the notice shall have been given to the Tenderer in manner hereinafter mentioned requiring the Tenderer to observe or perform the same or shall use improper materials or workmanship in carrying on the works, or shall in the opinion of the Indian Bank not exercise such due diligence and make such due progress as would enable the work to be completed within due time agreed upon, and shall fail to proceed to the satisfaction of the Indian Bank after three clear days notice requiring the Tenderer so to do shall have been given to the Tenderer as hereinafter mentioned, or shall abandon the contract, then and in any of the said cases, the Indian Bank may notwithstanding previous waiver determine the contract by a notice in writing to the effect as hereinafter mentioned, but without thereby effecting the powers of the Indian Bank of the obligations and liabilities of the Tenderer the whole on which shall continue in force as fully as if the Contract, had not been so determined and as if the works subsequently executed had been executed by or on behalf of the Tenderer (without thereby creating any trust in favour of the Tenderer) further the Indian Bank or his agent, or servants, may enter upon and take possession of the work and all plants, tools, scaffolding, sheds, machinery, steam and other power, utensils and materials lying upon premises or the adjoining lands or roads and sell the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completing the works or by employing any other Tenderers or other persons or person to complete the works, and the Tenderer shall not in any way interrupt or do any act, matter of thing to prevent or hinder such other Tenderers or other persons or person employed from completing and finishing or using the materials and plants for the works when the works shall be completed, or as soon thereafter as conveniently may be, the Indian Bank shall give notice in writing to the Tenderer to remove his surplus materials and plants and should the Tenderer fail to do so within a period of 14 days after receipt by him the Indian Bank may sell the same by Public Auction and shall give credit to the Tenderer for the amount so realized. Any expenses or losses incurred by the Indian Bank in get the works carried out by other Tenderers shall be adjusted against the amount payable to the Tenderer by way of selling his tools and plants or due on account of work carried out by the Tenderer prior to engaging other Tenderers or against the Security Deposit.

40. Force Majeure

- (a) Notwithstanding the provisions of Terms and Conditions of Contract (TCC), the successful bidder shall not be liable for forfeiture of his EMD/ISD/ASD, liquidated damages, or termination for default if and to the extent that the delay in performance or other failure to perform its obligations under the Contract, is the result of an event of Force Majeure.
- (b) For purposes of this clause, "Force Majeure" means an event beyond the control of the successful bidder and not involving the successful bidder's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of INDIAN BANK in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.
- (c) If a Force Majeure situation arises, successful bidder shall promptly notify INDIAN BANK in writing of such condition and the cause thereof. Unless otherwise directed by INDIAN BANK in writing, the successful bidder shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

41. Arbitration

All disputes or differences of any kind whatsoever which shall at any time arise between the parties hereto touching or concerning the works or the execution or maintenance thereof of this contract or the rights touching or concerning the works or the execution of maintenance thereof of this contract or the construction remaining operation or effect thereof or to the rights or liabilities of the parties or arising out of or in relation thereto whether during or after determination foreclosure or branch of the contract (other than those in respect of which the decision of any person is by the contract expressed to be final and binding) shall after written notice by either party to the contract to the other of them and to the Indian Bank hereinafter mentioned be referred for adjudication to a sole Arbitrator to be appointed as hereinafter provided.

For the purpose of appointing the sole Arbitrator referred to above, the Indian Bank will send within thirty days of receipt of the notice, to the Tenderer a panel of three names of persons who shall be presently unconnected with the organization for which the work is executed.

The Tenderer shall on receipt of the names as aforesaid, select anyone of the persons name to be appointed as a sole Arbitrator and communicate his name to the Indian Bank within thirty days of receipt of the names. The Indian Bank shall there upon without any delay appoint the said person as the Sole Arbitrator. If the Tenderer fails to communicate such selection as provided above within the period specified, the Competent Authority shall make the selection and appoint the selected person as the Sole Arbitrator.

If the Indian Bank fails to send to the Tenderer the panel of three names as foresaid within the period specified, the Tenderer shall send to the Indian Bank a panel of three names of persons who shall all be unconnected with either party. The Indian Bank shall on receipt of the named as aforesaid select anyone of the persons names and appoint him as the Sole Arbitrator. If the Indian Bank fails to select the person and appoint him as the Sole Arbitrator within 30 days of receipt of the panel and inform the Tenderer accordingly, the Tenderer shall be entitled to appoint one of the persons from the panel as the Sole Arbitrator and communicate his name to the Indian Bank.

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 as aforesaid.

The work under the Contract shall, however, continue during the, arbitration proceedings and no payment due or payable to the Tenderer shall be withheld on account of such proceedings.

The Arbitrator shall be deemed to have entered on the reference on the date he issued notice to both the parties fixing the date of the first hearing. The Arbitrator may from time to time, with the consent of the parties, enlarge the time for making and publishing the award.

The Arbitrator shall give a separate award in respect of each dispute or difference referred to him. The Arbitrator shall decide each dispute, in accordance with the terms of the contract and give a reasoned award. The venue of arbitration shall be in LUCKNOW only 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 who may direct to and by whom and in what manner, such costs or any part thereof shall be paid and may fix or settle and amount of costs to be so paid. The award of the Arbitrator shall be final and binding on both the parties.

Subject to aforesaid the provisions of the "Arbitration and Reconciliation Act 1996" or any statutory modification or re-enactment thereof and the rules made there under, and for the time being in force, shall apply to the arbitration proceeding under this clause.

The Indian Bank and the Tenderer hereby also agree that arbitration under clause shall be a condition precedent to any right to action under the contract with regard to the matters hereby expressly agreed

to be so referred to arbitration. The arbitration proceedings will not prejudice the right of approaching legal forum by the parties.

42. LIQUIDATED DAMAGES

- (a) Should the work be not completed to the satisfaction of the Bank /Consultants within the stipulated period, the contractor shall be bound to pay to the Bank a sum calculated as given below by way of liquidated damages and not as penalty during which the work remains uncompleted or unfinished after the expiry of the completion date.
- (b) The work should complete on time or as mentioned elsewhere. If the contractor fails to complete the job within the stipulated time, he will bear the cost of penalty @1% of contract value Per Week till completion of work after the scheduled time period. The maximum limit of the penalty amount is restricted to 10% of the total value of the jobs

43. LIMITATION OF LIABILITY

- (i) For breach of any obligation mentioned in this agreement, subject to obligations mentioned in this clause, in no event successful bidder shall be liable for damages to Bank arising under or in connection with this agreement for an amount exceeding the value of this agreement. Successful bidder will ensure Bank/Consultant confidentiality and shall be responsible for liability arising in case of breach of any kind of security and/or leakage of confidential customer/Bank's related information to the extent of loss so caused.
- (ii) The limitations set forth herein shall not apply with respect to:
 - a) claims that are the subject of indemnification pursuant to IPR infringement,
 - b) damage(s) occasioned by the gross negligence, fraud or wilful misconduct of successful bidder
 - c) damage(s) occasioned by successful bidder for breach of Confidentiality Obligations,
 - d) When a dispute is settled by the Court of Law in India.
 - e) Loss occasioned by Non-compliance of Statutory or Regulatory Guidelines.

SAFETY CODE AND MODEL RULES FOR PROTECTION OF HEALTH AND SANITARY ARRANGEMENTS FOR WORKERS

Safety Measures

All people working shall be provided with safety helmets, safety shoes, goggles, gloves, Safety belts, etc., which shall be worn by the workmen while performing work and people working at elevation more than 10 feet shall be always provided with safety belts at contractor's cost. The safety belts shall be properly fixed to a lifeline always while at work.

The Contractor shall provide safe means of access to any working place including provisions of suitable and sufficient scaffolding at various stages during all operations of the work for the safety of his workmen.

Contractor shall ensure deployment of appropriate equipment and appliances for adequate safety and health of the workmen and protection of surrounding areas.

The Contractor shall ensure that all their staff and workers including their sub-contractor (s) shall wear Safety Helmet and Safety Shoes. Contractor shall also ensure use of safety belt, Protective goggles, gloves etc. by the personnel as per job requirements.

Contractor shall ensure that a proper Safety Net System / MS Barriers and shall be used at appropriate locations. The safety net shall be located not more than feet (9.0 meters) below the working surface at site to arrest or to reduce the consequences of a possible fall of persons working at different heights.

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.

Personal Safety Equipment:

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 Tenderer should take adequate steps to ensure proper use of equipment by those concerned.

- Workers employed on mixing asphalt materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
- Those engaged in white washing and mixing or stacking of cement bags or any material that is injurious to the eyes shall be provided with protective goggles.
- Those engaged in welding works shall be provided with welder's protective eyesight lids.
- The Tenderer 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 precautions should be taken:

- Adequate facilities shall be provided to enable the working painters to wash during the cessation of work.
- When the work is done near any public where there is risk of necessary equipments should be provided and kept ready for use and all necessary steps take 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.

First Aid

At every work place, there shall be maintained in readily accessible place, first aid appliance including adequate supply of sterilized dressings and sterilized cotton wool. The appliance shall be kept in good order and in large work place, they shall be placed under the charge of a responsible person who shall be readily available during working hours.

Electricity & Water

All the water and their arrangement for work execution shall be provided by contractor at own cost, only required electricity will be provided by INDIAN BANK, all the necessary arrangement for electricity point i.e. cable, switch etc. shall be provided by contractor.

Before starting the work the contractor has to submit the BAR-CHART and it is to be approved by the Consultant/Client.

The Contractor is directly responsible for any accident, injury, disableness and other such things that may happen to his workmen during working hours or outside working hours if they happen to be in the work site and that he will pay adequate compensation to such people. And the contractor has to take the full responsibility for these disabilities.

The Contractor will be responsible for any accident or untoward incident that may happen to any person in the work site or near about due to inadequate safety measures, carelessness, negligence, incorrect procedures, inadequate supervision, improper methods, and that he will attend to all related police enquiry, court attendance and will bear the cost for all such expenses including compensation, if any, to be paid.

SPECIAL CONDITIONS OF THE CONTRACT

1. DRAWINGS AND SPECIFICATIONS

The works shall be carried out to the entire satisfaction of the EMPLOYER and the Architect / Consultant, in accordance with the signed drawings and specifications and such further drawings and details as may be provided by the Consultant, and in accordance with such written instructions, directions and explanations as may from time to time be given by the Consultant, whose decision as to the sufficiency and quality of the work and materials shall be final and binding upon all parties. If the work shown on any such further drawings or work that may be necessary to comply with any such instructions directions or explanations, being the opinion of the contractor that he shall before proceeding with such work, give notice in writing to this effect to Consultant, and in the event of the Consultants/employer agree to the same in writing the contractor shall be entitled to an allowance in respect of such extra work as on authorized extra. If the Consultant and the contractor fail to agree as to whether or to there is an extra, then, if the Consultant decided that the contractor is to carry out the said work, the contractor shall do so, and the question whether or not there is any extra, and if so the amount thereof, shall failing agreement, be settled by Arbitration as hereinafter provided, but such references shall in no way delay the fulfillment of this contract.

No drawings shall be taken as in itself an order for variation unless, in addition to the Consultant's signature, it bears express words stating that it is intended to be such an order or bears a remark '**VALID FOR EXECUTION**'. No claim for payment for extra work shall be allowed.

One complete set of the signed drawings and specification and schedule of quantities shall be furnished by the Consultant to the Contractor. The Architect / Consultant shall furnish within such time, as he may consider reasonable, one copy of any additional drawing, which in his opinion, may be necessary for the execution of any part of work. Such copies shall be kept at the works, and the Consultant or his representatives shall, at all reasonable time have access to the same and shall be returned to the Architect / Consultant by the Contractor before the issue of the Final certificate.

2. INSPECTION OF DRAWINGS

Before filling in the tender, the contractor will have to check up all drawings and schedule of quantities, and will have to get an immediate clarification from the Architect / Consultant / Bank on any point that he feels is vague or uncertain. No claim of damages or compensation will be entertained on this account.

3. EXECUTION OF WORK (PRICES TO INCLUDE)

The whole of the work is described in the contract (including the schedule of Quantities, the specifications and all drawing pertaining there to) and as advised by Bank / Consultant from time to time is to be carried out and completed in all its parts to the entire satisfaction of the Bank / Consultant. Any minor details of the work which may not have been definitely referred to in this contract, but which are usual in practice and essential to the work, are deemed to be included in this contract. Rates quoted in the Schedule shall be inclusive of all freights, taxes, such as octroi, sales tax, Royalties, duties, excise, turnover tax, sales tax on works contract, etc., as well as transportation, so as to execute the contract as per the rules and regulations of Local Bodies, State Government and Government of India.

The rates quoted in the tender should include all charges for:

- Labor, maintenance fixing, carrying, cleaning, making good, hauling, watering etc
- Plant, machinery, scaffolding, framework, English ladders, ropes, nails, spikes, tools, materials and workmanship protection from weather, shuttering, temporary supports, platform and maintenance of the same.
- Covering for the walling and other works during inclement weather or striking or whenever directed as necessary.

4. SITE SUPERVISION

The contractor shall appoint at his own cost competent and adequate number of qualified Engineers at site, for (1) joint measurements and preparations of bills, (2) for testing materials at site and outside laboratory, (3) for other general supervision. Their appointment may be consulted with Bank/ Consultant. The site Engineers shall not be removed from the site without the written consent of the Employer / Consultant.

5. MATERIALS AND WORKMANSHIP

The contractor under this contract binds himself to use first class materials. Quality of workmanship shall be of the highest order befitting the nature of the project. All work not up to the standard shall be summarily rejected and the Contractor will be required to dismantle the defective work and redo the work at his own cost and risk. The decision of the Bank regarding the quality/standard of workmanship shall be final and binding on the contractor.

6. DIMENSIONS

Figures, dimensions, are in all case to be accepted preferences to scaled sizes. Large- scale details take precedence over small-scale drawings. In case of discrepancy, the contractor is to ask for a clarification before proceeding with the work. Accordingly if any work is executed without prior clarification , it is liable to be rejected and shall not be paid for.

7. PROCUREMENT OF MATERIALS

Contractor shall procure all the materials for the work from the open market. Time is the essence of the contract. Acceptance of the completion date by the contractor shall mean that he has taken into consideration the availability of all material of approved make and quality in sufficient quantities at site to enable him to complete the entire work in the stipulated period.

Contractor will get sample of all materials approved by the Employer / Consultant before placing order / purchase / procurement. They shall conform to I.S. codes and or tender specification as applicable.

For all materials the contractor shall quote for the best quality of the materials of best make / source or supply and it will be got approved by Employer / Consultant before procurement.

In case sufficient quantities of approved quality materials from approved source are not available in time, contractor may have to procure the same for neighboring area with longer leads as required and directed at no extra cost. The material will be, however as per relevant I.S code as and wherever applicable.

8. UNFIXED MATERIALS

When any materials intended for the works shall have been placed at site by the Contract, such material shall not be removed there from (except for the purposes of being used on the works) without the written authority of the Employer / Consultant and when the contractor shall have received payment in respect of any certificate in which the Consultant shall have stated that he has

taken in to account to value of such unfixed materials on the works such material shall become the property of the Employer and the contractor shall be liable for any loss or damage to any such materials.

9. CUSTODY AND SECURITY OF MATERIALS

The contractors shall be responsible for the custody and security of all materials and equipment at site and he will provide full time watchman / watchmen to look after his materials, stores, equipment, etc.

10. RATES

Contractor shall quote all the rates both in figures and in words and any alterations shall have to be initiated by the contractor. Rates quoted by the contractor for the same item in different schedules will be same and in case different rates are quoted, the lowest will be taken as correct and the schedule corrected accordingly. In case of discrepancy between figures and the words the rate quoted in words shall be taken as correct one. Rates quoted by the contractor shall hold good for all the work carried out to any height and depth as required and directed by the Consultant. Rates quoted by the contractor shall also hold good for any small work at any place at site.

11. PRICES FOR EXTRAS, ETC

The work or extra items shall be started only after the approval of extra items rates by client / Consultant. Rates for additional or extra items of construction work, which can be derived from the contract item rates and are not covered in the contract, shall be calculated on the basis of actual cost plus 15 % for profit plus applicable service tax.

Where extra work cannot be properly measured or valued, the contractor shall be allowed any work prices at the net rates stated in the tender or the priced schedule of quantities, 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 Consultant, the workmen's name) and materials employed at or before the end of the week following that in which the work has been executed.

The measurements and valuations in respect of the extra items of contract shall be completed within the 'period of final measurement'.

12. CONSULTANT'S DRAWINGS AND INSTRUCTIONS

A set of major drawings along with the contract documents shall be provided to the contractor. For any clarifications or further drawings are required by the contract, during or before the start of construction work, the Contractor shall inform the Architect / Consultants in writing to provide the same. Working details will be given to the contractor from time to time during the progress of work as and when required. In case of other drawing is required by the contractor he will give a minimum 3 days' notice to the Employer / Consultant.

13. FAILURE BY CONTRACTOR COMPLY WITH CONSULTANT EMPLOYER'S INSTRUCTIONS

If the contractor after receipt of written notice from the Consultant requiring compliance with such further drawings and / or Consultants instruction, fails within seven days to comply with the same, the Employer / Consultant may employ and pay other persons to execute any such work whatsoever as may be necessary to give effect thereto and all cost incurred in connection there with shall be recoverable from the contractors by the Employer on a Certificate by the Consultant as a debit or may be deducted by him from any money due or which become due to the Contractors.

14. INFORMATION TO BE SUPPLIED BY THE CONTRACTOR

The contractor shall furnish the Employer / Consultant the following:

- (a) Detailed industrial statistics regarding the labor employed by him etc.
- (b) The Power of Attorney, name and signature of his authorized representative who will be in
- (c) Charges for the execution of work.
- (d) List of technically qualified persons employed by him for the execution of this work.
- (e) The total quantity and quality of materials used for the works.
- (f) The list of plant and machinery employed for this work.

15. CONSULTANT'S DELAY IN PROGRESS

The Architect / Consultant may delay the progress of the works in case of rains or otherwise, without vitiating the contract and grant such extension of time with the approval of the Bank for the completion of the contract as he may think proper and sufficient in consequences of such delay, and the contractor, shall not make any claim for compensation or damage in relation thereto.

16. CERTIFICATE AND PAYMENTS

The contractor shall be paid by the Bank from time to time, by installments under interim Certificates to be issued by the Architect / Consultant to the contractor on account of the works executed by the contractor when in the opinion of the Architect, work to the approximate value, named in the Appendix as 'Value of work for interim Certificates' (or less at the reasonable discretion of the Employer / Consultant) has been executed in accordance with this contract, subject however, to a retention of the percentage of such value need in the Appendix hereto mentioned as 'retention percentage for interim Certificates' until the total amount retained shall reach the sum named in the appendix as Total Retention money after which time the installments shall be up to the full value of the work subsequently so executed in the interim Certificate, such amount as he may consider proper on account materials delivered upon the site by the Contractor for use in the work.

The Contractor shall be entitled to the payment of the final balance in accordance with the final Certificate to be issued in writing by the Architect / Consultant at the expiration of the period refer to as 'The Defect Liability Period' in the Appendix hereto, from the date of Virtual Completion or as soon as after the expiration of such period as the work shall have been finally completed and all defect made good according to the true intent and meaning hereof, whichever shall happen, provided always that the issue by the Consultant of any certificate during the progress of the works or after the completion shall not relieve the Contractor from his liabilities in cases of fraud, dishonesty or fraudulent concealment relating to the works of materials or any matter dealt within the certificate, and in case of all defects and insufficiency in the works or materials which reasonable examination would have disclosed. No certificate of the Consultant shall of itself be conclusive evidence that any works and materials to which it relates are in accordance with the contract.

The Architect / Bank shall have power to withhold any certificate if the works or any part thereof is not being carried out to his / employer satisfaction. The Architect / Bank may by any Certificate make any correction in any previous Certificate, which shall have been issued by him.

Payment upon the Consultant's Certificates shall be made within a period named in the Appendix as 'Period of honoring of Certificates' after such Certificates have been delivered to Employer.

17. DELAYED PAYMENTS

Any amounts payable by the Employer to the contractor in pursuance of any Certificate given by the Consultant hereunder shall, if not paid within the 'Period of honoring of Certificate' no interest paid by the Employer.

18. FORCE MAJEURE

Neither party shall be held responsible by the other for breach of any condition of this agreement attributable to any 'Act of God' Act of state, lockout of control or any other reason, beyond the control of the parties and any breach of clauses arising from much force majeure conditions as aforesaid shall not be regarded as a breach of the provision of this Agreement.

19. INCOME-TAX, SERVICE TAX AND WORKS CONTRACT TAX

Income Tax, Service Tax and Works Contract Tax shall be deducted at source by the client from the contractor' interim and final bill payments as per Statutory Regulations.

20. SITE MEETINGS

A senior representative of the contractor shall attend weekly meetings at works site and in addition meetings as and when arranged by Bank / Architect to discuss the progress of the work and sort out problems, if any and ensure that the work is completed in the stipulated time.

21. ACTION WHERE THERE IS NO SPECIFICATION

In case of any class of work for which is there is no specification mentioned, the same will be carried out in accordance with the Indian Standards Specifications subject to the approval of the Employer / Consultant.

22. REPORTING OF ACCIDENT TO

The contractor shall be responsible for the safety of persons employed by him on the works and shall reports serious accidents to any of them whenever and wherever occurring on the works to employer who shall make every arrangement to render all possible assistance. This shall be without prejudice to the responsibility of the contractor under the Insurance Clause of the general conditions. Contractor shall take all precaution detailed in the safety code attached separately.

23. TYPOGRAPHICAL CLERICAL ERRORS

The Employer / Consultant clarification regarding partially omitted particulars of typographical or Clericals errors shall be final and binding on the contractors.

24. WORK PERFORMED AT CONTRACTOR'S RISK

The contractor shall take all precautions necessary and shall be responsible for the safety of the work and shall maintain all lights, goods, signs, temporary passages or other protection necessary for the purpose. All works shall be done by the contractor's risk and if any loss or damage shall result from fire or from others cause, the contractor shall promptly repair or replace such loss or damage free from all expenses to the employer.

The contractor shall be responsible for any loss or damage to materials, tools or other articles used held for use in connection with the work. The work shall be carried on to completion without interferences with the operations of existing machinery or equipment, if any.

25. WORK ENVISAGED

The work shall involve Internal and External Structural Repair / restoration / renovation work. Structural repairs includes works in waterproofing work of terrace & toilets, etc, internal plastering work, construction of Toilet, laying of sewer lines, providing septic tank and soak pit, flooring works, internal and external painting works, etc. including removal, re- fixing, repairs (if any while carrying out the civil work), necessary repairs to electrical installations, and any other damages/work resulting

from the civil work, common spaces development. Apart from this, one meeting hall is to be constructed using steel structures and puff panel in the roof.

Use of latest technology /methods for all repair, restoration and renovation work, drainage and sewage systems, etc.

The Contractor shall submit a brief write up on the a) Technical Approach & Methodology, Explaining the understanding of the assignment and proposed methodology to carry out the assignment with emphasis on the expected problems and adoption of approach to solve them. b) A Work Plan containing details of main activities, duration of different activities and milestones to deliver the output consistent with the Technical Approach & Methodology. c) Organisation & Staffing: Should contain the details of the technical & supervisory team to be deployed on the job including their qualifications and domain experience. Also, a list to be submitted detailing the documents, reports etc. proposed to be delivered considering feasibility of the final output.

26. WORK RESPONSIBILITY

1. Assuming full responsibility for supervision including day-to-day supervision, compliance and observance of all labour and safety regulations, checking and inspection of samples that will be used in the repair /restoration/renovation work, monitoring and compliance, quality control, co-ordination with INDIAN BANK and the contractors and reporting daily progress by posting sufficient number of qualified technical staff (preferably graduate in Civil Engineering having minimum 05 years' experience in similar type of works) as necessary to ensure proper and timely execution of the said works as per drawings and specifications.
2. Bio-data of technical staff shall be furnished to Indian Bank. Site Engineers shall be engaged full time during the progress of work on daily basis throughout the entire period of the Project for day-to-day supervision, ensuring smooth progress by prompt supply of drawings and giving proper directions and also co-ordination with all the agencies engaged in the design engineering and execution of various items of work as required. The technical staff will invariably report to the department every day and keep INDIAN BANK officers involved updated. The Architect shall have to coordinate his work with the works of all other trades.
3. INDIAN BANK reserves the right to judge the capability of supervising staff and advise for change in case not found suitable or delay in assigned work.
4. The measurements shall be generally recorded by the Site Engineer of the contractor and consultants in the presence of INDIAN BANK Official wherever necessary.
5. The Site Engineer of the Contractor and the representative of Architect / Consultant shall take joint measurements of the work as it progresses and record them directly in the Measurement sheet.
6. The contractor shall quote the rate as per BOQ Specification.
7. It shall be ensured that the method of measurement is in accordance with IS: 1200. The precision in measurements shall be as laid down in IS-1200 and as per actual measurement at site. Any points of disagreement with the contractor pertaining to measurements shall be promptly referred to the decision of the Competent Authority/ Consultants.
8. Extra/deviated items, as claimed by the contractor, shall not be recorded in Measurement Book until they are approved by the Competent Authority/ Consultants.
9. In case some allegedly extra/deviated item is carried out by the Contractor while complying with approved drawings and specifications and the same is to be covered up, the Architect / Contractor shall check the item and its specification and record its measurements but simultaneously enter up

- the proviso that their admittance is subject to the approval by the Competent Authority i.e Bank. Both the measurements and the proviso shall be got signed by the contractor.
10. The measurement book shall not be handed over to the contractor at any time. The contractor or his representative may be permitted by the Site Engineer or Project Management Consultant to see it in his presence and /or make a (concurrent) copy of his own. The contractor shall, however, be warned that his copy shall be regarded as an unofficial copy of the Indian Bank's Measurement Book. This is the only authorized document in the matter.
 11. The measurement shall be signed at the end of each session of measurement of the day's work, as the case may be, by both the parties (i.e. Measurer/Site Engineer of the PMC / Architect and the Contractor).

27. SPECIAL CONDITIONS OF CONTRACT

In the event of any discrepancy with clauses mentioned anywhere else in the tender with the clauses mentioned within special conditions of contract, the clauses mentioned within the special conditions of contract shall supersede those mentioned elsewhere.

I/We hereby declare that I/We have read and understood the above instructions which have been issued as conditions of the contract.

(Signature of the Tenderer)

THIS AGREEMENT is made on this day ofmonth of between Indian Bank , a body Corporate constituted under the Banking Companies (Acquisition and Transfer of Undertaking) Act, 1970” and having its FGM Office at 1st Floor, Hazaratganj, LUCKNOW - 226001 (hereinafter referred to as the “Employer”) which expression shall include its successor, legal heirs and assignees of the one part.

AND

M/s. having its office at
..... (hereinafter referred to as the “Contractor”) which expression shall include its successor, legal heirs and assignees of the second part.

WHEREAS the Employer has caused drawings and bid documents for ‘Construction of Boundary Wall in Bank’s Own Premises at Hazaratganj - LUCKNOW’

AND whereas the Employer has called for Tender vide ref. no. dated.....

AND whereas the contractor has submitted the Tender ref. no. dated..... to the Employer on

AND whereas the Employer has issued the work order ref dated.....to the contractor to do the work.

AND whereas the Contractor has agreed to execute the work as per drawings, specifications, conditions of contract and Work Order.

AND whereas the Employer has accepted the Contractor’s bid as aforesaid and whereas the bid submitted by the contractor has been accepted for such sum as may be ascertained to be payable in terms of the Bill of Quantities and which sum is estimated to be Rs. (Rupees) hereinafter referred to as the said “Contract Agreement”.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:-

- 1) In consideration of the said Contract Sum to be paid at the times and in the manner set forth in the said Conditions the Contractor shall carry out and complete the Works in terms and conditions herein contained and according to the general conditions of the contract, notice inviting tender, special conditions of contract, general scope of work, technical specifications, schedule of rates and instructions to be given by and the supervision of and to the entire satisfaction of the Employer.

- 2) **Contract Price, Taxes and Payment Terms :**

Total contract price is Rs..... + GST which is inclusive of cost of materials, equipment, installation charges and tools and tackles required for execution of the job. Above price is inclusive of all taxes & duties except GST in respect of this contract. No claim in this respect will be entertained. Income tax on payments will be deducted and deposited by Employer in accordance with the sales tax law of the state and the provisions of tax deductions at source under income tax act 1961.

- 3) **Completion Period:**

Time is the essence of the Contract. The work is to be completed in all respects within **90 days** reckoned from 7th day from the date of issue of the Work Order or handing over of site whichever is later. If the Contractor fails to complete the job within the agreed time period the Contractor will have to bear liquidated damages as per the relevant clause mentioned in the Tender Documents.



4) **Earnest Money:**

The Contractor has deposited an amount of **Rs.41,500/- (Rupees Forty one Thousand five hundred only)** as earnest money.

5) **Inspection of Site:**

The Contractor has inspected the site before submitting his bid and has satisfied himself as to the nature of the work to be executed on the site. Any difficulties which the Contractor may come across in the course of the work shall in no way relieve the contractor to claim or receive extra payment unless the Employer is of the opinion that such difficulties could not have been foreseen and the Employer consents in writing.

6) **Supply of Material and Labour:**

The Contractor shall arrange all labour, materials, equipments, tools, tackles and everything necessary for the completion of the work. The Contractor will assume all responsibility for the safety, protection and accounting of all material and equipment and the work during construction. All materials used by the Contractor shall be of the best quality conforming to the required specification mentioned in the bid document and will be subject to the approval of the Employer. All such materials not approved by the Employer shall be removed at once by the Contractor at his own expense. The Contractor shall also at his own expense arrange for carrying out any test of materials which the Employer may from time to time require or if so desired by the employer.

7) **Defective Work / Materials:**

If any part of the work done by the Contractor is found defective in workmanship or if bad or inferior materials have been used the Contractor shall at his own risk and cost demolish all such defective work and rebuild the same and / or replace the bad or inferior materials used within a time frame mentioned to the satisfaction of the Employer. The decision of the Employer in this regard shall be final and binding on the Contractor. In case of default of the contractor to remove the defective work and rebuild the same or replace bad or inferior materials as directed by the Employer, the Employer shall be entitled to employ anyone else to carry out the same at risk and cost of the Contractor and recover all expenses incurred in this regard from the contractor.

8) **Inspection of Work:**

During progress of the work the Employer shall be entitled at all times to have access to and inspect the work.

9) **Supervision:**

The Contractor shall provide one or more competent and technical qualified engineers duly and fully authorized to act on his behalf in all matters relating to the works to be carried out under or any other matter concerning this agreement and who shall at all times be present at the works while any work is in progress as per directions, explanations & instructions of Employer.

10) **Compliance with Statutory Regulations & Work Rules:**

The Contractor shall be responsible for complying with the applicable laws / bye laws / Regulations in force from time to time and shall have to bear all statutory liabilities to the workers / personnel engaged for the job. Nothing will be paid extra in this regard. If any amount is paid by the Employer with this regard the same amount shall be deducted from the Contractor's dues. The Contractor shall have to arrange insurance cover for the workers / personnel engaged by him for the job.



11) Determination of Contract:

In the event of Contractor failing to keep / adhere to agreed schedule of work, or in the event of the Contractor failing to comply with the provisions of this contract by default and / or negligence and / or suspension of work or in the event of Contractor failing to complete the work within the stipulated period, the Employer may terminate this Agreement forthwith and employ, at the Contractor's risk and cost, another contractor or sufficient number of workmen to complete the work.

12) Force Majeure:

This clause will be operative only if the work is delayed by

- Acts of God
- Earthquake or floods or similar natural calamities.
- Serious loss or damage by fire or lightning.
- Break out of war or any other emergency notified by the Union of India / State Government

In case any Force Majeure condition herein mentioned occurs and continues for a period exceeding 15 days the parties hereto undertake to sit together and devise ways for expeditious and proper performance of the obligations of the parties under this order.

13) Arbitration:

“ In the event of any dispute or difference relating to interpretation and application of provisions of the contract and all disputes/ claims whatsoever which shall either during the continuance of the contract or afterwards either between the parties to the contract or the respective representatives touching the construction/ application of any provision/ clause mentioned in the contract or any account or liability between the parties to the contract or as to any act or deed or omission of any party to the contract, in any way relating to these presents, shall be first at the discretion of the Bank attempted to be resolved in good faith by mutual discussion within 30 days of the dispute or question being raised failing which the same shall be settled by arbitration in accordance with provisions of Indian arbitration and Conciliation act 1996.

The Parties concerned shall designate an arbitrator on mutual consent/ consensus. The venue of the arbitration shall be exclusively at LUCKNOW and any award passed by arbitrator shall be final, conclusive and binding upon the parties and shall be deemed to have been made between parties themselves. The parties to the dispute shall share equally the cost of arbitration as intimated by the arbitrator”.

IN WITNESS whereof the said contracting parties have set their hands and seals on the day and year first hereinabove witness.

Witness Address

Employer

Witness Address

Contractor

LIST OF APPROVED MATERIALS

The contractor shall quote for the best of the materials specified below with ISI mark wherever applicable. The contractor shall obtain prior approval from the Bank / Architect before placing order for the specific materials agencies. In case of non availability of any of the approved/specified materials/agency during the execution of the work, the Bank /Architect may approve suitable equivalent brand/agency and his decision shall be final and binding on the contractor and the price variations If any shall be adjusted accordingly.

LIST OF CIVIL WORK MATERIALS

1	Grey Cement (43 or 53 Grade)	UltraTech / A.C.C / Birla/ Jaypee/Reliance
2	White Cement	Birla White / JK White
3	Putty	Birla White Putty / JK Wall putty
4	Admixture	FOSROC, SIKKA, DR.FIXIT, BASF, CICO, BERGER
5	Water Proofing Compound	Dr.Fixit, FOSROC, SIKKA, TAPECRETE, CICO, CHOK SEY'S, PIDILITE, ROFF.
6	Premium Acrylic Exterior Paint	Asian Paints / Berger / Dulux / Nerolac
7	External Cement Paint	(Asian Paint- Apex Ultima Protek of approved colour)/ Berger / Nerolac/
8	Synthetic Enamel Paint	(Asian Paint Apcolite Rust Shield PU Enamel) /Berger, Nerolac, ICI – Dulux, Indigo
a	Primer	Asian Paint - Deecoprime Premium Metal Primer)/ Berger / Nerolac/
9	Steel (Thermo Mechanically Treated Steel) High strength deformed bars	TATA / SAIL / JSW / JSPL/ RHL/(TMT STEEL)
10	Structural Steel Sections	TATA / SAIL / RINL, JSW STEEL / APL , APPOLO, TCI Tube Ltd
11	MS Pipes	TATA / SAIL / JINDAL / APOLLO Tricoat Tubes
12	Clay Bricks	Good quality locally available material approved by Engineer / Architect
13	Concrete Block / Rubble Stones	Good quality locally available material approved by Engineer / Architect
14	ACP CLADDING (In Front/Side Elevation)	Alucobond / Eurobond
15	Vitrified tiles	Johnson / Kajaria/ Bell / Naveen / Johnson / Rak.
16	Granite	Good quality available material approved by Engineer / Architect
17	MS Grills	Good quality locally available material.
18	UPVC / CPVC Pipes & Fittings	Astral / Finolex / Supreme / Ashirwad

GENERAL SPECIFICATIONS

To be read in along with particular specifications and bill of quantities

1. GENERAL

These Specifications cover the items of work in structural parts coming under preview of this document. All work shall be carried out in conformation with this. These specifications are not intended to cover the minute details. All codes, standard and good construction practice shall be referred to this specification be the latest thereof.

These specifications shall be read in conjunction with the Technical Specifications for various items of work. The General Contractor shall carefully acquaint himself with the general specifications, coordinate the same with any other specifications forming a part of the Contract Document and determine his contractual obligations for the execution of various items of work in accordance with good engineering practices.

All standards, tentative specifications, specifications, code of practice referred shall be the latest editions including all applicable official amendments and revisions. The contractor shall make available at site all relevant Indian Standard Codes of Practice as applicable. In case of discrepancy between standards, codes of practice, tentative specifications, and specifications referred to, the specifications of Indian Standard Codes of practice shall govern.

In case of contradiction between the technical specifications mentioned here and in BOQ, specifications mentioned in BOQ will prevail.

2. MEASUREMENT

- 2.1 Written dimensions on drawings shall supersede measurement by scale; and drawings to a large scale shall take precedence over those to a smaller scale. Special dimensions or directions in the specifications shall supersede all others. All dimensions shall be checked on site prior to execution.
- 2.2 The dimensions where stated do not allow for waste, laps, joints, etc. but the General Contractor shall provide at his own cost sufficient labour and materials to cover such waste, laps, joints, etc. and the rate quoted is inclusive of such provision and no separate payment will be made for the same.
- 2.3 The levels, measurements and other information concerning the existing site as shown on the drawings are believed to be correct, but the Contractor should verify them by himself and also examine the nature of the ground as no claim or allowance whatsoever will be entertained on account of any errors or omissions in the levels or the description of the ground levels or strata turning out different from what was expected or shown on the drawings..
- 2.4 The methods of measurement and payment shall be as described under various items and in the bill of quantity. Where specific definitions are not given, the methods described in IS code will be followed. Should there be any detail of construction or materials which has not been referred to in specification or in the bill of quantities and drawings, but the necessity for which may be implied or inferred wherefrom, or which are usual or essential to the completion of the work in the trades, the same shall be deemed to be included in the rates and prices quoted by the contractor in the bill of quantities.

3. MATERIALS

- 3.1 All materials used in the Works shall be of the best quality of their respective kinds as specified herein, obtained from sources and suppliers approved by the Engineer-in- Charge and shall comply strictly with the tests prescribed hereafter, or where tests are not laid down in the specifications, with the requirements of the latest issues of the relevant Indian Standards.
- 3.2 All materials used in the works shall be subjected to inspection and tests in addition to test certificates. Samples of all materials proposed to be employed in permanent works shall be submitted to the Engineer-in-Charge for approval before they are brought to the site.

Samples provided to the Engineer-in-Charge for their retention are to be labeled in boxes suitable for storage. Materials or workmanship not corresponding in character and quality with approved samples will be rejected by the Engineer-in-Charge.

Samples required for approval and testing must be supplied sufficiently in advance to allow for testing and approval, due allowance being made for the fact that if the first samples are rejected further samples may be required. Delay to the works arising from the late submission of samples will not be acceptable as a reason for delay in completion of the works.

Materials shall be tested before leaving the manufacturer's premises, quarry or source, wherever possible. Materials shall also be tested on the site and they may be rejected if not found suitable or in accordance with the specifications, notwithstanding the results of the tests at the manufacturer's works or elsewhere or test certificates or any approval given earlier.

The contractor will bear all expenses for sampling and testing, whether at the manufacturer's premises at source, at site or at any testing laboratory or institution as directed by the Engineer-in-Charge. No extra payment shall be made on this account.

- 3.3 Materials shall not be dispatched from the manufacturer's works to the site without written authority from the Engineer-in-Charge.
- 3.4 All manufacturer's certificates of test, proof sheets, etc. showing that the materials have been tested in accordance with the requirement of this specifications and of the appropriate Indian Standard are to be supplied free of charge on request to the Engineer-in-Charge.
- 3.5 Any materials that have not been found to conform to the specifications will be rejected forthwith and shall be removed from the site by the General Contractor at his own cost.

The Engineer-in-Charge shall have power to cause the General Contractors to purchase and use such materials from any particular source, as may in his opinion be necessary for the proper execution of the work.

- 3.6 All materials used in the works shall be stored on racks, supports, in bins, under cover etc. as appropriate to prevent deterioration or damage from any cause whatsoever to the entire satisfaction of the Engineer-in-Charge. The storage of materials shall be in accordance with IS 4082 "Recommendation on stacking and storage of construction materials on site" and as per IS 7969 "Safety code for handling and storage of building materials". This shall include the safe custody of all materials until they are required on the works and till the completion of the works. The same shall be applicable for the materials supplied by the owner or materials supplied by any specialized firms.

The materials shall be stored in a proper manner at places at site approved by the Engineer-in-Charge. Should the place where material is stored by the General Contractor be required by the owner for any other purpose, the General Contractor shall forthwith remove the material from that place at his own cost and clear the place for the use of the owner.

- 3.7 Clean fresh water (potable water) only shall be used for the works. The water shall be free from any deleterious matter in solution or in suspension. The quality of water shall conform to IS 456.
- 3.8 The General Contractor shall make his own arrangements for storing water, if necessary, in drums or tanks or cisterns, to the approval of the Engineer-in-Charge. Care shall be exercised to see that water is not contaminated in any way.
- 3.9 All works shall be true to level, plumb and square and the corners, edges and corners in all cases shall be unbroken and neat. Any work not to the satisfaction of the Engineer-in-Charge or his representative will be rejected and the same shall be rectified, or removed and replaced with work of the required workmanship at no extra cost.

4. UN-ACCEPTABLE WORK

All defective works are liable to be demolished, rebuilt and defective materials replaced by the General Contractor at his own cost. In the event of such works being accepted by carrying out repairs etc. as specified by the Engineer-in-Charge, the cost of repairs will be borne by the General Contractor.

In the event of the work being accepted at the sole discretion of Engineer-in-Charge or owner by giving 'Design Concession', arising out of, but not limited to under-sizing, under-strength, shift in location and alignment, etc. and accepting design stresses in members which are higher than those provided for in the original design or by accepting materials not fully meeting the specifications etc. and if the item is so acceptable without substantially affecting the utility of the item and the structure, then the General Contractor will be paid for the works actually carried out by him at the suitable reduced rate of the tendered rates for the portion of the work thus accepted, as the Engineer-in-Charge or owner or the authority may consider reasonable.

5. DE-WATERING SYSTEM

General Contractor shall arrange to clear water from excavation area before starting work, during execution & after completion of excavation. The excavated area shall be dewatered before pouring concrete in it. The arrangement shall be made by General Contractor to pump out the water from the area before placing reinforcement & pouring concrete for structural & nonstructural items as well. No extra claims shall be entertained for dewatering.

Suitable dewatering system by pumping etc. may be required for execution of items of work below the ground level. The rates of all such items shall include the cost of dewatering by suitable measures as required and nothing extra whatsoever will be paid towards the cost of dewatering. The dewatering, whenever necessary shall be carried out by the General Contractor till the completion of the work.

6. PREPARATION OF SITE

- 6.1 The land described or shown on the site plan shall be cleared of all obstruction, rubbish, brush wood, jungle, mud and bamboo clumps as directed by the Engineer-in-Charge. No trees are to be cut down without the orders of the Engineer-in-Charge. Where trees or bamboo are to be cut down the roots shall be grubbed up and the excavation leveled and consolidated with good earth.
- 6.2 The products of the site clearing are the property of Indian Bank and unless the General Contractor is ordered to dispose of those at his own expense are to be stacked as directed by the Engineer-in-Charge.
- 6.3 All hollows or depressions, where existing or caused by grubbing up roots or through any other cause, shall be carefully filled up with well-rammed earth and leveled up as required.

7. MATERIALS TO BE USED IN THE WORK

7.1 BRICKS

Burnt clay bricks shall conform to the requirements of IS:1077. except that the minimum compressive strength when tested flat shall not be less than 8.4 MPa for individual bricks and 10.5 MPa for average of 5 specimens. They shall be free from cracks and flaws and nodules of free lime. The brick shall have smooth rectangular faces with sharp comers and emit a clear ringing sound when struck. The size may be according to local practice with a tolerance of ± 5 per cent.

7.2 STONES

Stones shall be of the type specified. It shall be hard, sound, free from cracks, decay and weathering and shall be freshly quarried from an approved quarry. Stone with round surface shall not be used.

The stones, when immersed in water for 24 hours, shall not absorb water by more than 5 per cent of their dry weight when tested in accordance with IS:1124.

7.3 CEMENT

Cement to be used in the works shall be any of the following types with the prior approval of the Engineer-in-Charge

- a) Ordinary Portland Cement, 33 Grade, confirming. to IS:269.
- b) Rapid Hardening Portland Cement, conforming to IS:8041.
- c) Ordinary Portland Cement, 43 Grade, conforming to IS:8112.
- d) Ordinary Portland Cement, 53 Grade, conforming to IS: 12269.
- e) Sulphate Resistant Portland Cement, conforming to IS: 12330.

Cement conforming to IS:269 shall be used only after ensuring that the minimum required design strength can be achieved without exceeding the maximum permissible cement content of 540 kg / cum. of concrete (for Pre-stressed concrete) and 450 kd/cum for OPC.

Cement conforming to IS:8112 and IS:12269 may be used provided the minimum cement content mentioned elsewhere from durability considerations is not reduced. From strength considerations, these cements shall be used with a certain caution as high early strengths of cement in the 1 to 28-day range can be achieved by finer grinding and higher constituent ratio of C3S/C2S, where C3S is Tri calcium Silicate and C2S is Di calcium Silicate. In such cements, the further growth of strength beyond say 4 weeks may be much lower than that traditionally expected. Therefore, further strength tests shall be carried out for 56 and 90 days to fine tune the mix design from strength considerations.

Cement conforming to IS: 12330 shall be used when sodium sulphate and magnesium sulphate are present in large enough concentration to be aggressive to concrete. The recommended threshold values as per IS:456 are sulphate concentration in excess of 0.2 per cent in soil sub-strata or 300 ppm (0.03 per cent) in ground water.

Tests to confirm actual values of sulphate concentration are essential when the structure is located near the sea coast, chemical factories, agricultural land using chemical fertilizers and sites where there are effluent discharges or where soluble sulphate bearing ground water level is high. Cement conforming to IS: 12330 shall be carefully selected from strength considerations to ensure that the minimum required design strength.

Cement conforming to IS:8041 shall be used only for pre-cast concrete products after specific approval of the Engineer-in-Charge.

Total chloride content in cement shall in no case exceed 0.05 per cent by mass of cement Also, total sulphur content calculated as sulphuric anhydride (SO₃) shall in no case exceed 2.5 per cent and 3.0 per cent when tri-calcium aluminate per cent by mass is up to 5 or greater than 5 respectively.

7.4 COARSE AGGREGATE

For plain and reinforced cement concrete (PCC and RCC) or pre-stressed concrete (PSC) works, coarse aggregate shall consist of clean, hard, strong, dense, non-porous and durable pieces of crushed stone, crushed gravel, natural gravel or a suitable combination thereof or other approved inert material. They shall not consist of pieces of disintegrated stones, soft, flaky, elongated particles, salt, alkali, vegetable matter or other deleterious materials in such quantities as to reduce the strength and durability of the concrete, or to attack the steel reinforcement. Coarse aggregate having positive alkali-silica reaction shall not be used. All coarse aggregates shall conform to IS:383 and tests for conformity shall be carried out as per IS:2386, Parts I to VIII.

No aggregate which has water absorption of more than 2 % shall be used in the concrete mix. In test for soundness in accordance with IS:2386 (Part 5) after 5 cycles of testing the loss shall not be more than 12

per cent if sodium sulphate solution is used or 18 % if magnesium sulphate is used, the General Contractor shall submit for the approval of the Engineer-in-Charge, the entire information indicated in Appendix A of IS:383.

Maximum nominal size of coarse aggregate for various structural components in PCC, RCC or PSC, shall conform to Section 1700. The maximum value for flakiness index for coarse aggregate shall not exceed 35 per cent.

7.5 SAND / FINE AGGREGATE

For masonry work, sand shall conform to the requirements of IS:2116. For plain and reinforced cement concrete (PCC and RCC) or pre-stressed concrete (PSC) works, fine aggregate shall consist of clean, hard, strong and durable pieces of crushed stone, crushed gravel, or a suitable combination of natural sand, crushed stone or gravel. They shall not contain dust, lumps, soft or flaky, materials, mica or other deleterious materials in such quantities as to reduce the strength and durability of the concrete, or to attack the embedded steel. Where so required by the Engineer-in-Charge, sand shall be washed to remove impurities from sand. Fine aggregate having positive alkali-silica reaction shall not be used. All fine aggregates shall conform to IS:383 and tests for conformity shall be carried out as per IS:2386, (Parts I to VIII). The General Contractor shall submit to the Engineer-in-Charge the entire information indicated in Appendix A of IS:383. The fineness modulus of fine aggregate shall neither be less than 2.0 nor greater than 3.5

Manufactured sand (M-Sand) shall be approved grade as per the instructions of the Architect/ Site engineer /Employer. M Sand Should be strictly free from Quarry Dust. Contractor should provide sample prior to supply of M sand for the Specific works.

TYPE OF M SAND	IS CODE
<u>Concrete M Sand</u>	IS - 383: 1970
<u>Brick/ Block Work M Sand</u>	IS - 2116: 1980
<u>Plastering M Sand</u>	IS - 1542: 1992

7.6 REINFORCING STEEL

Cast Steel

The use of cast steel shall be limited to bearings and other similar parts. Steel for castings shall conform to Grade 280-520N of IS: 1030. In case where subsequent welding is unavoidable in the relevant cast steel components, the letter N at the end of the grade designation of the steel casting shall be replaced by letter

W. 0.3 per cent to 0.5 per cent copper may be added to increase the corrosion resistance properties. Reinforcement / Un-tensioned Steel

For plain and reinforced cement concrete (PCC and RCC) or pre-stressed concrete (PSC) works, the reinforcement / un-tensioned steel as the case may be shall consist of the following grades of reinforcing bars.

GRADE DESIGNATION	BAR TYPE CONFORMING TO GOVERNING IS SPECIFICATION	CHARACTERISTIC STRENGTH F_{yk} MPa	ELASTIC MODULUS E_s GPa
Fe 415	IS: 1786 High Yield Strength Deformed	415	200

Fe 500	IS: 1786 High Yield Strength Deformed	As per IS code	As per IS code
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Other grades of bars conforming to 13:432 and IS: 1786 shall not be permitted.

All steel shall be procured from original producers, no re-rolled steel shall be incorporated in the work.

Only new steel shall be delivered to the site. Every bar shall be inspected before assembling on the work and defective, brittle or burnt bar shall be discarded. Cracked ends of bars shall be discarded.

Fusion-bonded epoxy coated reinforcing bars shall meet the requirements of IS: 13620. Additional requirements for the use of such reinforcement bars have been given below:

- Patch up materials shall be procured in sealed containers with certificates from the agency who has supplied the fusion bonded epoxy bars.
- PVC coated G.I. binding wires of 18G shall only be used in conjunction with fusion bonded epoxy bars.
- Chairs for supporting the reinforcement shall also be of fusion bonded epoxy coated bars.
- The cut ends and damaged portions shall be touched up with repair patch up material.
- The bars shall be cut by saw-cutting rather than flame cutting.
- While bending the bars, the pins of work benches shall be provided with PVC or plastic sleeves.
- The coated steel shall not be directly exposed to sunrays or rains and shall be protected with opaque polyethylene sheets or such other approved materials.
- While concreting, the workmen or trolleys shall not directly move on coated bars but can move on wooden planks placed on the bars.

When specified in the contract, protective coating prescribed by CECRI shall be provided in conformance to specifications given in Appendix . The CECRI coating process shall be allowed to be implemented at the site of works provided a representative of the Institute is present throughout the duration of the coating process who shall certify that the materials and workmanship are in accordance with prescribed specifications developed by the Institute.

Structural Steel

Unless otherwise permitted herein, all structural steel shall before fabrication comply with the requirements of the following Indian Standards:

IS:226	:	Structural Steel (Standard
Quality) IS:961	:	Structural Steel (High Tensile)
IS:2062	:	Weldable Structural Steel
IS:8500	:	Weldable Structural Steel (medium & high strength
qualities) IS: 1148	:	Hot rolled rivet bars (upto 40mm dia) for structural
purposes IS:1149	:	High tensile rivet bars for structural purposes

IS:1161	:	Steel tubes for structural purposes
IS:4923	:	Hollow Steel sections for structural
use IS:11587	:	Structural weather resistant steel
IS:808	:	Specifications for Rolled Steel Beam, Channel and Angle
Sections IS: 1239	:	Mild Steel Tubes
IS: 1730	:	Dimension for Steel Plate, sheet and strip for structural and general engineering purposes
IS:1731	:	Dimension for Steel flats for structural and general engineering purposes
IS: 1732	:	Dimension for round and square steel bars for structural and general engineering purposes
IS:1852	:	Rolling and cutting tolerances for hot rolled steel products

STAINLESS STEEL

Stainless steel shall be austenitic chromium-nickel steel, possessing rust, acid and heat resistant properties conforming to IS:6603 and IS:6911. Mechanical properties/grade for such stainless steel shall be as specified by the accepting authority, but in no case be inferior to mild steel. Generally, stainless steel is available as per AISI grades. AISI 304 which is equivalent to grade 04Cr18Ni10 of IS:6911 satisfies the requirements of mechanical properties of structural steel. Other grades of stainless steel for specific purposes may be provided as per specific requirements. For application in adverse/ corrosive environment, stainless steel shall conform to AISI 316L or 02G17 Ni Mo2 of IS:6911.

7.7 TIMBER

The timber used for structural purposes shall conform to IS:883.

7.8 Concrete Admixtures

Admixtures are materials added to the concrete before or during mixing with a view to modify one or more of the properties of concrete in the plastic or hardened state.

Chemical admixtures are not to be used until permitted by the Architect / Employer. In case their use is permitted, the type, amount and method of use of any admixture proposed by the contractor shall be submitted to the Architect / Employer for approval.

Concrete admixtures are proprietary items of manufacture and shall be obtained only from established manufacturers with proven track record, quality assurance and full fledged laboratory facilities for the manufacture and testing of concrete.

The General Contractor shall provide the following information concerning each admixture after obtaining the same from the manufacturer:

- Normal dosage and detrimental effects, if any, of under dosage and over dosage.
- The chemical names of the main ingredients in the admixtures.
- The chloride content, if any, expressed as a percentage by the weight of the admixture.
- Values of dry material content, ash content and relative density of the admixture which can be used for Uniformity Tests.

- (e) Whether or not the admixture leads to the entertainment of air when used as per the manufacturer's recommended dosage, and if so to what extent
- (f) Where two or more admixtures are proposed to be used in any one mix, confirmation as to their compatibility.

There would be no increase in risk of corrosion of the reinforcement or other embedments as a result of using the admixture.

8. **SITE CLEARANCE**

The Construction site shall be cleared from all kind of rubbish/debris, loose rocks/boulders, trees, shrubs, stumps, grass, brush wood, undergrowth and all other vegetation including superficial earth etc. as directed by Engineer-in-Charge.

All materials arising from site clearance shall be the property of the Owner and shall not be removed from site until written approval shall be given by Owner / Engineer-in-Charge. All usable /serviceable materials shall be temporarily stacked in separate lots at the site as directed by Engineer-in-Charge and shall be transported to designated place.

All other materials from site clearance which, in opinion of Engineer-in-charge are not useable shall be carted away by General contractors to approved disposal areas.

The site clearance shall cover all operations required in full for clearing the site and its surroundings, including providing labour, materials, tools, equipments and incidentals necessary to complete the work. It will also include handling, salvaging, piling or stacking or collecting and disposing off cleared materials.

9. **EARTHWORK**

All earth work shall generally comply with this specification and relevant local code of practice & standard. Unless otherwise specified, following codes/standards shall be used for earth work

IS:1200 (Part I) 1992	– Method of measurement of earthwork (Fourth
revision) IS:3764 1992	– Code of practice for excavation works (First revision)
IS:4082 1996	– Recommendation on stacking and storage of construction materials and components at site (Second revision)
IS:13416 (Part 3) 1994	– Recommendation for preventive measures against hazards at work places; disposal of debris
SP 62:1992	– Handbook on building construction practices
SP 70:2001	– Handbook on construction safety practices IRC codes

In cuttings where soft and unsuitable materials occur within one metre below the design platform levels of the sub-grade, such materials shall be removed and replaced with approved stable materials in layers not exceeding 150mm-200mm loose thickness, compacted as elsewhere specified.

General Contractor shall report to Engineer-in-charge when secured bottoms have been obtained in the excavations and are ready to receive the foundations. Any concrete or other work put in before Engineer-in-charge's approval shall be removed and replaced at General Contractor's own expense.

Surplus excavated material arising from excavation and not required for filling, etc. shall be removed, deposited, spread, leveled and mechanically rammed and consolidated on site where directed by the Engineer-in-charge or removed off the site. General Contractor shall find his own area for dumping, which

has to be approved by the Engineer-in-charge.

10. EARTH FILL

Approved material shall be used for fill of site, construction including embankments, and shall be free from logs, stumps, weeds and organic matter or any other deleterious matter. The filling material shall consist of suitable material all of which shall pass a 125mm IS sieve and at least 95% shall pass the 75mm IS sieve.

All fills shall be constructed in layers of uniform thickness not exceeding 200mm and each layer shall be compacted as specified in Clause "compaction of earth work". Layers of filling may be formed by equipment which will spread the material as it is dumped, or by blade or spreading by other acceptable methods so that the material is uniformly distributed.

Before beginning compaction, the material in each layer of the embankment shall be uniform in composition and moisture content. Clods of material shall be broken and the material mixed by blade, harrowing, disking or by other methods. Oversized rocks shall be broken to the specified maximum dimension of 125mm. Rock shall be placed, spread and compacted in such a manner that the interstices between the larger pieces are filled with compacted finer materials.

11. ANTI-TERMITE TREATMENT

The relevant I.S specifications, standards and codes given below are made a part of this specification. All standards, specifications, code of practices referred to herein shall be the latest edition including all applicable amendments, revisions and additional publications.

List of Indian Standards

- IS: 6313 (Part I) - Code of Practice for Anti-termite Measures in Buildings Constructional Measures
- IS: 1200 (Part I) - Method of measurement of buildings and civil engineering works.
- IS: 6313 (Part II) - Pre-constructional Chemical Treatment Measures
- IS: 8944 - Specification for Chlorpyrifos Emulsifiable Concentrates
- IS: 4015 (Part I) - Guide for Handling cases of Pesticide Poisoning First Aid Measures
- IS: 4015 (Part II) - Symptoms, Diagnosis and Treatment

Pre-constructional anti-termite treatment is a process in which soil treatment is applied to a building in early stages of its construction. The purpose of anti-termite treatment is to provide the building with a chemical barrier against the sub-terrain termites.

The effectiveness of chemical depends upon the choice of the chemical, the dosage adopted and the thoroughness of application. The chemical solutions or emulsions are required to be spread uniformly in the soil and to the required strength so as to form an effective chemical barrier that is lethal and repellent to termites.

Chlorpyrifos emulsifiable concentrates chemical (IS: 8944) with 1.0 % in water emulsion shall be effective when applied uniformly over the area to be treated. General Contractor may propose alternate to Engineer-in-Charge.

In case of normal wall load bearing structure, column pits, wall trenches and basement, the treatment shall be @ 5 (five) litres per square metre of surface area of the bottom and sides to a height of at least 300 mm. After the foundation works, the sides shall be treated @ 15 (fifteen) litres per square metre at vertical surface of sub-structure on each side.

After the earth filling is done, treatment shall be done by rodding the earth at 150 mm center to center close to wall surface and spraying the chemical with the above dose i.e., 15 (fifteen) litres per square meter. In case of framed structure, the treatment shall start at a depth of 500 mm below ground level. From this depth the backfill around the columns, beams and R.C.C basement walls shall be treated @ 15 (fifteen) liters per square meter of the vertical surface and @ 5 (five) liters per square metre for the horizontal surface at the bottom in the trenches/pits.

The payment will be made on the basis of plinth area measurements at ground floor only for all the stages of treatment in square metre rounded off to two places of decimals. Rate includes the cost of materials, labour and all tools, consumables, spares for complete operation.

12. **FORMWORK** –

Formwork shall consists of shores, bracings, side of beams and columns, bottom of slabs, etc. including ties, anchors, hangars, inserts, etc. complete which shall be properly designed and planned for the works.

Formwork shall be so constructed that up and down vertical adjustments can be made smoothly. Wedges may be used at top or bottom of shores, but not at both the ends to facilitate vertical adjustment for dismantling of the formwork.

The relevant IS specification, standards and codes given below are made a part of this specification. All standards, specifications, code of practices refer to herein shall be the latest edition including all applicable amendments, revisions and additional publications.

IS No.	IS Particulars
IS: 303	Plywood for general purpose
IS: 1200 (Part V)	Method of Measurement of building and civil engineering work (Form work)
IS: 2750	Specification for steel scaffolding
IS: 3696	Safety code for scaffolds and ladders
IS: 4014 (Part I)	Code of Practice for steel tubular scaffolding
IS: 4014 (Part II)	Code of Practice for steel tubular scaffolding
IS: 4990	Specification for plywood for concrete shuttering work

Design and engineering of the formwork as well as its construction shall be the responsibility of the General Contractor. If so instructed, the drawings and calculations for the design of the formwork shall be submitted well in advance to the Engineer-in-charge for approval before proceeding with the work at no extra cost. Engineer-in-charge's approval shall not relieve the General Contractor of the full responsibility for the design and construction of the formwork.

Formwork may be of timber, plywood, metal, plastic or concrete. For special finishes the formwork may be lined with plywood, steel sheets, oil tempered hard board, etc. sliding forms and slip forms may be used with the approval of Engineer-in-Charge

Forms shall conform to the shapes, lines, grades and dimensions including camber of the concrete as called for on the drawings. Ample studs, waler, braces, ties, straps, shores, etc. shall be used to hold the forms in proper position without any distortion whatsoever until the concrete has set sufficiently to permit removal of forms. Form shall be strong enough to permit the use of immersion vibrators; in special case form vibrators may also be used. The shuttering shall be close boarded. All forms should not have any warps or other surface defects in contact with concrete; seasoned, free from sap, shakes, loose knots, worm holes for timber forms and shall be free from adhering grout, plaster, paint, projecting nails, splits or other defects. Joints shall be sufficiently tight to prevent loss of water and fine material from concrete.

All new and used forms shall be maintained in a good condition with respect to shape, strength, rigidity, water tightness, smoothness and cleanliness of surfaces. Forms with unsatisfactory in any respect shall not be used and if rejected by the Engineer-in-charge shall be removed from the site.

Form work during any stage of construction showing signs of distortion or disturbed to such a degree that the intended concrete work will not conform to the exact contours indicated on the drawings shall be re-positioned and strengthened. Poured concrete affected by faulty formwork shall be removed entirely and the formwork shall be corrected prior to placing new concrete.

Forms shall be designed and constructed that they can be stripped in order required and their removal do not damage the concrete. Face form work shall provide true vertical and horizontal joints conforming to the architectural features of the structure as to location of joints and be as directed by the Engineer-in-charge.

Use of the form oil shall not be permitted on the surface that requires painting. If the contractor desires to use form oil on the inside of form work of the other concrete surfaces, a non staining mineral oil or other approved oil 'CEMOL-35' of M/s Hindustan Petroleum Co. Ltd. or equivalent may be used provided it is applied before placing of reinforcing steel and embedded parts.

Shuttering shall be braced, strutted, propped and so supported that it shall not deform under weight and pressure of the concrete and also due to the movement of men and other materials. Bamboos shall not be used as props or cross bracings.

Before reuse all forms shall be thoroughly scraped, cleaned, nails removed, holes that may leak suitably plugged and joints examined and when necessary repaired and the inside retreated to prevent adhesion to the satisfaction of Engineer-in-charge. Warped timber or metal shall be resized. Contractor shall equip himself with enough shuttering to complete the job in the stipulated time.

Contractor shall record in the drawings or a special register the date upon which the concrete is placed in each part of the work and the date on which the shuttering is removed there from.

13. **STEEL REINFORCEMENT**

Steel reinforcement bars, if supplied or arranged by the General Contractor, shall be either plain round mild steel bars grade – I or medium tensile steel bars as per IS: 432 or hot rolled mild steel and medium tensile deformed as per IS: 1139 or Thermo-mechanically treated (TMT) bars - high yield strength deformed bars as per IS: 1786 as shown and specified on the drawings and shall be manufactured by M/s SAIL or TISCO and shall be rolled from their own plants and from virgin material. Materials manufactured by their authorized conversion agents and re-rollers shall not be accepted.

The relevant IS specification, standards and codes given below are made a part of this specification. All standards, specifications, code of practices refer to herein shall be the latest edition including all applicable amendments, revisions and additional publications.

IS CODE	DETAILS
IS: 432 (Part I)	Mild Steel and Medium Tensile Steel bars and Hard drawn Steel Wires for concrete reinforcement
IS: 432 (Part II)	Mild Steel and Medium Tensile Steel bars and Hard drawn Steel wires for concrete reinforcement
IS: 1139	Specification for Hot Rolled Mild steel, Medium steel and HYSD bars for concrete reinforcement

IS: 1200 (Part VIII)	Method of Measurement of Building and Civil Engineering work (Steel and Iron works)
IS: 1566	Hard drawn Steel Wire fabric for concrete reinforcement
IS: 1599	Method for Bend Test
IS: 1608	Method of Tensile Testing of Steel Products
IS: 1786	High Strength Deformed Steel and Wires for concrete reinforcement
IS: 2502	Code of Practice for Bending and Fixing of Bars for concrete reinforcement

The reinforcement shall not be kept in direct contact with the ground but stacked on top of an arrangement of timber slippers or the like. The reinforcement shall be coated with cement wash before stacking to prevent scale and rust. Fabricated reinforcement shall be carefully stored to prevent damage, distortion, corrosion and deterioration.

13.1 QUALITY

All steel shall be of grade-I quality unless specifically permitted by the Engineer-In-Charge. No re-rolled material will be accepted. General Contractor shall submit the manufacturer's test certificate for steel.

Random test on steel supplied by the General Contractor may be performed by Engineer- in-Charge as per relevant IS. All cost incurred to such tests shall be at the contractor's expenses. Steel not conforming to the specifications shall be rejected.

All reinforcement shall be clean, free from grease, oil, paint, dirt, loose mill scale, loose rust, dust, bituminous material or any other substance that will destroy or reduce the bond. All rods shall be thoroughly cleaned before being fabricated.

Pitted and defective rods shall not be used. All bars shall be rigidly held in position before concreting. No welding of rods to obtain continuity shall be allowed unless approved by the Engineer-in-charge. If welding is approved the work shall be carried out as per IS: 2751, according to best modern practices and as directed by the Engineer-in-charge.

In all cases of important connections, test shall be made to prove that the joints are of the full strength of the bar welded. Special precaution as specified by the Engineer-in-charge shall be taken in the welding of cold work reinforcing bars and bars other than mild steel.

13.2 LAPS

Laps and splices for reinforcement shall be as shown on the drawings. Splices and adjacent bars shall be staggered and the location of all splices except those specified on the drawings shall be approved by the Engineer-in-charge. The bars shall not be lapped unless the length required exceeds the maximum available length required of bars at site.

13.3 BENDING

All bars shall be accurately bent (cold) according to the size and shape shown on the detail working drawing / bar bending schedule. They shall be gradually bent by machine or approved means.

Reinforcing bars shall not be straightened and re-bend in the manner that will injure the material. Bars containing cracks and splits shall be rejected. They shall be bent cold except bars above 25 mm in

diameter which may be bent hot, if specifically approved by Engineer-in-charge.

Bars which depend for their strength on cold working shall not be bent hot. Bars bent hot shall not be heated beyond cherry-red color (not exceeding 645o C) and after bending shall be allowed to cool slowly without quenching.

Bars incorrectly bent shall be used only if the means used for straightening and re-bending be such as shall not in the opinion of the Engineer-in-charge injure the material.

No reinforcement bars shall be bent when in position in the work without approval, whether or not it is partially embedded in hardened concrete. Bars having kinks or bends other than those required by the design shall not be used.

13.4 FIXING

The reinforcement shall accurately be fixed by any approved means and maintained in the correct position as shown in the drawing by use of blocks, spacers and chairs as per IS: 2502 to prevent displacement during placing and compaction of concrete.

Bars intended to be in contact at crossing point shall be securely bound together at all such points with 1.6 mm diameter annealed soft iron wire.

The vertical distance required between successive layers of bars in beams or similar members shall be maintained by provision of mild steel spacer bars at such intervals that the main bar do not perpetually sag between adjacent spacer bars.

13.5 COVER TO REINFORCEMENT

Unless indicated otherwise on the drawing, clear concrete cover for reinforcement (exclusive of plaster or decorative finish) shall be as per the provisions of IS: 456.

13.6 MODE OF MEASUREMENT

- The actual quantity of reinforcement bars embedded in concrete as specified in the drawing and as approved by the Engineer-in-charge irrespective of the level or height at which the reinforcement bars are placed shall be measured for payment.
- The reinforcement bars shall be measured in length nearest to a centimeter for different diameters and their weight shall be calculated based on the standard weights as per Indian Standard.
- Wastage, unauthorized overlap and annealed steel binding wires shall not be measured for payment.
- Pins, chairs and spacers wherever required shall be provided As directed by the Engineer- in-charge and measured separately and paid for.
- The rate for reinforcement item shall include the cost of labour and materials required for all operations described above including transportation, cleaning, straightening, cutting, bending, placing in position and binding of reinforcement bars and wastage, etc.

14. **REINFORCED CONCRETE**

The following specifications, standards and codes are made a part of this specification. All standards, tentative specifications, codes of practices referred to herein shall be the latest edition including all applicable official amendments, revisions and additional publications. In case of discrepancy between this specification and those referred to herein this specification shall govern.

List of Indian Standards

IS: 269	- Specification for ordinary, rapid hardening and low heat Portland cement IS:
383	- Specification for coarse & fine aggregate from natural source or concentrate IS:
456	- Code of practice for plain and reinforced concrete
IS: 515	- Specification for natural and manufactured aggregate for use in mass concrete
IS: 516	- Method of test for strength of concrete
IS: 650	- Specifications for standard sand for testing of cement IS:
1199	- Method of sampling and analysis of concrete
IS: 1200 (Part-II)	- Method of measurement of building works
IS: 1791	- Specification for batch type concrete mixers.
IS: 2386 (Part-I)	- Method of test for aggregates for concrete; Particle size and shape.
IS: 2386 (Part-II)	- Method of test for aggregates for concrete: Estimation of deleterious materials and organic impurities
IS: 2386 (Part-III)	- Method of test for aggregates for concrete: Specific gravity, density, voids, absorption and bulking.
IS: 2386 (Part-IV)	- Method of test for aggregates for concrete: Mechanical properties. IS:
2386 (Part-V)	- Method of test for aggregates for concrete: Soundness.
IS: 2386 (Part-VI)	- Measuring mortar making properties of fine aggregates. IS:
2386 (Part-VII)	- Method of test for Alkali aggregates reactivity.
IS: 2438	- Specification for roller pan mixer.
IS: 2505	- Specification for immersion type concrete vibrators. IS: 2506 - Specification for screed board concrete vibrators.
IS: 2514	- Specification for concrete vibrating table.
IS: 2645	- Specification for integral cement water proofing compound.
IS: 3025	- Methods of sampling and test (physical and chemical) for water used in industry.
IS: 3366	- Specification for pan vibrator.
IS: 3370 (Part-I)	- Code of practice for concrete structures for the storage of liquids: General. IS:
3370 (Part-II)	- Code of practice for concrete structures for the storage of liquids: Reinforced concrete structure.
IS: 3385	- Code of practice for measurement of Civil Engineering works IS:
3414	- Code of practice for design and installation of joints in buildings
IS: 3558	- Code of practice for use of immersion vibrators for consolidating concrete IS:
3935	- Code of practice for composite construction
IS: 4031	- Method of physical test for hydraulic cement IS:
4656	- Specification for form vibrator.
IS: 7861 (Part-I)	- Code of practice for extreme weather concreting (for hot weather concreting). IS:
8112	- Specifications for high strength ordinary Portland cement (Grade 43).
IS: 10262	- Code of practice for design mix
IS: 12269	- Specifications for high strength ordinary Portland cement (Grade 53) IS:
13311 (Part-I)	- Non-destructive testing of concrete: Method of test for ultrasonic pulse velocity.

IS: 13311 (Part-II) - Non-destructive testing of concrete: Method of testing by reboundhammer.

All concrete, whether ordinary or controlled, shall be mixed in an approved mixer for the minimum time necessary to ensure adequate quality and uniform distribution of the materials. The cement and aggregates shall normally be first mixed dry until all particles of aggregate are coated with cement after which the water shall be added.

Allowance shall be made for the moisture content of the aggregates when calculating the amount of water to be added for each mix.

The temperature of the aggregate, water and cement when added to the mixer shall be such that the temperature of the concrete at the time of placement is less than 40 deg. C and during cold weather it shall not be below 4.5 deg. C. Concrete damaged by frost shall be removed and work redone.

Materials for concrete shall be deposited into the drum while it is in rotation. Mixers shall not be loaded beyond their rated capacity and each batch shall be completely discharged from the drum before recharging takes place.

Facilities shall be provided to spray the mixer drum with cool water between batches and on the completion of concreting the drum shall be washed down. The surface of the mixer drum shall be maintained in a clean condition at all times.

Re-tempering and/or mixing of concrete which has partially hardened and set will not be permitted under any circumstances.

INSPECTION AND TESTING OF STRUCTURES

- Immediately after stripping the form work all concrete shall be carefully inspected and any defective work or small defects either removed or made good before the concrete has thoroughly hardened as instructed by the Engineer-In-Charge.
- In case of doubt regarding the grade of concrete used either due to poor workmanship or based on results of cube strength tests the contractor may be asked to carry out compressive strength test of concrete on the basis of core test, ultrasonic test and/ or load test.
- In case of results of cube strength are observed to be lower than the required designed strength at 28 days as per specifications, ultrasonic test shall be carried out by the digital ultrasonic concrete tester by an approved agency at the cost of the contractor.
- In case the ultrasonic test do not satisfy the requirement as above the Engineer-in-Charge will be at liberty to reject the concrete and the contractor has to dismantle and redo the same to the satisfaction of the Engineer-in-Charge at the contractor's own cost.
- The unit rate for concrete shall be all inclusive of making preliminary mix design and test cubes, works cubes, testing them as per specifications, slump test, optional tests etc. However, the Engineer-in-Charge will witness the same and the General Contractor will have to make arrangement for transportation of the cubes to the approved laboratory.
- In case cube tests give unsatisfactory results the General Contractor should also conduct conclusive tests such as ultrasonic pulse test, core test etc. to prove the suitability of concrete. The cost of the conclusive tests shall have to be borne by the contractor.

- If the results of any test prove unsatisfactory or the structure shows signs of weakness, undue deflection or faulty construction the contractor shall remove and rebuild the member(s) involved or carry out such other remedial measures as may be required by the Engineer-In-Charge. The contractor shall bear the cost of so doing unless the failure of the member(s) to fulfill the test conditions is approved to be solely due to faulty design. The cost of all tests shall be borne by the contractor.

PREPARATION PRIOR TO CONCRETE PLACEMENT, FINAL INSPECTION AND APPROVAL

- Before the concrete is actually placed in position the insides of formwork shall be inspected to see that they have been cleaned and oiled. Temporary openings shall be provided to facilitate inspection especially at bottom of columns and wall forms to permit removal of saw dust, wood shavings, binding wire, rubbish, dirt etc. Such openings/ holes shall be later suitably plugged.
- The various traders shall be permitted ample time to install drainage and plumbing lines, floor and trench drain, conduits, hangers, anchors, inserts, sleeves, bolts frames and other miscellaneous embedment to be cast in the concrete as indicated on the drawing or as necessary for the proper execution of the work. All such embedment shall be correctly positioned and securely held in the forms to prevent displacement during depositing and vibrating of concrete.
- Slots, openings, holes, pockets etc. shall be provided in concrete work in the positions indicated in the drawings or as directed by the Engineer-In-Charge.
- Reinforcement and other items to be cast in concrete shall have clean surfaces that will not impair bond.
- Prior to concrete placement all works shall be inspected and approved by the Engineer-In-Charge and if found unsatisfactory concrete shall not be poured until all defects have been corrected at contractor's cost.
- Approval of Engineer-In-Charge for any and all materials and work as required herein shall not relieve contractor from his obligations to produce finished concrete in accordance with the drawings and specifications.
- No concrete shall be placed in wet weather or on a water covered surface. Any concrete that has been washed by heavy rains shall be entirely removed if there is any sign of cement and sand having been washed away from the concrete mixture.
- Before leaving unattended the work shall be covered with tarpaulins immediately after the concrete has been placed and compacted to safe guard against damages, which may be caused by rain.
- Any water accumulating on the surface of the newly placed concrete shall be removed by approved means and no further concrete shall be placed thereon until such water is removed. To avoid flow of water over / around freshly placed concrete suitable drains and sumps shall be provided.
- Immediately before concrete placement begins prepared surfaces except formwork which will come in contact with the concrete to be placed shall be covered with a bonding mortar of the same

strength of concrete.

- All buckets, containers or conveyers used for transport the concrete shall be mortar tight. All means of conveyance shall be adopted to deliver the concrete of the required consistency and plasticity without segregation or loss of slump whatever method for transportation is employed.
- Chute shall not be used for transport of concrete without the written permission of the Engineer-In-Charge and concrete shall not be re-handled before placing. Maximum height of pour should be limited to 1.0m.
- The period between mixing the concrete and placing it in the final position shall be kept to a minimum and the delivery of concrete shall be coordinated with the rate of placement to avoid delays in delivery and placement.
- Concrete shall be handled from the place of mixing to the place of final deposit by methods which prevent segregation, loss of ingredients and contamination and maintain the required workability.
- Should any segregation have accrued in any batches arriving at the place of deposition, such batches be deposited and thoroughly turned over by hand before placing in the works.
- All plant and equipment used in the transportation of concrete shall be thoroughly cleaned before and after each working period and at all changes of concrete mixes. Water used for this purpose shall be discharged well clear of formwork or the concrete already in place.
- Concrete must be placed in its final position before it become too stiff to work. On no account water shall be added after the initial mixing. Concrete which has become stiff or has been contaminated with foreign materials and which has not been placed within half an hour of mixing water with cement shall be rejected and disposed off as directed by the Engineer-In-Charge.
- All equipments used for mixing, transporting and placing of concrete shall be maintained in clean condition. All pans, buckets, hoppers, chutes, pipe lines and other equipments shall be thoroughly cleaned after each period of placement.

PROCEDURE FOR PLACING OF CONCRETE

- Before any concrete is placed the entire placing programme consisting of equipment, layout, proposed procedures and methods shall be submitted to Engineer-In-Charge for approval if so demanded by the Engineer-In-Charge and no concrete shall be placed until Engineer-In-Charge's approval has been obtained. Equipment for conveying concrete shall be of such size and design as to ensure a practically continuous flow of concrete during depositing without segregation of materials considering the size of the job and placement location.
- Concrete shall be placed in its final position before the cement reaches its initial set and concrete shall normally be compacted in its final position within 30 minutes of leaving the mixer and once compacted it shall not be disturbed.
- In all cases the concrete shall be deposited as nearly as practicable directly in its final position and shall not be re-handled or caused to flow in a manner which may cause segregation, loss of materials, displacement of reinforcement, shuttering or embedded inserts or impair its strength. For locations where direct placement is not possible and in narrow forms General Contractor shall

provide suitable drop and Elephant Trunks to confine the movement of concrete. Special care shall be taken where concrete is dropped from a height especially if reinforcement is in the way particularly in columns and thin walls.

- Except when otherwise approved by Engineer-In-Charge concrete shall be placed in the shuttering by pumps or cranes or other approved implements and shall not be dropped from a height more than one metre or handle in a manner which will cause segregation.
- Concrete placed in restricted forms by borrows, buggies, cars, sort chutes or hand shoveling shall be subjected to the requirement for vertical delivery of limited height to avoid segregation and shall deposited as nearly as practicable in it's final position.
- Concreting once started shall be continuous until the pour is completed. Concrete shall be placed in successive horizontal layers of uniform thickness ranging from 150 mm to 900 mm as directed by the Engineer-In-Charge. These shall be placed as rapidly as practicable to prevent the formation of cold joints or planes of weakness between each succeeding layers within the pour. The thickness of each layer shall be such that it can be deposited before the previous layer has stiffened. The bucket loads or other units of deposit shall be spotted progressively along the face of the layer with such overlap as will facilitate spreading the layer to uniform depth and texture with a minimum of shoveling. Any tendency to segregation shall be corrected by shoveling stones into mortar rather than mortar onto stones. Such a condition shall be corrected by redesign of mix or other means as directed by Engineer-In-Charge.
- The top surface of each pour and bedding planes shall be approximately horizontal unless otherwise instructed.

COMPACTION

- Concrete shall be compacted during placing with approved vibrating equipment until the concrete has been consolidated to the maximum practicable density, is free of pockets of coarse aggregate and fits tightly against all form surfaces, reinforcement and embedded fixtures. Particular care shall be taken to ensure that all concrete placed against the form faces and into corners of forms or against hardened concrete at joints is free from voids or cavities. The use of vibrators shall be consistent with the concrete mix and caution is to be exercised not to over vibrate the concrete to the point that segregation results.
- When placing in layers, which are advancing horizontally as the work progresses great care shall be exercised to ensure adequate vibration, blending and melding of the concrete between the successive layers.
- The immersion vibrator shall penetrate the layer being placed and also penetrate the layer below while the under layers is still plastic to ensure good bond and homogeneity between the two layers and prevent the formation of cold joints.
- Care shall be taken to prevent contact of immersion vibrators against reinforcement steel. Immersion vibrators shall not be allowed to come in contact with reinforcement steel after start of initial set. They shall also not be allowed to come into contact with forms or finished surfaces.
- Formation of stone pockets or mortar pondages in corners and against faces of forms shall not be permitted. Should these occur they shall be dug out, reform and refilled to a sufficient depth and

shape for thorough bonding as directed by Engineer-In-Charge.

- Bleeding or free water on top of concrete being deposited into the forms shall be caused to stop the concrete pour and the condition causing this defect corrected before any further concreting is resumed.
- The time elapsing between the discharge of the concrete from the mixer and the completion of compaction shall not exceed 30 minutes.
- A sufficient number of spare vibrators shall be kept readily accessible to the place of deposition of concrete to assure adequate vibration in case of breakdown of those in use.

CONSTRUCTION JOINTS

- Concrete shall be placed without interruption until completion of the part of the work between predetermined construction joints as specified therein after. Time laps between the pouring of adjoining units shall be as specified in the drawings or as directed by the Engineer-In-Charge.
- If stopping of concreting becomes unavoidable anywhere a properly formed construction joints shall be made where the work is stopped.
- Joints shall be either vertical or horizontal unless otherwise shown on drawing. In case of an inclined or curved member the joints shall be at right angles to the axis of the member. Vertical joints in walls shall be kept to a minimum.
- Vertical joints shall be formed against a stop board and horizontal joints shall be level and wherever possible arranged so that the joint lines coincide with the architectural features of the finished work.
- Batten shall be nailed to the form work to ensure a horizontal line and if directed shall also be used to form a grooved joint. For tank walls and similar work joints shall be formed as per IS 3370.
- Concrete that is in the process of setting shall not be disturbed or shaken by traffic either on the concrete itself or upon the shuttering.
- Horizontal and vertical joints and shear keys shall be located and shall conform in details to the requirements of the plans unless otherwise directed by the Engineer-In-Charge.
- Column Joints - In a column, joints shall be formed 75 mm below the lowest soffit of the beam including haunches if any. In flat slab construction the joint shall be 75 mm below the soffit of column capital. At least 2 hours shall elapse after depositing concrete in columns, piers or walls before depositing in beams, girders or slabs supported thereon.
- Beam and Slab Joints - Concrete in beam shall be placed throughout without a joint but if the joint is unavoidable the same shall be vertical and at the centre or within the middle third of the span unless otherwise shown on drawings. The joint shall be vertical throughout the full thickness of the concrete member. A joint in a slab shall be vertical and parallel to the principal reinforcement. Where it is unavoidably at right angles to the principal reinforcement the joint shall be vertical and at the middle of the span.
- Vertical construction joints in water tight construction will not be permitted unless indicated on the drawings. Where a horizontal construction joint is required to resist water pressure special care shall be taken in all phases of its construction to ensure maximum water tightness.

CURING, PROTECTING, REPAIRING AND FINISHING

- All concrete shall be cured by keeping it continuously damp for a period of time required for complete hydration and hardening to take place. Preference shall be given to the use of continuous sprays or by ponding of water, continuously saturated coverings of sacking, canvas, hessian or other absorbent materials or approved effective curing compounds (for vertical members and slab-on-Grade) applied with spraying equipment capable of producing a smooth even textured coat. Extra precautions shall be exercised in curing concrete during cold and hot weather as outlined hereinafter.
- Certain type of finish or preparation for overlaying concrete must be done at certain stages of the curing process and special treatment may be required for specific concrete surface finish.
- Fresh concrete shall be kept continuously wet for a minimum period of 10 days from the date of placing of concrete following a lapse of 10 to 12 hours after laying of concrete in normal weather and in hot weather not more than lapse of 4 hours. Date of casting shall have to be marked, as directed by Engineer-in-charge, on the exposed surfaces of the concrete so as to enable easy monitoring of the curing period.
- The curing of horizontal surface exposed to the drying winds shall be however begin immediately after the concrete has hardened. Water shall be applied to unformed concrete surfaces within one hour after concrete has set. Water shall be applied to formed surface immediately upon removal of forms. Quantity of water applied shall be controlled so as to prevent erosion of freshly placed concrete.
- The quality of curing water shall be the same as that used for mixing concrete.
- Curing shall be assured by use of an ample water supply under pressure in pipes with all necessary appliances of hose, sprinklers and spraying devices. Continuous fine moist spraying or sprinkling shall be used unless otherwise specified or approved by the Engineer-In-Charge.
- For curing of concrete in pavements, side-walks, floors flat roofs or other level surfaces the ponding method of curing is preferred. The method of containing the ponded water shall be approved by the Engineer-In-Charge. Special attention shall be given to edges and corners of the slab to ensure proper protection to these areas. The ponded areas shall be kept continuously filled with water during the curing period.
- All equipment and materials required for curing shall be on site and ready for use before concrete is placed.

FINISHING OF CONCRETE

- This specification is intended to cover the treatment of concrete surface for all structures. Areas requiring special finish not covered by this specification shall be clearly indicated on the drawings and special specification shall be furnished.
- When specified on the drawings an integral cement concrete finish of specified thickness for floors and slabs shall be applied either monolithic or bonded as specified on the drawings and as per IS 2571.
- The surface shall be compacted and then floated with double power floating machine. The surface shall be tested with a straight edge to meet the requirement and any high and low spots eliminated.

- Floating or troweling of the finish shall be permitted only after all surface water has evaporated. Dry cement or a mixture of dry cement and sand shall not be sprinkled directly on the surface of the concrete finish to absorb moisture or to stiffen the mix.
- A rubbed finish shall be provided only on exposed concrete surfaces as specified on the drawings.
- Upon removal of forms all fins and other projections on the surfaces shall be carefully removed, offsets leveled, voids and /or damaged sections immediately saturated with water and repaired by filling with concrete or mortar of the same composition as was used in the concrete.
- The finished surfaces shall present a uniform and smooth appearance.
- All concrete shall be protected against damage until final acceptance by the Engineer-In- Charge.

15. **PAINTING**

The provisions of the latest revisions of the following IS Codes shall form a part of this specification.

IS: 63	-	Whiting for Paint & putty.
IS: 75	-	Specification for Linseed oil, raw & refined.
IS: 159	-	Specification for ready mixed paint, brushing, acid resistant.
IS: 345	-	Specification wood filler, transparent, liquid.
IS: 426	-	Specification for paste filler for colour coats.
IS: 427	-	Specification for Distemper, dry colour, as required.
IS: 428	-	Specification for Distemper, Oil Emulsion, colour as required.
IS: 533	-	Specification for Gum spirit of Turpentine (Oil of Turpentine)
IS: 710	-	Marine Plywood
IS: 1200 (Part XIII)	-	Method of Measurement of Building & Civil Engg Works – White Washing, colour washing, distempering & other finishes.
IS: 1477 (Part 1)	-	Code of practice for painting of ferrous metals in buildings Pre-treatment
IS: 1477 (Part 11)	-	Code of practice for finishing of ferrous metals in buildings.
IS: 2338 (Part 1)	-	Code of practice for finishing of wood and wood based materials Operations and workmanship for finishing.
IS: 2338 (Part 11)	-	Code of practice for finishing of wood and wood based materials, Schedule
IS: 2395 (Part 1)	-	Code of practice for painting concrete masonry and plaster surfaces.
Operation & workmanship		
IS: 2395 (Part 11)	-	Code of practice for painting concrete, masonry and plaster surfaces.
IS: 2524 (Part 1)	-	Code of practice for painting of non-ferrous metal in buildings Pre-treatment
IS: 2524 (Part II)	-	Code of practice for painting of non-ferrous metal in buildings
Painting IS: 3140	-	Code of practice for painting asbestos cement buildings:
IS: 3537	-	Specification for ready mixed paint, finishing, interior for general purposes to IS colour.
IS: 5410	-	Specification for cement paints, colour as required.
IS : 6278	-	Code of practice for white washing & colour washing.

Other IS Codes not specifically mentioned here, but pertaining to painting form part of these specifications.

PAINTING PLASTERED OR CONCRETE SURFACES

General

Wherever scaffolding is necessary, it shall be erected in such a way that as far as possible no part of scaffolding shall rest against the surface to be painted. A properly secured and well tied suspended platform ("JHoola") may be used for painting. Where ladders are used, pieces of old gunny bags shall be tied at top and bottom to prevent scratches to the walls and floors. For painting of ceilings, proper stage scaffolding shall be erected, where necessary.

Preparation of surfaces:

The surface shall be thoroughly cleaned off all dirt, dust, mortar dropping and other foreign matter, before paint is to be applied. New plaster surfaces and wet patches shall be allowed to sufficiently dry, before applying paint. All unnecessary nails shall be removed. Pitting in plaster shall be made good with putty. 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 allowed.

The surface affected by moulds moss, fungi, algae, efflorescence shall be treated in accordance with IS 2395 (Part 1) before applying paint.

WATER PROOF CEMENT PAINT

Preparation of Surfaces

The surfaces shall be thoroughly wetted with clean water before the water proof cement paint is applied.

Preparation of Paint

Portland cement paints are made readily by adding paint powder to water and stirring to obtain a thick paste which shall then be diluted to a brushable consistency. Generally equal volumes of paint powder and water make a satisfactory paint. In all cases the manufacturer's instructions shall be followed. The paint shall be mixed in such quantities as can be used up within an hour of mixing as otherwise the mixture will set and thicken, affecting flow and finish.

The lids of cement paint drums shall be kept tightly closed when not in use, as by exposure to atmosphere the cement paint rapidly becomes air set due to its hygroscopic qualities.

Application of Paint

No painting shall be done when the paint is likely to be exposed to a temperature of below 7°C within 48 hours after application.

When weather conditions are such as to cause the paint to dry rapidly, work shall be carried out in the shed as far as possible. This helps the proper hardening of the paint film by keeping the surface moist for a longer period.

To maintain a uniform mixture and to prevent segregation the paint shall be stirred frequently in the bucket. For undecorated surfaces, the surface shall be treated with minimum two coats of water-proof cement paint. Not less than 24 hours shall be allowed between two coats and the second or subsequent coat shall not be started until the preceding coat has become sufficiently hard to resist marking by the brush being used. In hot dry weather the preceding coat shall be slightly moistened before applying the subsequent coat.

The finished surface shall be even and uniform in shade without patches, brush marks, paint drops, etc.

Cement paints shall be applied with a brush with relatively short stiff hog or fibre bristles. The paint shall be brushed in uniform thickness and shall be free of excessively heavy brush marks. The laps shall be well brushed out.

Curing

Painted surfaces shall be sprinkled with water two or three times a day. This shall be done between coats and for at least three days following the final coat. The curing shall be started as soon as the paint has hardened so as not to be damaged by the sprinkling of water say about 12 hours after its application.

Rate

The rate shall include the cost of all labour, materials, equipments, scaffolding necessary in all the above operations (including priming coat) as described above.

16. **BRICKWORK**

Cement and sand shall be mixed in specified proportions given in the drawings. Cement shall be proportioned by weight, taking the unit weight of cement as 1.44 tonne per cubic metre. Sand shall be pro-portioned by volume taking into account due allowance for bulking. All mortar shall be mixed with a minimum quantity of water to produce desired workability consistent with maximum density of mortar. The mix shall be clean and free from injurious type of soil/acid/alkali/ organic matter or deleterious substances.

The mixing shall preferably be done in a mechanical mixer operated manually or by power. Hand mixing can be resorted to as long as uniform density of the mix and its strength are assured subject to prior approval of the Engineer. Where permitted, specific permission is to be given by the Engineer. Hand mixing operation shall be carried out on a clean water- tight platform, where cement and sand shall be first mixed dry in the required proportion by being turned over and over, backwards and forwards several times till the mixture is of uniform colour. Thereafter, minimum quantity of water shall be added to bring the mortar to the consistency of a stiff paste. The mortar shall be mixed for at least two minutes after addition of water.

Mortar shall be mixed only in such quantity as required for immediate use. The mix which has developed initial set shall not be used. Initial set of mortar with ordinary Portland Cement shall normally be considered to have taken place in 30 minutes after mixing.

In case the mortar has stiffened during initial setting time because of evaporation of water, the same can be re-tempered by adding water as frequently as needed to restore the requisite consistency, but this re-tempering shall not be permitted after 30 minutes. Mortar unused for more than 30 minutes shall be rejected and removed from site of work.

SOAKING OF BRICKS

All bricks shall be thoroughly soaked in a tank filled with water for a minimum period of one hour prior to being laid. Soaked bricks shall be removed from the tank sufficiently in advance so that they are skin dry at the time of actual laying. Such soaked bricks shall be stacked on a clean place where they are not contaminated with dirt, earth, etc.

JOINTS

The thickness of joints shall not exceed 10mm. All joints on exposed faces shall be tooled to give concave finish.

LAYING

All brickwork shall be laid in an English bond, even and true to line, in accordance with the drawing or as directed by the Engineer, plumb and level and all joints accurately kept. Half and cut bricks shall not be used, except when necessary to complete the bond. Closer in such cases shall be cut to the required size and used near the ends of the walls. The bricks used at the face and also at all angles forming the junction of any two walls shall be selected whole bricks of uniform size, with true and rectangular faces.

All bricks shall be laid with frogs up on a full bed of mortar except in the case of tile bricks. Each brick shall be properly bedded and set in position by slightly pressing while laying, so that the mortar gets into all their surface pores to ensure proper adhesion. All head and side joints shall be completely filled by applying sufficient mortar to brick already placed and on brick to be placed. All joints shall be properly flushed and packed with mortar so that no hollow spaces are left. No bats or cut bricks shall be used except to obtain dimensions of the different courses for specified bonds or wherever a desired shape so requires.

The brick work shall be built in uniform layers, and for this purpose wooden straight edge with graduations indicating thickness of each course including joint shall be used. Corners and other advanced work shall be raked back. Brickwork shall be done true to plumb or in specified batter. All courses shall be laid truly horizontal and vertical joints shall be truly vertical. Vertical joints in alternate courses shall come directly one over the other. During construction, no part of work shall rise more than one metre above the general construction level, to avoid unequal settlement and improper jointing. Where this is not possible in the opinion of the Engineer, the works shall be raked back according to the bond (and not toothed) at an angle not steeper than 45 degrees with prior approval of the Engineer. Toothing may also be permitted where future extension is contemplated. Before laying bricks in foundation, the foundation slab shall be thoroughly hacked, swept clean and wetted. A layer of mortar not less than 12 mm thick shall be spread on the surface of the foundation slab and the first course of bricks shall be laid.

JOINTING OLD AND NEW WORK

Where fresh masonry is to join with masonry that is partially/entirely set, the exposed jointing surface of the set masonry shall be cleaned, roughened and wetted, so as to effect the best possible bond with the new work. All loose bricks and mortar or other material shall be removed.

In, the case of vertical or inclined joints, it shall be further ensured that proper bond between the old and new masonry is obtained by interlocking the bricks. Any portion of the brickwork that has been completed shall remain undisturbed until thoroughly set.

In case of sharp corners specially in skew bridges, a flat cutback of 100 mm shall be provided so as to have proper and bonded laying of bricks.

CURING

Green work shall be protected from rain by suitable covering and shall be kept constantly moist on all faces for a minimum period of seven days. Brick work carried out during the day shall be suitably marked indicating the date on which the work is done so as to keep a watch on the curing period. The top of the masonry work shall be left flooded with water at the close of the day. Watering may be done carefully so as not to disturb or wash out the green mortar.

During hot weather, all finished or partly completed work shall be covered or wetted in such a manner as will prevent rapid drying of the brickwork.

During the period of curing of brick work, it shall be suitably protected from all damages. At the close of day's work or for other period of cessation, watering and curing shall have to be maintained.

Should the mortar perish i.e. become dry, white or powdery through neglect of curing, work shall be pulled down and rebuilt as directed by the Engineer. If any stains appear during watering, the same shall be removed from the face.

SCAFFOLDING

The scaffolding shall be sound, strong and safe to withstand all loads likely to come upon it. The holes which provide resting space for horizontal members shall not be left in masonry under one metre in width or immediately near the skew backs of arches. The holes left in the masonry work for supporting the scaffolding shall be filled and made good. Scaffolding shall be got approved by the Engineer. However, the Contractor shall be responsible for its safety.

EQUIPMENT

All tools and equipment used for mixing, transporting and laying of mortar and bricks shall be clean and free from set mortar, dirt or other injurious foreign substances.

FINISHING OF SURFACES

- General

All brickwork shall be finished in a workmanlike manner with the thickness of joints, manner of striking or tooling as described in these above specifications.

The surfaces can be finished by “jointing” or “pointing” or by “plastering” as given in the drawings.

For a surface which is to be subsequently plastered or pointed, the joints shall be squarely raked out to a depth of 15 mm. while the mortar is still green. The raked joints shall be well brushed to remove dust and loose particles and the surface shall be thoroughly washed with water, cleaned and wetted.

The mortar for finishing shall be prepared as approved.

- Jointing

In jointing, the face of the mortar shall be worked out while still green to give a finished surface flush with the face of the brick work. The faces of brick work shall be cleaned to remove any splashes of mortar during the course of raising the brick work.

- Pointing

Pointing shall be carried out using mortar not leaner than 1:3 by volume of cement and sand or as shown on the drawing. The mortar shall be -filled and pressed into the raked joints before giving the required finish. The pointing shall be ruled type for which it shall, while still green, be ruled along the centre with half round tools of such width as may be specified by the Engineer. The super flush mortar shall then be taken off from the edges of the lines and the surface of the masonry shall be cleaned of all mortar. The work shall conform to IS:2212.

- Plastering

Plastering shall be done where shown on the drawing.

Plastering shall be started from top and worked down. All putlog holes shall be properly filled in advance of the plastering while the scaffolding is being taken down. Wooden screeds 75 mm wide and of the thickness of the plaster shall be fixed vertically 2.5 to 4 metres apart, to act as gauges and guides in applying the plaster. The mortar shall be laid on the wall between the screeds using the plaster's float and pressing the mortar so that the raked joints are properly filled. The plaster shall

then be finished off with a wooden straight edge reaching across the screeds. The straight edge shall be worked on the screeds with a small upward and sideways motion 50 mm to 75 mm at a time. Finally, the surface shall be finished off with a plasterer's wooden float. Metal floats shall not be used.

When recommencing the plastering beyond the work suspended earlier, the edges of the old plaster shall be scrapped, cleaned and wetted before plaster is applied to the adjacent areas. No portion of the surface shall be left unfinished for patching up at a later period.

The plaster shall be finished true to plumb surface and to the proper degree of smoothness as directed by the Engineer.

The average thickness of plaster shall not be less than the specified thickness. The minimum thickness over any portion of the surface shall not be less than the specified thickness by more than 3 mm.

Any cracks which appear in the surface and all portions which sound hollow when tapped, or are found to be soft or otherwise defective, shall be cut in rectangular shape and re- done as directed by the Engineer.

- Curing of Finishes

Curing shall be commenced as soon as the mortar used for finishing has hardened sufficiently not to be damaged during curing. It shall be kept wet for a period of at least 7 days. During this period, it shall be suitably protected from all damages.

- Scaffolding for Finishes

Stage scaffolding shall be provided for the work. This shall be independent of the structure.

17. **PLASTERING AND POINTING APPLICABLE INDIAN STANDARDS**

The provision of the latest revisions of the following IS codes shall form a part of this specification to the extent they are relevant.

IS: 269	Specification for ordinary rapid hardening and low heat Portland cement
IS – 383	Specification for coarse and fine aggregate
IS: 712	Building Limes
IS: 1200 (Part XII)	Method of measurement of building and Civil Engg. Works - Plastering & Pointing
IS: 1542	Specification for sand for plaster
IS: 1630	Mason's Tools for Plaster work and pointing work.
IS: 1661	Code of practice for application of cement lime plaster finishes
IS 2645	Specification for integral waterproofing compound.
IS: 10067	Material Constants for Building Works

Other IS Codes, not specifically mentioned here, but pertaining to plastering work, form part of these specifications.

Cement Mortar

Cement mortar shall have the proportion of cement to sand as specified and shall comply with relevant clauses of concrete specifications.

Scaffolding

Scaffolding independent of masonry / RCC work i.e. double scaffolding shall be erected having two sets of vertical supports with steel sections or pipes of adequate strength so as to be safe for construction operations. The contractor shall take all measures to ensure the safety of the work and working people. Any instructions of the Engineer in this respect shall also be complied with.

The contractor shall be entirely responsible for any damage to property or injury to persons resulting from ill erected scaffolding, defective ladders and materials or otherwise arising out of his default in this respect. Proper scaffolding shall be provided to allow easy approach to every part of the work. Overhead work shall not be allowed. Making holes of any kind for the purpose of supporting the scaffolding shall not be permitted.

Tools and Accessories

Tools and accessories used in plaster work shall conform to IS: 1630. All tools shall be cleaned by scrapping and washing at the end of each day's work or after use. Metal tools shall be cleaned after each operation. All tools shall be examined to see that they are thoroughly cleaned before plastering is begun.

Preparatory work

All joints in the face work that is to be plastered shall be raked out to depth equal to not less than the width of the joints or as directed by the Engineer. The raking shall be done taking care not to allow by chipping of masonry. In new work the raking out shall be done when the mortar in the joints is still green. Efflorescence if any shall be removed by brushing and scrapping. Smooth surfaces of concrete, old plaster, etc. must be suitably roughened to provide necessary bond for the plaster. All dirt, soot, oil paint or any other material that might interfere with satisfactory bond shall be removed. In the case of stone masonry, scrubbing on the walls to receive the plaster shall not be more than 12 mm. The surface to be plastered shall be cleaned and scrubbed with fresh water and kept wet for 6 hours prior to plastering. It shall be kept damp during the progress of the work. The plastering shall not be commenced unless the preparatory work is passed in writing by the Engineer.

Chicken wire Mesh at Junction

All junctions of Masonry wall with R.C. structure e.g. column, beam, etc. which are to be plastered, shall be reinforced by fixing strips of approved G.I. Chicken wire mesh of minimum 300mm wide centrally over the length of junction. G.I. Chicken wire mesh of required width shall also be fixed over chasing for conduits, pipes, etc. on masonry walls before plastering is commenced. The mesh shall be nailed rigidly to the structure / masonry with G.I. nails of suitable type at approx. 400mm centers. The finished mesh shall be straight, rigid and laid without sagging. The payment shall be made for the area covered by wire mesh in Sq. mtrs including overlaps.

Gauges

Patches of plaster 15cm x 15cm shall be put on about 3 m apart as gauges to ensure even plastering in one plane.

[illegible]

TECHNICAL SPECIFICATIONS FOR ELECTRICAL WORK

SCOPE

The Scope of work under Internal Electrical Works shall cover the supply installation, testing and commissioning of the complete electrical power , lighting , fire alarm & access control system and communication system (if any) of the entire Premises including approval from statutory authorities.

It is not the intent to specify completely herein all aspects of design and constructional features of equipments and details of the work to be carried out, nevertheless, the equipment and work shall conform in all respects to high standards of Engineering, design and workmanship and shall be capable of performing in continuous operation in a main acceptable to the Client who will interpret the meaning of the specifications and drawings and shall have right to reject or accept any work or material which in assessment is not complete to meet the requirement of this specifications and or applicable code and standards mentioned else where in this specifications.

1.0 STANDARDS AND REGULATIONS

2.1 All materials and the equipments used in the work shall be ISI and TAC approved and installed with a high degree of workmanship.

2.2 The installation as a whole , shall confirm in all respects with I.E. rules , Indian Standard Specifications , Regulations of the Tariff Advisory Committee (General Insurance) and the Electricity Supply Co.'s rules and regulations.

3.0 GENERAL

3.1 BROCHURE AND DATA

The contractor shall submit four copies of all brochures, manufacturer's description data and similar literature. One copy will be returned to the contractor after approval.

3.2 APPROVAL

The Engineer's approval of such drawings, schedule, brochures, etc. will be an approval of general details and arrangements only and shall not relieve the contractor from responsibility for deviation from drawings or specifications unless he has in writing called the Engineer's attention to such deviations at the time of submission nor shall it relieve the contractor from responsibility for errors or omissions of any kind in the shop drawings when approved.

3.3 STORAGE

All materials and equipment's shall be stored properly to the satisfaction of the Engineer so that physical handling and climatic conditions do not affect the equipment's.

3.4 CUTTING & PATCHING

Cutting, patching and redoing shall be kept to the minimum. Wherever such works are required to be carried out, necessary permission shall be obtained from Engineer before cutting and patching up. Those shall be subsequently furnished properly to the satisfaction of Engineer. Care shall be taken to prevent damage of finishing.

3.5 PROTECTION

All work, equipment and material shall be protected at all times to prevent obstructions, damage or breakage. All equipments shall be covered and protected against water, dust, sand as well as chemical and or mechanical damage. At the completion of the work, all equipment shall be thoroughly cleaned and delivered in a perfect unblemished and working conditions.

3.6 CONTRACT RATES

The rates and prices shall be deemed to have included all labour, materials used, plants and tools, temporary works, minor building works like cutting, chases, holes, making good, grouting, finishing etc., insurance, sales tax, local taxes and duties, establishment charges, profit, supervision, transport, storage, testing & commissioning and other charges and fees and every expenses required to be incurred for proper and due execution including approval from Electrical Inspector and/or from all other

statutory authorities or may be required and amended by laws till commissioning of the project.

3.7 COMPETENCY OF ELECTRICAL STAFF

Accepted norms of good workmanship is required. The electrical works shall be done by qualified and trained staff having First Class Wireman's license and Supervisory Competency Certificate having sufficient competency in electrical works and under the overall supervision of electrical contractors.

3.8 APPROVAL OF MATERIALS

All materials used on the works shall be new and of the best quality available, conforming to the relevant specifications and approved makes list. Prior approval should be obtained in writing from the Engineer for all materials proposed to be purchased of makes not included in 'Approved Makes list' and when necessary, approved sample duly identified and labeled shall be deposited with the Engineer.

3.9 AS BUILT DRAWINGS

On completion of work, the contractor shall submit to the Engineer, a reproducible and five copies of as built drawings showing :-

- a) Conduit layout, location of junction boxes and number of wires through each section of conduit.
- b) Circuit distribution scheme for each main and sub-distribution board. This shall indicate various outlets controlled by each fuse/circuit breaker and phase wise distribution of load.
- c) Location of distribution and sub-distribution boards.
- d) Distribution layout of telephone system.
- e) Distribution layout of computer network.
- f) Earthing system

4.0 LIGHTING SYSTEM EQUIPMENT

4.1 SCOPE

This specification covers the design, manufacture, testing, inspection and delivery to site of lighting system equipment such as light control switches, lighting and power receptacle units, ceiling fans, lighting fixtures conduits and other similar items necessary for lighting system.

4.2 SUB-DISTRIBUTION BOARDS (NORMAL & EMERGENCY)

4.2.1 CONSTRUCTIONAL FEATURES

Boards shall be sheet steel enclosed and shall be fully dust and vermin proof, providing a degree of protection of IP:52. The sheet steel used shall be cold rolled and 2 mm thick for meter boards.

All boards and panels shall be provided with hinged doors for access to equipment. Doors shall be casketed all round with neoprene gaskets. For wall mounting, lighting panels when provided with MCBs, a hinged, latched front door shall be provided with key-locking facility and a slotted bakelite sheet shall be provided inside. Only the MCBs operating knobs shall project out of the bakelite sheet slots for safe operation and neat appearance.

All accessible live connections/metals shall be shrouded and it shall be possible to change individual MCBs from the front of the boards/panels without danger of contact with live metal.

Adequate interior cabling space and suitable removable cable entry plates shall be provided for top & bottom entry of cables through glands and or conduits. Necessary number of glands to suit the specified cable sizes shall be provided. Cable glands shall be screwed on type and made of brass.

Two earthing terminals shall be provided to suit the PURCHASER's earthing conductor.

All sheets steel parts shall undergo rust-proofing process which should include degeasing, de-scaling and a recognised phosphating process. The steel works shall then be painted with two coats of Zinc-chromate primer and two coats of final stove-enamelled finish paint of colour. For chemical/corrosive areas, epoxy paint shall be used.

4.3 PANELS/BOARDS' COMPONENT EQUIPMENT

4.3.1 Miniature Circuit Breakers (MCB)

MCBs shall be hand operated, air break, quick make, quick break type conforming to applicable standards.

MCB shall be provided with overload/short-circuit protective device for protection under overload and short-circuit conditions. The minimum breaking capacity of MCBs shall be 10 kA r.m.s. at 415V.

4.3.2 Internal Wiring

Panel/boards shall be supplied completely wired, ready for the PURCHASER's external connections at the terminal blocks. Wiring shall be carried out with 1100/650V grade, PVC insulated, stranded copper, conductors. Conductors of adequate size shall be used to suit the rated circuit current.

Engraved identification ferrules, marked to correspond with the wiring diagram shall be fitted at both ends of each wire.

All wiring shall be terminated on terminal blocks. Terminal blocks shall be one piece moulded 650V, of reputed make, preferably stud type for higher current ratings such that wires are connected by cable-lugs and complete with nuts and washers. Terminals shall be adequately rated for the circuit current, the minimum rating shall be 20A.

Terminals for circuits with voltage exceeding 125V shall be shrouded.

Terminals shall be numbered and provided with identification strip for identification of the circuit.

4.3.3 Label & Diagram Plate

All door mounted equipment as well as equipment mounted inside the switchboards/panels shall be provided with individual labels with equipment designation/rating. Also the boards/panels shall be provided on the front with a label engraved with the designation of the board/panel as furnished by the PURCHASER.

Labels shall be made of non-rusting metals, 3-ply lamicaid or engraved PVC.

Inside the door of the 1 phase ways lighting panels a circuit diagram/description shall be fixed for reference and identification.

4.4 Light Control Switches

Light control switches of ratings and types, i.e. decorative shall be supplied as indicated in BOQ. The switches shall be grid plate type/Piano Key type suitable for use on 240V, 1 Phase, 50 Hz supply.

Switches shall be of flush type for mounting behind an insulated plate or incorporated with a switch plate for mounting flush with the surface of wall or switch box/suitable enclosure. The switch box/enclosure may be recessed into or mounted on a wall as per the requirements of project layouts.

The size of enclosure boxes shall be chosen to accommodate the number of switches to be installed at the particular location. The enclosures shall be 16 SWG sheet steel stove enamelled/galvanized. The enclosure box shall be covered with perspex/insulating cover. An enclosure intended for surface mounting shall not have holes or gaps in its sides other than those expressly provided for cable entry.

4.5 Receptacle Units

Receptacle units shall consist of socket outlet with associated switch and plug. The socket outlet and switch or MCB shall be flush mounted within a stove enamelled 16 SWG steel enclosure with Perspex/insulating cover. The box may be recessed into or mounted on a wall as per requirements of project layouts.

The receptacle units shall be suitable for 240V, 1 phase, 50 Hz/415V, 3 phase, 50Hz supply as indicated. Single phase receptacles shall be associated with a switch/MCB of same current rating and the receptacle shall become live only when the associated switch/MCB is in "ON" position.

The plugs shall be provided with cord grips to prevent strain and damage to conductors/wires at connection and entry points. The types and current rating of receptacle units shall be as indicated in BOQ and they shall conform to the applicable standards. Whenever required, receptacle units may be provided with MCBs instead of switch.

4.7 Lighting Wires

The wiring of lighting system shall be carried out through 650/1100V, PVC insulated, unarmored stranded copper conductors, unless otherwise specified. The wires shall conform to the applicable standards.

The minimum area of conductors shall be 1.5 sq.mm for point wiring of light fittings and 6A receptacles and 4.0 sq.mm for receptacles rated 16A and above as indicated in BOQ. The Circuit wiring for light fitting shall be with 2.5 sq.mm stranded copper conductors.

The wires shall be coated red, yellow, blue for R,Y,B phase and black for neutral and green for earthing. The approximate quantities of wires shall be indicated by the PURCHASER only when the same are not covered in the CONTRACTOR's "Point Wiring" work under lighting system installation work. Unless otherwise specified, lighting cables shall be of 650/1100V grade, 3, 3-1/2 and 4C, PVC insulated and armoured type for main distribution boards.

4.8 Conduits UPVC (Unplasticised PVC) conduits and their associated fittings as per sizes shall conform to applicable standards. The minimum size of conduit shall be 20mm.

Supply of conduits shall include all associated fittings like couplers, bends and tees as required for lighting system installation work including suitable fish wire, if necessary.

4.9 Junction Boxes

Junction boxes with terminals shall be supplied for branching and terminating lighting cables when required for outdoor areas, 3 phase receptacles etc.

The junction boxes shall be dust and vermin proof and shall be fabricated from 14 gauge sheet steel and shall be complete with removable cover plate with gaskets, two earthing terminals each with nut, bolt and washer. Boxes shall be additionally weather-proof when specified.

The boxes shall have provision for wall, column, pole or structure mounting and shall be provided with cable/conduit entry knock outs, terminal blocks, HRC fuses, etc.

The terminal blocks, with specified number of terminals, shall be mounted securely on bracket welded to the back sheet of the box. The terminals shall be 600V grade, one piece construction complete with terminals, insulation barriers, galvanized nuts, bolts and washers and provided with identification strips of UPVC. The terminals shall be made of copper alloy and shall be of box clamp type.

The boxes shall be painted with one shop coat of Red Oxide Zinc chromate primer followed by a finishing coat of paint as specified.

5.0 LIGHTING SYSTEM INSTALLATION WORK

5.1 Scope

This specification indicates the requirements of lighting system installation work. The installation, testing and commissioning of complete lighting system and power receptacles shall be carried out in accordance with the Lighting Installation Notes, the PURCHASER's /ENGINEER's Drawings and as stipulated in this specification and Data Sheets. Separate Specifications when enclosed, cover the requirements of lighting equipment supply.

5.2 Installation Work Scope

The installation work shall include storing, unpacking, fixing of all equipment associated with lighting system, routing and laying conduits, wiring, termination with copper lugs wherever required, testing, commissioning and all other work items necessary for completing the job.

The supply of all mounting accessories, earthing wires and incidental hardware and consumables like fixing saddles, spacer plates, junction boxes and conduits required for the fitting fixing/suspension points, point boxes and connectors, jointing ferrules, all fixing brackets, screws and studs, shall be deemed to be included as part of installation work. Mounting accessories like saddles, spacer plates, joint boxes, junction boxes and fixing hardware shall be of galvanized mild steel.

The CONTRACTOR shall work in co-ordination with the Civil and Air- conditioning Contractors and where holes or openings in walls and floors, cut-outs in false ceilings are required the CONTRACTOR shall inform the ENGINEER and other respective Contractors. Holes in walls made by the CONTRACTOR shall necessarily be patched by him in a good and approved manner, using the same kind of masonry as in the structure surfaces.

The CONTRACTOR shall be responsible if parts of panels, fittings, etc. are lost or damaged and all damage and thefts shall be made good by the CONTRACTOR till the installation is handed over to the PURCHASER.

The CONTRACTOR shall touch-up painting on lighting panels/boards if the same is damaged during installation handling.

5.3 Point Wiring

Whenever asked for, if installation is to be carried out on point wiring basis, the supply of following shall be deemed to be included as part of the installation work, in addition to the items mentioned in para 4.3.3.

- a) 650/1100V lighting wires for conduit wiring, minimum size of 1.5 sq. mm PVC insulated copper conductor.
- b) PVC conduits with all relevant accessories and junction/inspection boxes. Minimum size 20 mm for exposed/concealed conduits respectively.
- c) Necessary 6A/16A light control switches of grid plate type on MS boxes.
- d) Required switch and receptacles units in similar boxes as in item (d) above. Wiring of each lighting fitting/receptacle unit/ceiling fan/bell etc. shall be considered as one point. However, when two or more receptacles are to be wired at the same location/in the same box. Wiring of first receptacle shall be considered as one point and wiring of each of subsequent receptacle at that location shall be considered as half point each.

5.4 Concealed Wiring

For installations requiring concealed conduit wiring, the supply routing and laying of UPVC conduits of minimum size 20mm in walls/ceiling, from lighting panels upto fittings, receptacles, inspection/junction boxes etc. shall be in the CONTRACTOR's scope. The CONTRACTOR shall closely co-ordinate his work with that of the Civil Contractor. The CONTRACTOR shall prepare and furnish drawings showing

the location of the embedded conduits/junction boxes/inspection boxes, based on the PURCHASER's lighting layout drawings.

5.5 Wiring

Unless otherwise stated wiring shall be carried out in UPVC conduits. All types of wiring, concealed or unconcealed shall be capable of easy inspection. Unconcealed wiring when run along walls shall be as near the ceiling as possible. In all types of wiring, due consideration shall be given for neatness and good appearance.

Wherever specified, Emergency lighting shall be switched in through change-over Switch on AC mains failure, and manually switched in for testing, independently of normal lighting. Emergency lighting cables shall run in a separate conduit system. In large rooms, the lighting system shall be distributed among three phases.

Wiring shall be colour coded so as to enable easy identification of phase and Neutral conductors. The neutral shall be of the same size as the phase conductor. There shall be a circuit breaker or a linked switch on each live conductor of supply mains at the point of entry. The wiring throughout the installation shall be such that there is no break in neutral wire in the form of switch or fuse unit.

Conductors not arranged for connection to the same system and circuit or supply different phases of the same supply, shall be kept apart throughout their entire run.

Receptacles and lighting fittings in general shall be fed from different circuits. Six amps receptacles for toilet or small change rooms can be fed from the lighting circuit with proper isolating arrangement.

Each final sub-circuit from a lighting panel shall be controlled by a single pole switch connected to the live conductor.

For long conduit wiring runs, inspection/pull boxes shall be provided at intervals not exceeding 5m. Such facilities shall also be provided at conduit bends.

5.6 General Practices

All receptacles and switches to be installed in offices and control rooms shall be flush mounted within the wall and those in other areas shall be wall or column mounted.

Ceiling roses shall not embody fuse terminals as an integral part of it. For voltages exceeding 250 volts, a ceiling rose or any similar attachment shall not be used.

A socket outlet shall not embody fuse terminals as an integral part of it. The switch controlling the socket outlet shall be on the live side of the line.

All exposed metal parts of the plug, when the plug is in complete engagement with the socket outlet, shall be in effective electrical connection with the earthing pin.

5.7 Earthing

Conduits and fittings shall be earthed by 14 SWG Copper wires (unless otherwise stated, run along the length of the conduit and secured by means of suitable clamps efficiently fastened to conduit pipe. To achieve perfect electrical continuity, the conduits shall be bonded effectively on either end of a coupling and other joints. Earth bonding clips shall be provided.

Conduits shall be grounded at the ends adjacent to switch boards at which they originate or otherwise at the commencement of the circuit, by a earthing conductor connected at an earth clip, clamp or gland, in effective electrical contact with the conduit.

5.8 Testing and Commissioning

Before a completed installation, or an extension to an existing installation is put into service, installation tests stipulated in applicable Standards and Codes of Practices shall be carried out by the CONTRACTOR in the presence of the Client's representative.

6.0 LIGHTING FITTING AND ACCESSORIES

6.1 Scope

This specification covers the design, material specification, manufacture, testing, inspection and delivery to site and installation & commissioning of lighting fittings and their associated accessories.

6.2 Standards

The lighting fittings and their associated accessories such as lamps/tubes, reflectors, housings, ballasts, etc. shall comply with the latest applicable standards as specified. Where no standards are available, the supply items shall be backed by test results, shall be of good quality and workmanship & any supply items which are bought out by the VENDOR shall be procured from approved manufacturers acceptable to the PURCHASER/ENGINEER.

6.3 Lighting Fittings – General Requirements

Fittings shall be designed for continuous trouble free operation under atmospheric conditions as specified (in Sections B & C of project information) without reduction in lamp life or without deterioration of materials and internal wiring. Outdoor fittings shall be weather-proof and rain-proof type.

The fittings shall be designed so as to facilitate easy maintenance, including cleaning, replacement of lamps/starters etc.

Connections between different components shall be made in such a way that they will not work loose by small vibration.

For each type of lighting fitting the VENDOR shall supply the utilization factor to indicate the proportion of the light emitted by the bare lamps which falls on the working plane.

All fittings shall be supplied complete with lamps suitable for operation on a supply voltage and the variation in supply voltage.

The fittings and accessories shall be designed to have low temperature rise. The Temperature rise above the ambient temperature shall be as indicated in the relevant standards.

All mercury vapour and sodium vapour lamp fittings shall be complete with accessories like lamps, ballasts, power factor improvement capacitors, starters wherever applicable etc. These shall be mounted as far as possible in the fitting assembly only. If these cannot be accommodated inside, then a separate metal enclosed box shall be included to accommodate the accessories and in addition with a fuse and a terminal block suitable for loop-in, loop-out connections. Outdoor type fittings shall be provided with outdoor type weather-proof box.

All fluorescent lamp fittings shall be complete with all accessories like ballasts, power factor improvement capacitors, lamps, starters and capacitors for correction of stroboscopic effect.

Each fitting shall have a terminal block suitable for loop-in, loop-out and T-off connection by 650/1100V, 3 core, PVC insulated Cu conductor cable of 2.5 sq. mm. in size unless otherwise specified in Data Sheet A1. The internal wiring should be completed by the MANUFACTURER by means of stranded copper wire and terminated on the terminal block.

The mounting facility and conduit knock-outs for the fixtures shall be as specified.

All hardware used in the luminaire shall be suitably plated or anodized and passivated for use in chemical industrial and power plants.

6.4 Earthing

Each lighting fitting shall be provided with an earthing terminal suitable for connection to the earthing conductor.

All metal or metal enclosed parts of the housing shall be bounded and connected to the earthing terminal so as to ensure satisfactory earthing continuity throughout the fixture.

6.5 Painting / Finish

All surfaces of the fittings shall be thoroughly cleaned and degreased. The fittings shall be free from scale, rust sharp edges and burrs.

When enamel finish is specified, it shall have a minimum thickness of 2 mills for outside surface and 1.5 mills for inside surface. The finish shall be non-porous and free from blemishes, blisters and fading. The housing shall be stove-enamelled/epoxy stove-enamelled-vitreous enamelled or anodized as indicated on flame-proof fittings is prohibited. The surface shall be scratch resistant and shall show no sign of cracking or flaking when bent through 90° over ½" dia mandrel. The finish of the fittings shall be such that no bright spots are produced either by direct light source or by reflection.

7.0 EARTHING SYSTEM

7.1 General

The earthing system shall comply with all currently applicable standards, regulations and safety codes of the locality where the installation is to be carried out. Nothing in this specification shall be construed to relieve the CONTRACTOR of this responsibility.

The installation work shall conform to the latest applicable Electricity Rules, standards (IS : 3043) and codes of practice.

7.2 Scope of Supply

The earthing & electrodes shall be supplied by the CONTRACTOR when specifically indicated. Conductors shall be free from rust, scale and other electrical and mechanical

defects and all materials used shall conform to relevant standards or approved by the Engineer . The sizes, materials and quantity shall be as listed.

Steel earthing conductors above ground shall be hot-dip galvanized , unless otherwise stated, to prevent atmospheric corrosion.

7.3 Scope of Installation Work

The CONTRACTOR shall carry out the earthing of all equipment/panels / structures. Whether specifically shown in drawings or not, building columns, hand-rails, miscellaneous items such as junction/marshalling boxes, field switches, cable boxes etc., shall be earthed.

The CONTRACTOR shall install bare/insulated, copper/aluminium conductors, etc. required for system and individual equipment earthing. All work such as cutting, bending, supporting, painting/coating, drilling, brazing/soldering/ welding, clamping, bolting and connecting into structures, equipment frames, terminals, rails or other devices shall be in the CONTRACTOR's scope of work. All incidental hardware and consumable such as fixing cleats/clamps, anchor fasteners, lugs, bolts, nuts, washers, bitumastic compound, anti-corrosive paint as required for the complete work shall be deemed to be included by the CONTRACTOR as part of the installation work.

The quantities, sizes and material of earthing conductors and electrodes to be installed, and routes of the conductors and locations of electrodes shall be shown on the project drawings.

The alignments of conductors are approximately shown in the earthing drawings and these may be suitably shifted/finalized in consultation with the site ENGINEER / PURCHASER to avoid any interference. If earth connection to any device is not shown specifically in the relevant earthing drawings, it shall be field routed.

The scope of installation of electrodes shall include installation of these electrodes such as:

(a) directly in earth, (b) in constructed earth pits, and connecting to main buried earth grid, as per enclosed drawings/relevant standards. The scope of work shall include excavation, construction of the earth pits including all materials required for construction of the earth pits, placing the rod, providing and fixing test links on those rods in test pits and connecting to main earth grid conductors. The location of the earth electrodes will be such that the soil has reasonable chances of remaining moist, as

far as possible. Entrances, pavements and roadways are definitely avoided for locating the earth electrodes.

The scope of installation of the test links shall include mounting of the same at specified height on wall/column by suitable brackets and connections of the test link to the earth electrode.

7.4 Work Details

Earthing conductors along their run on walls and columns shall be supported by cleating/welding at intervals of 750 mm and 1000 mm respectively.

Wherever earthing conductors cross underground service ducts and pipes, it will be laid 300mm below, the earthing conductor shall be bounded to such service ducts/pipes. Wherever main earthing conductor crosses cable trenches, they shall be buried below the trench floor.

Suitable earth risers approved by the ENGINEER shall be provided above finished floor/ground level, if the equipment is not available at the time of laying of the main earth conductors. The minimum length of such riser inside the building shall be 200 mm and outdoors shall be 500 mm above ground level. The risers to be provided shall be marked in project drawings.

Earth leads and risers between equipment earthing terminals and the earthing grid shall follow as direct and short a path as possible.

Neutral connection shall never be used for the equipment earthing. Each neutral point of a transformer shall be earthed to two separate earth electrodes for connection with earthing system.

Shield wire in sub-stations shall be connected to the earthing grid through test links at every alternate switchyard portal tower.

An earthing pad as shown in the drawings shall be provided under each operating handle of the isolator and operating mechanism of HV breakers. Operating handle of the isolator and supporting structure shall be bonded together by a flexible connection and connected to the earthing grid.

A separate earth electrode bed shall be provided adjacent to structures supporting lightning arrestors and coupling capacitors. Each connections shall be as short and as straight as practicable. For arrestors mounted near transformers, earth conductors shall be located clear of the tank and coolers.

Whenever earthing conductor passes through walls, galvanized iron sleeves shall be provided for the passage of earthing conductor. The pipe ends shall be sealed by the CONTRACTOR by suitable water proof compound. Water stops shall be provided wherever earthing conductor enters the building form outside below grade level. Water stops and above mentioned sleeves shall be provided by the civil contractor.

7.5 Earthing Connections

All connections in the main earth conductors buried in earth/concrete shall be welded/brazed type. Connection between main earthing conductor and earth leads also be a welded/brazed type. Cad welding type connections shall be done if specifically indicated.

Connection between earth leads and equipments shall be of bolted type, unless, otherwise specified or shown in the drawings. Equipment vendors shall provide earthing terminals on their equipments.

Welding and brazing operations and fluxes/alloys shall be of approved standards.

All connections shall be of low resistance. Contact resistance also shall be minimum.

All bimetallic connections shall be treated with suitable compound to prevent moisture ingress.

Metallic conduits and pipes shall be connected to the earthing system unless, otherwise specified.

Lightning protection system down conductors shall not be connected to other earthing conductors above ground level. Also no intermediate earthing connection shall be made to lightning arrestor, transformer and CVT earthing leads which shall be directly connected to pipe plate/rod electrode.

7.6 Earth Electrode

Electrodes shall as far as practicable, be embedded below permanent moisture level.

Some electrodes shall be housed in test pits with concrete covers for periodic testing of earth resistivity. Installation of rod/pipe/plate electrodes in test pits shall be convenient for inspection, testing and watering.

7.7 Pipe Earth Electrodes

GI pipe shall be of medium Class-B 50 mm dia and 3.0 m length Galvanising of the pipe shall conform to relevant Indian Standards. GI Pipe electrodes shall be tapered at the bottom and provided with holes of 12 mm dia drilled not less than 7.5 cm from each other up to suitable length from bottom. The electrode shall be buried in the ground vertically with its top not less than 20 cm below ground level.

7.8 Plate Earth Electrode

For Plate electrode minimum dimension of the electrode shall be as under : GI plate electrode 60 cm x 60 cm x 6 mm thick Heavy duty cast iron/MS frame with cover shall be suitably embedded in the masonry.

Soil, salt and charcoal placed around the electrode shall be finely graded, free from stones and other harmful mixtures. Backfill shall be placed in the layers of 250 mm thick uniformly spread and compacted. If excavated soil is found unsuitable for backfilling, the CONTRACTOR shall arrange for a suitable soil from outside.

7.9 Method of Connecting Earthing Lead to Earth Electrode

In the case of plate earth electrodes, the earthing lead shall be securely bolted to the plate with two bolts, nuts, check nuts and washers. In the case of pipe earth electrodes, they shall be connected by means of a through bolt, nuts and washers and cable socket.

All materials used for connecting the earth lead with electrodes shall be GI in case of GI pipe and GI plate earth electrodes The earthing lead shall be securely connected at the other end to the main board.

7.10 Lightning Protection System

Lightning protection of any installation shall be done in accordance with IS:2309:1989.

The lightning protection air termination and/or horizontal air termination conductors shall be fixed in such a way that they remain in their installed position even during severe weather conditions.

Air termination system shall be connected to earthing system by down conductors as shown in various drawings. The down conductors shall follow a direct path to earth. There shall not be any sharp bends, turns and kinks in the down conductors.

All metallic structures within 2 m vicinity of down conductors shall be bonded to the lightning protection system.

Every down conductor shall be provided with a test joint at about 100 mm above ground level. The test joint shall be directly connected to the earthing system/electrode.

The lightning protection system shall not be direct contact with underground metallic service ducts, cables, cable conduits and metal enclosures of electrical equipment.

The recommended shape and minimum size of conductors for use above and below ground are given below and should be used unless otherwise indicated.

Above ground
GI Strip

Below ground
20 x 3 mm

32 x 6 mm

Down conductors shall be provided for every 30 m of perimeter or one for first 100 sq. m plus ne more for every additional 300 sq.m or part thereof. Out of the two cases, smaller of two shall be applicable.

Joints as far as possible, should be avoided and wherever joints are necessary, they shall be mechanically and electrically effective. The joints may be clamped, screwed, bolted, riveted, sweated, braced or welded. No joints should be made below ground.

The lightning conductors shall be secured at not more than 2 m apart for horizontal run and 1.0 m for vertical run by fasteners resistive to corrosion. Earth down conductor shall have an independent earth termination. The interconnection of all the earth terminals shall be preferred. It should be capable of isolation for testing purpose by "Testing Joints". The whole of lightning protective system should have combined resistance to earth not exceeding 10 ohm before any bonding has been affected to metal in or on a structure of surface below ground. In addition the resistance from the earth electrode to the nearest test clamps shall not exceed 0.2 ohm.

8.0 GENERAL INSTRUCTIONS ON ELECTRICAL PRE-COMMISSIONING ARRANGEMENT AND TESTS

8.1 All tests shall be carried out by the Contractor using his own instruments , testing equipments as well as qualified testing personnel .

8.2 The result of all tests shall conform to the specification requirements as well as any specific performance data guaranteed during finalization of contract .

8.3 Cable termination and jointing.

Termination and jointing of alluminium conductor power cable shall be by means of compression method using compression type alluminium lugs . Copper conductor control cables shall be terminated directly into screwed type terminals provided in the equipment . Wherever control cables are to be terminated by means of terminal lugs , the same shall be of tinned copper compression type .

8.4 Testing and Commissioning of Electrical Equipment Installation

8.4.1 General

The testing and commissioning for all electrical equipment at site shall be according to the procedure laid down below .

All electrical equipments shall be tested , installed and commissioned in accordance with the latest relavant standards and codes of practice published by Indian Standard Institution wherever available and stipuylations and in relevant general specifications .

8.4.2 Polarity test of Switches

In a two wire installation a test shall be made to verify that all switches in every circuit have been fitted in the same conductor throughout and such conductor shall be labelled or marked for connection to the phase conductor or to the non earthed conductor of the supply .

A verification of polarity shall be made and shall be ensured that all fuses and single pole control devices are connected in the live conductor only and for socket outlets that the wiring is correctly connected .

8.4.3 Earth Electrode Resistance Test

The earth resistance of the earth electrode is to be measured by an earth testing 'Megger' provided with a direct reading Ohmmeter . Readings obtained in ohms shall not be more than 1 ohms .

If necessary , with the approval of Engineer –in-Charge additional electrode shall be provided away from the resistance and linked to the electrode system .

8.4.4 Insulation resistance test should be made before the installation is permanently connected to the Electric supply . The insulation resistance to be measured by using an approved portable hand operated insulation resistance tester reading directly in Ohms .

8.4.5 Earth continuity test

The earth continuity conductor should be tested for continuity to ensure that there is no breakage or loose connections in the system .

8.4.6 The installation with fittings complete shall before the current is switched on satisfactorily pass the following tests a) All lamps and appliances having been connected and all witches 'ON' a pressure of not less than twice the working pressure (subject to a limit of 500 V) shall be applied and insulation resistance of the whole or any part of installation to earth , must not

be less than 50 Mega Ohms divided by the number of points .

- b) With all lamps and appliance removed from the circuit and all switches 'ON' a similar test between poles shall satisfy the above requirement
- c) Test to ensure that all single pole switches are on the live side of the apparatus they control .
- d) Insulation test in accordance with Indian Electricity rules
- e) Earth continuity and resistance test in accordance with IS specification and Indian Electricity rules
- f) Load balancing test with tong tester .

8.4.6 **Test Certificates**

Type and routine test certificates for the factory build assembly of board / panels , flameproof enclosures and for all competent parts and other equipments eg. Switches , MCBs , fuses , conduits , lighting wires , light switches etc. shall be furnished

APPROVED LIST OF MATERIALS FOR ELECTRICAL WORKS

Sl. No.	ITEMS		MAKERS / BRANDS
1	MCB Distribution Board with MCB Isolator / MCB / ELCB / RCCB/ RCBO	:	HAGER / HAVELS / LEGRAND /SCHNEIDER/ABB/SEIMENS/L&T.
2	PVC INSULATED SINGLE CORE MULTISTRANDED FLEXIBLE COPPER CONDUCTOR 1100V GRADE FRLS	:	FINOLEX / POLYCAB / RR CABLE
3	PVC INSULATED TELEPHONE CABLES & WIRES (ARMOURED / UNMOURED)	:	DELTON / NETCO
4	UTP CABLE	:	D-LINK / AVAYA
5	CONDUIT	:	
	a) EI (MS) CONDUIT		BEC / SUPREM / KK A.K.G / PRECISION /
	b) PVC (RIGID) CONDUIT		SUPREME / AKG / PRECISION
6	6/16A SWITCH, SOCKET, BELL PUSH, TELEPHONE & TV SOCKET ETC. (MODULAR)	:	WIPRO FLAT SWITCH(PLATIA) /HAGER (Insysta)/ LEGRAND/ HAVELS
7	CEILING ROSE	:	ANCHOR / PRECISION / SSK
8	SINGLE PHASE MOTOR STARTER UNIT	:	NORTHWEST / ELECTRON DEVICE
9	LIGHTING FIXTURES (INDOOR)	:	PHILIPS / WIPRO / CORMPTON / JAQUAR/HAVELLS/ BAJAJ
10	LAMPS (CF & FL.TUBE)	:	PHILIPS / OSRAM / BAJAJ
11	CEILING FAN / WALL BRACKET FAN	:	CROMPTON / POLAR /HAVELS
12	EXHAUST FAN	:	CALCUTTE / EPC / CROMPTON / POLAR / HAVELS
13	CURRENT TRANSFORMER	:	KPPA / A.E.
14	INCATING METERS (AMMETER/VOLTMETER/FREQUENCY METER ETC. (ANALOG TYPE)	:	A.E / IMP
15	SELECTOR SWITCH (AMMETER / VOLTMETER)	:	KAYCEE / HPL / VAISHNO/L&T / SCHNEIDER
16	INCATING LAMP	:	VAISHNO / BINAY
17	MCCB (MP THERMAL I MAGNATE RELEASE)	:	L&T / SIEMENS / HAGER/ABB/LEGRAND / SCHNEIDER.
18	SWITCH DISCONNECTOR FUSE (HRC) UNIT (OPEN & SS ENCLOSURE UNIT)	:	L&T / ABB / SIEMENS
19	ON – LOAD CHANGE OVER SWITCH (OPEN & SS ENCLOSURE UNIT)	:	L&T / ABB / LEGRAND
20	XIPE – ARMOURED AL CABLE	:	NICCO / GLOSTER
21	MCB CHANGE OVER ISOLATO(CENTRE OFF)	:	ABB / HAVELLS / LEGRAND

22	END TERMINATION ACCESSORIES		DOWELLS/ USHA/ BRECCO/ COSMOSE/ COMMENT
23	ASTRO-TIMERS		SCHNEIDER/ LEGRAND ,L&T , GIC
24	SURGE- PROTECTION (SPD)		SCHNEIDER/LEGRAND / PHONEX / CONTACT.
25	POWER CONTACTORS.		SCHNEIDER (TeSYS), ABB, SIEMENS.
26	METAL CLADED POWER PLUG & SOCKET (FLUSH TYPE)	:	LEGRAND / SIEMENS

Note: 1) Architects reserves the right to insist contractor for use of any specific brand / make etc.
2) In case any materials are not available from the above brands, Architect will suggest names of other brands / manufacturers and contractor will have to abide by the same.

Date:

Signature of Contractor with Seal



LIST OF ENCLOSURES

ANNEXURE NO.	PARTICULARS	TICK IF ENCLOSED
Proforma - I	General Information of the Organization	
I	Documentary Proof showing Registered Address	
II	EMD or Valid certificate from MSME and NSIC issued by Govt. of India	
III	Documentary Proof showing Year of Establishment of the Firm	
IV	Evidence showing Constitution of the Firm	
V	Certified Copies mentioning Name of Proprietor / Partner / Director of the Firm	
VI	Document showing appointment of Authorized Signatory of the Firm	
VII	Document showing details of Registration with Registrar of Firms / Companies	
VIII	Certificate of being registered as MSME Organization, if mentioned.	
IX	Empanelment Letters	
X	Document showing experience in the field	
XI	Audited Balance Sheet & Profit & Loss Statement for FY 2019-20, FY 2020-21 & FY 2021-22.	
XII	Copy of Cancelled Cheque	
XIII	Copy of Solvency Certificate issued by Scheduled Commercial Bank	
XIV	Documentary Proof of Registration in Various Govt. Authorities (PAN, GSTIN, Labour License, ESI & EPF)	
XV	Copies of Income Tax Returns of last three financial years	
XVI	FORM – A along with Copies of Work Order / Completion Certificate of the Works Completed in last 7 years to satisfy eligibility criteria mentioned in the Notice	
XVII	FORM – B along with Copies of Work Order under Execution issued by PSBs / PSUs / Central Govt. Departments / State Govt. Departments	
XVIII	FORM – C	
XIX	FORM – D	
XX	FORM – E	
XXI	FORM – F	
XXII	Self-Declaration – No Blacklisting	

NOTE: APART FROM ABOVE, ANY OTHER DOCUMENT DEMANDED BY BANK OR THE TENDERER THINKS IT IS NECESSARY TO SUBMIT TO SATISFY PRE-QUALIFICATION CRITERIA HAS TO BE ENCLOSED WITH TECHNICAL BID

Place :

Date :

SIGNATURE

NAME & DESIGNATION

SEAL OF ORGANISATION



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