

NIT NO	AMR20211021
DATE	21.10.2021



STATE BANK OF INDIA

AMARAVATI LOCAL HEAD OFFICE

INVITES e-TENDERS

IN A TWO BID THROUGH E-TENDERING PROCESS.

Contractors who are on the panel of SBI, Hyderabad Circle, (LHO) in the Civil category (50 Lakhs and above) are only eligible. (Contractors should submit proof of the same)

FOR

**PROPOSED EXTERNAL CIVIL WORKS AT KADIRI MAIN BRANCH, KADIRI,
ANANTAPUR DIST, ANDHRA PRADESH.**

Last date for submission of E Tender: 3.00 P.M. (IST) on 27.10.2021

Opening of E Tenders: 3:30 P.M. (IST) on 27.10.2021

Architect



M/S abhikram-s

**architects, interior designers, urban
planners valuers & project managers**

#3-6-134 FLAT NO 302

**SVC ROYAL DM APARTMENTS
STREET NO 18, HIMAYATNAGAR
HYDERABAD-500029**

Ph.no 040-35561296, abhikramarchitects@gmail.com

**The Asst. General Manager,
State Bank of India, P&E Dept.,
LHO Amaravati, 2nd floor,
Gunfoundry, Abids,
Hyderabad-500001
Ph: 040-23387364, 365**

NOTICE INVITING TENDER (NIT)

NAME OF WORK: PROPOSED EXTERNAL CIVIL WORKS AT KADIRI MAIN BRANCH, KADIRI, ANANTAPUR DIST, ANDHRA PRADESH. online E-Tenders are invited from CIVIL contractors who are on the banks approved panel of SBI, Hyderabad Circle, (LHO) in the Civil category (50 Lakhs and above) (contractors to furnish proof of empanelment and its validity)

1	Name of the work	e-TENDER NOTICE FOR PROPOSED EXTERNAL CIVIL WORKS AT KADIRI MAIN BRANCH, KADIRI, ANANTAPUR DIST, ANDHRA PRADESH
2	Date and Time where tender forms are available (From _____ to _____)	FROM 21.10.2021 to 27.10.2021 For information: Refer Bank's web site www.sbi.co.in under "procurement news". To apply refer https://etender.sbi/
3	Time and last date of submission of online e-Tender	Up to 3.00 PM on 27.10.2021
4	Place, Time & Address for submission of e tender/contact person /telephone no/email address.	Up to 3.00 PM on 27.10.2021 A) Tender documents at https://etender.sbi/ B) EMD at the Address: State Bank of India, P&E Dept., 2 nd Floor, SBI Amaravati LHO Building, Gunfoundry, Abids, Hyderabad – 500 001 Ph: 040-23387364, 365 e- mail id: agmpe.lhoand@sbi.co.in
5	Date, Time and Place of opening of eTenders (Representatives of Bidder may be present during opening of Bids. However, Bids would be opened even in the absence of any or all the bidder's representatives)	On 27.10.2021, 3:30 PM State Bank of India, P&E Dept., 2 nd Floor, SBI Amaravati LHO Building, Gunfoundry, Abids, Hyderabad – 500 001 Ph: 040-23387364, 365 e- mail id: agmpe.lhoand@sbi.co.in
6	Quantum of Security Deposit _____ (percentage) drawn in favour of _____ Payable at _____. Amount of bank guarantee.	1. Initial Security Deposit (ISD) – 3 % of the Tender value in the form of DD-Drawn in favour of Asst. General Manager, P&E, SBI, LHO Amaravati payable at Hyderabad. 2. Retention Money- Deductible in running bills @ 10% of the value of work and Total deductible is 3% of value of work including ISD.
7	Estimated cost	Rs. 31.94 LAKHS + GST
8	Terms of payment of Bills, if any (specify the minimum value of work for payment of running account bills)	1) Minimum value of completed work for Running Bills is Rs.16.00 LAKHS 2) No Advance will be paid.
9	(Penalty clause) Liquidated Damages	@ 0.5% of the value of work per week of delay subject to a maximum penalty of 5% of the value of work would be strictly imposed.
10	Stipulated time for completion of the work/supply.	45 DAYS.
11	Defects Liability Period	1 Year (12 months) after completion of final bill payment.
12	Validity period of the tender.	90 days from last date for receipt of tender
13	Eligible Taxes	A) Income Tax will be deducted at source as per Govt. Guidelines. B) Reimbursement of GST will be made only on submission of

		<p>proper GST invoice as per applicable GST provisions/Rules. The contractor should comply with the following -</p> <ul style="list-style-type: none"> • Contractor should have GST Registration Number. • Invoice should specifically/separately disclose the amount of GST levied at applicable rate as per GST provisions/Rules. • In case of Correction in the bills after scrutiny, contractor should submit fresh bills for payment. • Contractor should timely file his GST return in accordance with GST provisions to enable the bank to claim the credit of GST paid to the contractor. • The GST Number of State Bank of India are For Andhra Pradesh state -37AAACS8577K1ZO For Telangana State -36AAACS8577K1ZQ For Puducherry U.T - 34AAACS8577K1ZU
14	Electronic Payment	Electronic payment shall be preferred. All the contractors must furnish details such as 1) Name of their bank 2) Name of their branch 3) Account number 4) Name of the account holder as in the bank account 5) IFSC No of the branch 6) PAN number.
15	Agency for arranging e-tender/online bidding	e-Procurement Technologies Limited, Ahmedabad. 1. Mr. Nandan Valera: - nandan.v@eptl.in-9081000427 2. Mr. Fahad Khan- fahad@eptl.in-9904406300 3. Mr. Shaikh Nasiruddin- shaikh@eptl.in- 9510812960 You are requested to contact the agency for further guidance on E tendering
16	Any additional Information	The quoted rate should be inclusive of materials, labour, wages, fixtures, transportation, installation, all taxes (excluding GST), wastages, Octroi, machinery, temporary works such as scaffolding, cleaning, overheads, profit, statutory expenses, incidental charges, and all related expenses to complete the work
17	Bidder Contact Details.	Bidder to provide following information. 1) Name of Company. 2) Contact Person. 3) Mailing address with Pin Code. 4) Telephone number and Fax number. 5) Mobile Number and E-MAIL.

Only authorized person carrying authority letter or power of attorney with him/ her along with photo ID and address proof shall be allowed to sign the document/Application/attend any meeting/ bid opening.

Incomplete offers will not be entertained. Conditional proposals are liable for disqualification.

The SBI reserves their rights to accept or reject any or all the applications, either in whole or in part without assigning any reason(s) therefor and no correspondence shall be entertained in this regard.

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

Corrigendum if any would be posted on the website only. Hence, applicants are advised to visit website regularly for above purpose.

The contractor have to provide their E-mail id, contact nos. and postal address in the bid documents. Henceforth, all official communication form Bank shall be through E-mail and SMS also.

ASST. GENERAL MANAGER (P&E)

Signature of the Contractor

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INSTRUCTIONS TO CONTRACTORS

1.0 Scope of Work

Sealed Tenders are invited by State Bank of India for “**PROPOSED EXTERNAL CIVIL WORKS AT KADIRI MAIN BRANCH, KADIRI, ANANTAPUR DIST, ANDHRA PRADESH**”

1.1 Site and Its Location

The proposed work is to be carried out at KADIRI MAIN BRANCH, ANANTAPUR DIST, ANDHRA PRADESH

1.2 Clients/Architects reserve to itself the right to accept or reject any tender without assigning any reason for doing so and do not bind itself to accept the lowest or any other tender.

1.3 General Specifications are for guidance only. The latest ISI codes and Specifications and mode of measurements will be referred to during execution.

1.4 The term "THE ARCHITECTS" in the said conditions shall mean M/S ABHIKRAM-S Architects, Interior Designers, Urban Planners, Valuers & Project Managers. #3-6-134, Flat No-302, SVC Royal DM Apartments, Street No-18, Himayat Nagar, Hyderabad-500029.

1.5 Employer or Client shall mean SBI.

1.6 Tenders are to be quoted electronically in <https://etender.sbi/>. For details refer NIT.

2.0 Tender Documents

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

- Instructions to tenderers
- General Conditions of Contract
- Special Conditions of Contract
- Additional Conditions for Electrical Installation
- Technical Specifications
- Drawings
- Priced Bid and Estimated BOQ

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

- Price Bid and Estimated BOQ
- Technical Specifications
- Additional Conditions for Electrical Installation
- Special Conditions of Contract
- General Conditions of Contract
- Instructions to Tenderers

2.3 Complete set of tender documents including relative drawings can be downloaded from <https://etender.sbi/> during the period mentioned in the NIT.

2.4 The tender documents are not transferable.

3.0 Site Visit

3.1 The tenderer must obtain himself on his own responsibility and his own expenses all information and data which may be required for the purpose of filling this tender document and enter into a contract for the satisfactory performance of the work. The Tenderer is requested satisfy himself regarding the availability of water, power, transport and communication facilities, the character quality and quantity of the materials, labour, the law-and-order situation, climatic conditions local authorities requirement, traffic regulations etc;

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

4.0 Initial Security Deposit

The successful tenderer will have to submit a sum equivalent to 2% of contract value by means of D/D drawn in favour of State Bank of India within a period of 15 days of acceptance of tender.

5.0 Security Deposit

5.1 Total security deposit shall be 3% of contract value. Out of this 2% of contract value is in the form of initial security deposit. Balance 1% shall be deducted from the running account bill of the work at the rate of 10% of the respective running account bill i.e. deduction from each running bill account will be 10% till total 3% of contract value is reached.

Out of Total Security Deposit 50% of the total security deposit amount shall be refunded without interest to the contractor on issuance of virtual completion certificate by the Architect/Bank and the Contractor's removal of his materials, equipment, labour force, temporary sheds, stores, site office etc. and on receipt of physical possession of the site by the Bank. The remaining 50% of the total security deposit may be refunded 15 days after the end of defects liability period, provided he has satisfactorily carried out all the works and attended to rectification of all defects in accordance with the conditions of the contract. In case of failure on the part to do so, the cost of rectifying the defects through any other agency shall be deducted from the amount of security deposit due to the contractor.

Completion of work i) The work shall be considered as complete only when the certificate of virtual completion is issued by the architects/Bank. ii) The 'defects liability period' as prescribed in the contract shall commence only from date of such virtual completion. iii) Any defect that may appear within the defects liability period shall be rectified by the contractor within reasonable time on receipt of necessary instructions from Bank/SBI to that effect.

5.2 No interest shall be paid to the amount retained by the Bank as Security Deposit.

5.3 All compensation or other sums of money payable by the Contractor to Clients under the terms of this contract may be deducted from the security deposit, or from any sum that may be or may become due to the Contractor on any account whatsoever and in the event of the Security Deposit being reduced by reasons of any such deductions, the Contractor shall within 7 days of being asked to do make good in by DD any sum which have been deducted from his security deposit.

6.0 Signing of Contract Documents

The successful tenderer shall be bound to implement the contract by signing an agreement and conditions of contract attached herewith within 15 days from the receipt of intimation of acceptance of his tender by the Bank. However, the written acceptance of the tender by the Bank will constitute a binding agreement between the Bank and successful tenderer whether such formal agreement is subsequently entered into or not.

7.0 Completion Period

As mentioned in NIT

8.0 Validity of Tender

Tenders shall remain valid and open for acceptance for a period of 3 (Three) months from the date of opening price bid. If the tenderer withdraws his/her offer during the validity period or makes modifications in his/her original offer which are not acceptance to the Bank without prejudice to any other right or remedy the Bank shall be at liberty to forfeit the EMD.

9.0 Liquidated Damages

The liquidated damages shall be 0.5% per week subject to a maximum of 5% of contract value.

10.0 In case, any of such contractors (quoted same tender amount during initial bidding or subsequent re bidding) refuses to submit revised offer, it shall be treated as 'withdrawal of tender' by the contractor before acceptance. The EMD of such contractors shall be forfeited.

1. TENDER FORM

PROJECT: PROPOSED EXTERNAL CIVIL WORKS AT KADIRI MAIN BRANCH, KADIRI, ANANTAPUR DIST, ANDHRA PRADESH STATE

Dear Sirs,

I/We the undersigned have carefully gone through and clearly understood after visiting the site and the Tender drawings and tender documents comprising of the tender form, Notice to contractors, and conditions for building contract, Special Conditions, Specifications and Schedule of Probable quantities and Draft Agreement prepared by your Architects **M/S ABHIKRAM-S Architects, Interior Designers, Urban Planners, Valuers & Project Managers. #3-6-134, Flat No-302, SVC Royal DM Apartments, Street No-18, Himayat Nagar, Hyderabad-500029.**

I/We do hereby undertake to execute and complete the whole or part of the work (as desired by you) at the respective rates which/I/We have quoted for the respective items of the Probable Bill of Quantities and at which rate the items specified amount to Rs. **31.94 LAKHS**

In the event of this Tender being accepted I/We agree to enter into an agreement as and when required and execute the contract according to your form of Agreement, within 15 days of receipt of work order, in default thereof, I/We do hereby bind my-self/ourselves to forfeit the aforesaid initial security deposit.

I/We further agree to complete the work covered in the said schedule of quantities within the time mentioned in NIT from the 15th day reckoned from the date of issue of the work order to commence the work or on which contractor is instructed to take possession of the site, whichever is later.

I/We agree not to employ Sub-contractors other than those that may be specifically approved by your Architects for this contract work.

I/We agree to and to get the work, workers, employees (of contractor, Architect & Employer) engaged on the work at site and all materials at site for execution of the work shall be insured comprehensive insurance including fire/accidents/ rain/ floods/riots/CAR policy (contractor's all risk insurance policy) and the insurance shall cover the period from date of start of work to date of actual completion of work plus 3 months. In case part work is taken over by the Employer before final completion of the whole work, such parts may not be covered by the insurance from the date of taking over that part of work by the Employer. Draft Insurance deed will be got vetted by the Architect, before obtaining the same. All the rates quoted by me/ us are inclusive of the same in full and nothing extra shall be claimed anytime on account of any of these.

I/We agree to pay Income tax, to be deducted at source, at the rate prevailing from time to time on the Gross value of the work done, and the rates quoted by me/us are inclusive of same.

Yours faithfully,

Contractor's Signature

Address:

Date:

2. NOTICE TO CONTRACTOR

ADDRESS:

PROJECT: PROPOSED EXTERNAL CIVIL WORKS AT KADIRI MAIN BRANCH, KADIRI, ANANTAPUR DIST, ANDHRA PRADESH STATE

Dear Sirs,

1. On behalf of SBI we have pleasure in inviting tender for the aforesaid work.
2. ***The scope of work broadly as given below is for PROPOSED EXTERNAL CIVIL WORKS AT KADIRI MAIN BRANCH, KADIRI, ANANTAPUR DIST, ANDHRA PRADESH STATE***
3. **Tender Documents should be filled and uploaded/quoted on the site of <https://etender.sbi/>**
4. The tenderer must obtain for himself, on his own responsibility and at his own expenses, all the information which may be necessary for the purpose of filling this tender and for entering into a contract for the execution of the same and must examine the drawings and inspect the site of the work and acquaint himself with all local conditions and matters pertaining thereto.
5. Each page of the tender document is required to be signed by the person or persons submitting the tender in token of his/their having acquainted himself/themselves with the General conditions etc., as laid down. Any tender with any of the documents not so signed will be rejected.
6. The tender shall be valid for a period of 90 days from the date of opening.
7. TOTAL SECURITY DEPOSIT: shall comprise of:
 - a. Initial Security deposit
 - b. Retention money
- 7.1 The intending tenderer shall deposit SD amount as mentioned in NIT by Demand Draft as a guarantee of good faith, which amount shall be forfeited as liquidated damages, in the event of any evasive/direct refusal or delay in starting the work and or signing the contract.
- 7.2 **The successful tenderer will have to pay a sum equivalent to 3% of his contract value, as Security Deposit (SD) by means of a D.D./Banker's cheque in favor of Regional Manager, Anantapur urban RBO, payable at Anantapur within 14 days from the date of issue of work order to commence work. The Security deposit thus paid shall be held by the State Bank of India as Security deposit, for due execution and fulfillment of the contract, till the completion of the work and defect liability period in all respects and shall not bear any interest.**
- 7.3 Together with the money paid above, further retention of 10% of the value of the work done will be deducted from every running bill, till total retention, including initial SD paid earlier, comes to 3% of the contract value, and same shall be held by the Bank as Total Security Deposit. On the Architect's certifying the completion of work, the total security deposit shall be retained in the manner stated elsewhere for a further period of twelve months after the completion date recorded in completion certificate, issued by the Architects and agreed to by the Bank.
8. Within 7 Days of the receipt of intimation from the Architects of the acceptance of his/their tender, the successful tenderer shall be bound to sign an agreement, on a stamp paper in accordance with the Draft Agreement and conditions of contract attached herewith, but the work order or the written acceptance of a tender by the Employer will constitute a binding agreement between the Employer and the person tendering whether such formal contract is or not signed by the contractor.

Signature of the Contractor

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9. All compensation or other sums of money payable by the contractors to the clients, under the terms of this contract, may be deducted from the Security Deposit or from any sum that may be or may become due to the contractor on any account whatsoever, and in the event of the Security deposit being reduced by reasons of any such deductions, the contractor shall within 15 days of being asked to do so make good in cash or cheque, any sum which have been deducted from his security deposit.
10. The rates quoted by the Contractor shall include all eventualities, such as heavy rain, sudden floods, accidents, fire, riots etc., which may cause damage to the executed work or which may totally wash out the work. Until the completion certificate is issued to the Contractors, neither the Architect nor the clients will be responsible for such damage or wash out of the construction work.
11. Time is the essence of the contract. The work should be completed **within the time mentioned in NIT** from the date of commencement. The date of commencement shall be within ONE day after confirmation.
 - a) The day two weeks from the date of issue of work order.
Or
 - b) The day on which the contractor receives the possession of the site whichever is later.
OrThe successful contractor will have to give a CPM/PERT chart of various activities of work to be done so that the work gets completed within the stipulated time. The chart shall be submitted within 15 days from the date of acceptance of the tender.
12. If the contractor fails to complete the work by the Scheduled date of completion or within any sanctioned extended time, he will have to pay liquidated damages at the rate of 0.50% of contract amount for each week of delay the work remains incomplete beyond the completion (Original/extended date), subject to maximum of 5% of the contract value (without extra items).
13. The quantities contained in the Schedule are only indicative. The work as actually carried out and done will be measured up from time to time, for which payment will be made subject to the terms and conditions of contract.
14. The unit prices shall be deemed to be fixed prices. In case of extra items, a record of labour charges paid shall be maintained and shall be presented every month for extra/substituted items regularly to the Architects for checking. The settlement will be made based on figures arrived at jointly and taking into account, unit prices of items of work mentioned in the contract assigned to the successful tenderers. In case, of extra items, where similar or comparable items are quoted in the tender, extra rates shall invariably be based on those tender rates to the extent reasonable.
15. SBI do not bind themselves to accept the lowest or any tender and reserve to themselves the right to accept or reject any or all tenders, either in whole or in part, without assigning any reason whatsoever for doing so.
16. No employee of the bank or SBI is allowed to work as a contractor for a period of two years of his retirement from service, without the previous permission of the bank or SBI. This contract is liable to be cancelled, if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of the bank or SBI as aforesaid before submission of the tender or engagement in the contractor's service.
17. The tenderer, apart from being a competent contractor must associate himself with agencies of the appropriate class who are eligible to tender for (1) Electrical (2) Air-conditioning works (3) Fire fighting systems & (4) Interiors (fixed furniture), as the case maybe.

ARCHITECTS:

**M/S abhikram-s
architects, interior designers, urban planners
valuers & project managers
#3-6-134 FLAT NO 302, SVC ROYAL DM APARTMENTS
STREET NO 18, HIMAYATNAGAR
HYDERABAD-500029
ph.no 040-35561296; abhikramarchitects@gmail.com**

3. ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT made the _____ day of _____ 2021
between _____

of _____

(hereinafter called the "Employer") of the one part and _____
of _____ (hereinafter called "The Contractor") of the other part, where
as the Employer is desirous of getting the work of "**PROPOSED EXTERNAL CIVIL WORKS AT KADIRI MAIN
BRANCH, KADIRI, ANANTAPUR DIST, ANDHRA PRADESH STATE**" executed and has caused drawings,
conditions of contract, specifications and schedule of quantities etc., describing the works prepared by **M/S
ABHIKRAM-S Architects, Interior Designers, Urban Planners, Valuers & Project Managers. #3-6-134, Flat
No-302, SVC Royal DM Apartments, Street No-18, Himayat Nagar, Hyderabad-500029.**
AND WHEREAS the SAID DRAWINGS numbered as per list attached inclusive of and the conditions of contract,
specifications and schedule of quantities etc., have been signed by or on behalf of the parties hereto.

AND WHEREAS THE CONTRACTOR has agreed to execute upon and subject to the conditions set forth in the
Schedule hereto (hereinafter referred to as "Said Conditions") the works shown upon the said drawings and
described in the same specifications and included in the said schedule of quantities for such sum as may be
ascertained to be payable in terms of the Bills of Quantities, and which sum is estimated to be Rs. _____
(Rupees _____) (hereinafter referred to as "Said
Contract Amount").

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the said sum to be paid at the times and in the manner set forth in the said conditions, the contractor shall upon and subject to the said conditions, execute and complete the work shown in the said drawings and described in the said specifications.
2. The term "Architect" in the said conditions shall mean the said **M/S ABHIKRAM-S Architects, Interior Designers, Urban Planners, Valuers & Project Managers. #3-6-134, Flat No-302, SVC Royal DM Apartments, Street No-18, Himayat Nagar, Hyderabad-500029.** or in the event of their ceasing to be the Architect for the purpose of this contract, such other person as shall be nominated for that purpose by the Employer, not being a person to whom the contractor shall object for reasons considered to be sufficient by the Arbitrator mentioned in the said conditions provided always that no persons subsequently appointed to be the Architect under this contract shall be entitled to disregard or over-rule any previous decision or approval or direction given or expressed by the Architect for the time being.
3. Tender documents containing Notice Inviting Tender(NIT), work order, Contractors acceptance letter, Notice to the Contractor, General Conditions of Contract, Appendix thereto, Special Conditions of Contract, Specifications and Schedule of Quantities with the rates entered therein, drawing shall be read and studied as forming part of this agreement and the parties hereto shall respectively abide by and submit themselves to the conditions and stipulations and perform the agreement on their part respectively in such conditions contained.
4. The contract is neither a fixed lumpsum contract or a piece work contract but is a contract to carry out work in respect of the entire works to be paid for according to actual measured quantities, including variations from BOQ at the rates contained in the Schedule of rates and Probable bill of quantities or as provided in the said conditions.
5. The Employer through the Architect reserves to himself the right of altering the drawings and natures of the work, of adding/substitution to or omitting any items of work or having portions of the same carried out through alternate agencies without prejudice to this contract.
6. Time shall be considered as the essence of this agreement and the contractor hereby agrees to commence the work soon after the site is handed over to him but within 15 days reckoned from the date of issue of work order to execute the work, as provided for in the said conditions and complete the entire work in **90 days** subject to nevertheless to the provisions for extension of time.

Signature of the Contractor

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7. This agreement and contract shall be deemed to have been made in Anantapur and any questions or dispute rising out of or in any way connected with this Agreement and Contract shall be deemed to have arisen in Anantapur and only the courts in Anantapur shall have jurisdiction to determine the same. The limitation period will be 90 days from the date of dispute having arisen.

AS WITNESS our hand this _____ day of _____ 2021

Signed by the said in the presence of:

WITNESS : SIGNATURE

NAME :

ADDRESS : EMPLOYER

WITNESS : SIGNATURE

NAME :

ADDRESS :

4. APPENDIX TO GENERAL CONDITIONS OF CONTRACT

SL No	Description	Remarks
1	Initial Security Deposit (ISD)	3% of contract value.
2	Period of completion	90 Days
3	Defects Liability period	12 months after completion as recorded in the completion certificate.
4	Agreed Liquidated Damages	0.50% of contract amount per week of delay subjected to a maximum of 5% of contract value.
5	Period of final measurement	One months after completion as recorded in the completion certificate
6	Minimum value of work to be Executed for issue of interim Certificates for making payment	Minimum Rs.16.00 Lakhs
7	Retention money from each bill	10% of gross value of each interim bill, subject to max. 5% of contract value
8	Total retention money including Earnest money and initial security Deposit.	5% of the contract value
9	Release of Security deposit after Virtual completion.	50% of the total security to be released along with final certificate of payment, but only after removing all his materials, equipment, labour, huts/force, temporary sheds/stores, all his installations, machinery etc., from the site. Balance payment to be released on completion of defects liability period of 12 months
10	Period for honoring Architect's certificate	20 working days from date of receipt of Architect's certificate of payment for interim bills and 30 working days for final certificate.

WITNESS :

DATE :

SIGNATURE OF THE CONTRACTOR WITH DATE

5. 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 (relevant IS) and under the direction of Employer / Architect.

5.1 INTERPRETATION

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

5.1.1 Employer:

The term Employer shall denote SBI (on behalf of SBI) with their Local Head office at Abids, Gunfoundry, Hyderabad and any of its employee's representative authorized on their behalf.

5.1.2 Architects / Consultants:

The term Architects shall mean M/s. ABHIKRAM-S Architects, Interiors designers, Valuers, Urban Planners, Project Managers. #3-6-134, Flat no 302, SVC ROYAL DM Apartments, Street no-18, Himayatnagar, Hyderabad-500029 or in the event of his / their ceasing to be the Architects for the purpose of this contract such other persons as the Employer shall nominate for the purpose. The Architect with the approval of the Bank may engage a local Architect /Consulting Engineer for the supervision and co-ordination of the work at the site. He will be considered a representative of the Architect. The Bank may also engage a Project Management Consultant for the supervision of the work. He will be designated by the term PMC and works as Employer's agent at the site.

5.1.3 Contractor:

The term Contractor shall mean _____ (Name and address of the Contractor) and his/ their heirs, legal representative, assigns and successors.

5.1.4 Site:

The site shall mean the site where the works are to be executed Kadiri main branch Building plan including any building and erections thereon allotted by the Employer for the Contractor's use.

5.1.5 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 Employer during the execution of the work.

All drawings relating to work given to the Contractor together with a copy of schedule of quantities are to be kept at site and the Employer/Architect / PMC shall be given access to such drawings or schedule of quantities wherever necessary.

In case any detailed Drawings are necessary Contractor shall prepare such detailed drawings and / or dimensional sketches therefore and have it confirmed by the Employer / Architects / PMC as case may be prior to taking up such work.

The Contractor shall ask in writing for all clarifications on matters occurring anywhere in drawings, specifications, and schedule of quantities or to additional instructions at least 10 days ahead from the time when it is required for implementation so that the Employer may be able to give decision thereon.

5.1.6 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 status.

5.1.7 The Schedule of Quantities: shall mean the schedule of quantities as specified and forming part of this contract.

5.1.8 Priced Schedule of Quantities: shall mean the schedule of quantities duly priced with the accepted quoted rates of the Contractor.

- 5.1.9 Works:** Shall mean the works to be executed in accordance with the contract specifications and schedule of quantities.
- 5.1.10 Contract:** shall mean the Articles of Agreement, the general conditions special conditions, the appendix, the schedule of quantities, specifications and drawings attached here to and duly signed.
- 5.1.11. Contract Price:** Shall mean the sum named in the tender subject to such additions thereto or deductions there from as may be made under the provisions hereafter contained.
- 5.1.12. 'Notice in Writing'** or written notice shall mean a notice in writing, type or printed characters sent (unless delivered personally or otherwise provided to have been received) by registered post to the last known private or business address or registered office of the addressee and shall be deemed to have been received when in the ordinary course of post, it would have been delivered.
- 5.1.13. 'Virtual Completion'** shall mean the completion of works in the opinion of the Architect and Employer ready for use.
- 5.1.14.** Words importing persons include firms and corporations. Words importing the singular only, also include the plural and vice verse where the context requires.

5.2.0 SCOPE

The work consists of **PROPOSED EXTERNAL CIVIL WORKS AT KADIRI MAIN BRANCH, KADIRI, ANANTAPUR DIST, ANDHRA PRADESH STATE** in accordance with the "drawings" and "schedule of quantities." It includes furnishing of all materials, labour, tools and equipment and management necessary and incidental to the construction and completion of work. All work, during its progress and upon the completion, shall conform to the lines, elevations and grades as shown on the drawings furnished by the Employer/Architect. Should any detail essential for efficient completion of the work be omitted from the drawings and specifications it shall be the responsibility of the Contractor to inform the Employer/Architect and to furnish and install such details with Employer's / Architect's concurrence, so that upon completion of the proposed work the same will be acceptable and ready for use. Employer or his agent (PMC) / Architects may in their absolute discretion issue further drawings and / or written instructions, details, directions and explanations, which are, hereafter collectively referred to as "The Employer's / Architect's instructions" in regard to:

- 5.2.1** The variation or modification of the design quality or quantity of works or the addition or omission or substitution of any work.
- 5.2.2** Any discrepancy in the drawings or between the schedule of quantities and / or drawings and / or specification.
- 5.2.3** The removal from the site of any defective material brought thereon by the Contractor and the substitution of any other material thereof.
- 5.2.4** The demolition removal and / or re-execution of any work executed by the Contractor/s.
- 5.2.5** The dismissal from the work of any persons employed there upon.
- 5.2.6** The opening up for inspection of any work covered up.
- 5.2.7** The rectification and making good of any defects under clauses hereinafter mentioned and those arising during the maintenance period (Defect Liability Period). The Contractor shall forthwith comply with and duly execute any work comprised in such Employer's or his agent / Architect's instructions, provided always that verbal instructions, directions and explanations given to the Contractor's or his representative upon the works by the Employer's or his agent/Architects shall, if involving a variation, be confirmed in writing to the Contractors within seven days. No works for which rates are not specifically mentioned in the priced schedule of quantities, shall be taken up without written permission of the Employer or his agent / Architects. Rates of items not mentioned in the priced schedule of quantities shall be fixed by the Employer in consultation with the Architects as provided in clause "variation". The Contractors shall set up a field laboratory with necessary equipment for day-to-day testing of materials like grading of coarse and fine aggregates, silt content and bulkage of sand, cube testing etc. or the

materials can beget tested in any reputed laboratory. Regarding all factory made products for which ISI marked products are available, only products bearing ISI marking shall be used in the work.

5.3.0 TENDERERS SHALL VISIT THE SITE

Intending tenderer shall visit the site and make himself thoroughly acquainted with the local site condition, nature and requirements of the works, facilities of transport conditions, effective labour and materials, access and storage for materials and removal of rubbish, the quality, quantity and conditions of various materials lying at the site, the efforts and cost required for completing the incomplete work. The tenderer shall provide in their tender for cost of carriage, freight and other charges as also for any special difficulties and including police restriction for transport etc., for proper execution of work as indicated in the drawings. The successful tenderer will not be entitled to any claim of compensation for difficulties faced or losses incurred on account of any site condition which existed before the commencement of the work or which in the opinion of the Employer or his agent / Architect might be deemed to have reasonably been inferred to be so existing before commencement of work.

5.4.0 TENDERS

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

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 Employer / Architects detailed analysis of any or all the rates shall be submitted. The Employer / Architects shall not be bound to recognize/accept the Contractor's analysis.

The works will be paid for as "measured work" on the basis of actual work done and not as "lumpsum" 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 items of work will be made for the actual work done on the basis of lumpsum charges as will be assessed to be payable by the Employer / Architects. The Employer has power to add to, omit from any work as shown in drawings or described in specifications or include in schedule of quantities .and intimate the same in writing but no addition, omission or variation shall be made by the Contractor without authorization from the Employer. No variation shall vitiate the contract.

The tenderer shall note that his tender shall remain open for consideration for a period of three months from the date of opening of the tender (Price Bid).

5.5 AGREEMENT

The successful Contractor will be required to sign agreement in accordance with the draft agreement form enclosed and the schedule conditions. The Contractor shall pay for all stamps and legal expenses, incidental thereto. However, the written acceptance by the Employer of a tender will constitute a binding contract between the Employer and the person so tendering whether such formal agreement is or is not subsequently executed.

5.6 PERMITS AND LICENSES

Permits and licenses for release of materials which are under Government control will be arranged by the Contractor. The Employer will render necessary assistance, sign any forms or applications that may be necessary. The basic price of controlled materials, if any, for the purpose of valuing the tender, is to be considered as stipulated below. This will also be the basis of adjustments in settling the Contractor's bills.

It may be clearly understood that no compensation or additional charges can be claimed by the Contractor for no-receipt of the cement or any controlled materials in due time on this account or according to his own requirements.

The Contractor will, however, be eligible to a proportionate extension of time on this account which in the opinion of the Employer / Architects is reasonable. The Contractor shall at his own cost arrange for storage shed adequate for taking delivery and storing of the quantity of controlled materials released by the authorities or supplied by the Employer. The cost of storing, transporting etc., of all materials including those under Government control is to be included by the tenderer in the quoted rates.

The Employer / 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 Contractor.

5.7 GOVERNMENT AND LOCAL RULES

The Contractor shall confirm to the provisions of all local bye - laws and Acts relating to the work and to the regulations etc., of Government and local Authorities and of any company with whose system the structure is proposed to be connected. The Contractor shall give all notices required by said Act, Rules, Regulations and bye-laws etc., and pay all fees payable to such authority/authorities for execution of 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 Employer against such liabilities and shall defend all actions arising from such claims or liabilities.

5.8 TAXES AND DUTIES

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

5.9 QUANTITY OF WORK TO BE EXECUTED

The quantities shown in the schedule of the quantities are intended to cover the entire remaining work for indicated in the drawings but the Employer reserves the right to execute only a part of the whole or omit/delete any item/s before commencement/execution or execute any excess thereof without assigning any reason therefore.

Variation in the quantity is however not expected to be more than +25%. The quoted rate shall be applicable for variations of quantity up to +25%. If the quantity of work to be executed varies beyond +25%, the rate for the quantity beyond +25% variation will be settled as per clause No 5.34 of "General conditions". Nothing extra will be paid neither for omission/deletion of any item/s nor for execution of only part of the quantities stated in the Schedule of quantities.

5.10 OTHER PERSONS ENGAGED BY THE EMPLOYER

The Employer 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 the other Agency or persons and Contractor shall allow all reasonable facilities and use of his scaffoldings for the execution of such work. The main Contractor shall extend all cooperation in this regard.

5.11 SECURITY DEPOSIT

The successful tenderer will have to deposit 3% of contract value in the form of Bank draft drawn in favour of **Regional** Manager, Anantapur Urban RBO as ISD within 15 days from the date of acceptance of tender. It shall be refunded to the Contractor at the end of the defects liability period (12 months) provided he has satisfactory carried out all the work and attended to all defects in accordance with the conditions of the contract, subject to the following:

- Issue of completion certificate by the Architect/Bank.
- Contractor's removal of his materials, equipment, labour force, temporary sheds/stores etc. from the site (Excepting for a small presence required if any for the defect liability / period and approved by Bank).

However, ISD will not bear any interest.

5.12 CONTRACTOR TO PROVIDE EVERYTHING NECESSARY

The Contractor 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 Contractor finds any discrepancies therein he shall immediately and in writing, refer the same to the Employer / Architects whose decision shall be final and binding. The Contractor shall make his own arrangement of water

required for construction, electricity for carrying out the works at his own cost. The Employer shall on no account be responsible for the expenses incurred by the Contractor for water and electricity. **(The contractor should submit the certificate showing the water is fit for construction)**

He may use ground water by drilling within the site a bore and installing required capacity pump and water supply line. Up on completion of work, the Contractor shall handover the bore with the pump and pipeline in working condition to the Employer, no charges will be paid on this account. The bore well water shall be tested and approved by the Employer/Architect for its suitability for using in works as well as curing.

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 material inclusive of all taxes and duties whatsoever except for specific items, if any, stipulated in the tender documents.

The Contractor shall supply, fix and maintain at his own cost, for the execution of any work, all tools, tackles, machinery and equipment and 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 and the said work but also for the protection of the public and safety of any adjacent roads, streets, walls, houses, buildings, all other erections, matters and things and the Contractor shall take down and 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 all good matters and things disturbed during the execution of works to the satisfaction of the Employer / Architect.

The Contractor 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 leveled where so required by the drawings unless the Employer shall otherwise direct.

The Contractor shall at all times give access to workers employed by the Employer 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 Employer as may be required to enable such workmen to lay fix pipes, electrical wiring, special fittings etc. the quoted rates of the tenderers shall accordingly include all these above contingent works.

5.13 TIME OF COMPLETION, EXTENSION OF TIME & PROGRESS CHART

5.13.1 Time of Completion: The entire work is to be completed in all respects within the time mentioned in NIT period. The work shall deemed to be commenced within ten days from the date of acceptance letter or date of handing over of site, whichever is earlier. Time is the essence of the contract and shall be strictly observed by the Contractor.

The work shall not be considered as complete until the Employer/Architect have certified in writing that this has been completed and the defects liability period shall commence from the date of such certificate.

5.13.2 Extension of Time: If in the opinion of the Employer/Architect the works be delayed

5.13.2.1 By reason of any exceptionally inclement weather, which does not include normal Monsoon

or

5.13.2.2 By reasons of instructions from the Employer in consequence of proceedings taken or Threatened by or disputes, with adjoining or neighbouring Employers

or

5.13.2.3 By the works, or delay, of the Contractors or tradesmen engaged or nominated by the Employer and not referred to in the specification

or

5.13.2.4 By reason of authorized extra and additions

or

5.13.2.5 By reason of any combination of workmen or strikes or lock - out affecting of the building trades

or

5.13.2.6 From other causes which the Employer may consider being beyond the control of the Contractor, the

Employer at the completion of the time allowed for the contract shall make fair and reasonable extension of time for completion in respect thereof. In the event of the Employer 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 lock - outs, as are referred to above, the Contractor shall, immediately give the employer, written notice thereof. Nevertheless, the Contractor shall use his best endeavors to prevent delay, and shall do all that may be reasonably required, to the satisfaction of the Employer to proceed with the works and on his doing so, it will be ground of consideration by the Employer for an extension of time as above provided. The decision of the Employer as to the period to be allowed for an extension of time for completion hereunder (which decision shall be final and binding on the Contractor) shall be promulgated at the conclusion of such strike or lockout and the Employer shall then, in the event of an extension being granted, determine and declare the final completion date. The provision in clause 5.14 with respect to payment of liquidated damages shall, in such, be read and construed as if the extended date fixed by the Employer were substituted for and the damage shall be deducted accordingly.

5.13.3 Progress of Work:

During the period of construction, the Contractor shall maintain proportionate progress on the basis of a Programme Chart /PERT CHART submitted by the Contractor immediately before commencement of work and agreed to by the Employer/Architect, Contractor 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.

5.13.4 Force Majeure:

If at any time, during the continuance of the work, the performance in whole or in part by either party of any obligation under this Contract shall be prevented or delayed by reason of any war, hostility, acts of public enemy, civil commotion, sabotage, floods, explosions, epidemics, fires or other acts of God, strikes and lockouts (hereinafter referred to as eventualities) then, provided notice of the happening of any such eventuality is given by either party to the other within 15 days from the date of occurrence thereof, neither party shall by a reason of such eventuality be entitled to terminate this Contract nor shall either party have any claim for damages against the other in respect of such non-performance or delay in performance and construction of work under this contract shall be resumed as soon as practicable after such eventuality has ceased. Appropriate extension in time of completion shall be granted.

5.14 LIQUIDATED DAMAGES:

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

5.15 TOOLS, STORAGE OF MATERIALS, PROTECTIVE WORKS, AND SITE OFFICE REQUIREMENTS

The Contractor shall provide, fix up and maintain in an approved position proper office accommodation for the Contractor's representative and staff which offices shall be open at all reasonable hours to receive instruction notices or communications and clear away on completion of the works and make good all work disturbed. All drawings 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 Contractor shall provide at his own cost all artificial light required for the work and to enable other Contractors and sub-Contractors to complete the work within the specified time.

The Contractor shall provide a suitable temporary hut for the watchmen and clear away the same when no longer required and to provide all necessary attendance, lights etc., required.

The Contractor shall arrange for temporary latrines for the use of workers and field staff and keep the same in a clean and sanitary condition to the satisfaction of the 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 Contractor 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 Contractor shall indemnify the Employer against any breach of rules in respect of anti-malarial measures.

The Contractor 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 Employer.

5.15.1 Protective Measures:

The Contractor 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.

Contractor shall indemnify the Employer against any possible damage to the building, roads, or members of the public in course of execution of the work.

The Contractor 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.

5.15.2 Storage of materials:

The Contractor 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-Contractors and remove same on completion.

Cement shall be stored as per norms with a stack of 10 bags each and 2 feet opening all around with 2 feet passage of each stack. Structure shall be waterproof from all the sides and top. Cement should be stored one feet above the ground level and have pucca raised floor.

So, also reinforcement bars, are to be stored above the ground level to prevent the same from getting rusted.

5.15.3 Tools:

The theodolite levels, prismatic compass, chain, steel, and metallic tapes and all other surveying instruments found necessary on the works shall be provided by the Contractor 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 Contractor.

The masons and the supervisors on the works shall carry with them always a: one metre or two metre steel tape, a measuring tape of 30 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 Contractors as he chooses for checking the works executed or being executed on the contract.

The Contractor should cover in his rates for making provisions for all reasonable facilities for the use of his scaffolding, tools and plant etc., for their work.

5.16 NOTICE AND PATENTS OF APPROPRIATE AUTHORITY AND OWNERS

The Contractor shall conform 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 specifications that may be associated to so conform, give the Employer / Architects written notices specifying the variations proposed to be made and reasons for making them and apply for instruction thereon. The Employer/Architect on receipt of such intimation shall give a decision within a reasonable time.

The Contractor/s shall arrange to give all notices required for by the said Acts, Regulations or Bye-laws to be given to any authority, and to pay to such authority or to any public officer all fees that may be properly chargeable in respect of the work and lodge the receipts with the Employer.

The Contractor shall indemnify the Employer against all claims in respect of course of execution of work and shall defend all actions arising from such claims and shall keep the Employer saved harmless and indemnified in all respects from such actions, costs and expenses.

5.17 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 or loose stone or materials shall be carefully filled up with earth well rammed and levelled off as directed at his own cost.

The Contractor 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, rectify such error, if called upon to the satisfaction of the Employer. The Contractor 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.

5.18 DATUM

The average ground level will be considered as the crown of the Main Road at the higher level if there is a slope, which should be taken as "Datum" which is however, subject to final confirmation by the Employer/ Architect. All levels shown in the drawings are to be strictly adhered to.

5.19 BENCHES

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

These benches will consist of brick masonry post of adequate size to be constructed at the ground at suitable distance as directed. The lines will be marked on the top of brick pillars on the centre lines of columns, walls, inside and outside faces of foundation trenches, in order that lines may be stretched between the benches and accurate intersection of excavation. Centre line of walls, columns etc., may be clearly indicated and checked at any time if it is so required.

5.20 CONTRACTOR IMMEDIATELY TO REMOVE ALL OFFENSIVE MATTERS

All soil, filth or other matters of any offensive nature taken out of any trench, sewer, drain, cesspool or other place shall not be deposited on the surface but shall be at once carted away by the Contractor to place provided by him.

The Contractor shall keep the foundation 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 Employer for the purpose, until the site is handed over to the Employer. The Contractor shall arrange for the disposal of the water so accumulated to the satisfaction of the Employer and local authority and no claims will be entertained afterwards if he does not include in his rates for the purpose.

5.21 ACCESS

Any authorized representative of the Employer 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 Contractor shall give every facility to the Bank or their representatives necessary for inspection and examination and test of the materials and workmanship. Except the representatives of the Employer, no person shall be allowed at any time without the written permission of the Employer.

5.22 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 workmanlike 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 Employer/Architect during the execution of the work, and to his entire satisfaction.

All mandatory tests shall be carried out as per CPWD/IS specifications. If required by the Employer/Architect the Contractor shall have to carry out tests on materials and workmanship in approved materials testing laboratories or as prescribed by the Employer/Architect 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 Contractor. No extra payment on this account should in any case be entertained.

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 charges for import duties, sales tax, octroi and other charges and must be the best of their kind available and the Contractors 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 to the Employer / Architects and written approval from Employer must be obtained prior to placement of order.

During the inclement weather the Contractor shall suspend concreting and plastering for such time as the Employer/Architect 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 Contractor shall be rectified by the Contractor 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 Contractor 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 Contractor 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-Contractor and any damage caused must be made good by the Contractor at his own expenses.

5.23 REMOVAL OF IMPROPER WORK

The Employer 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 Employer/Architect are not in accordance with specification or instructions, the substitution or proper re-execution of any work executed with materials or workmanship not in accordance with the drawings and specifications or instructions. In case the Contractor refuses to comply with the order the Employer 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 Employer/Architect shall be borne by the Contractor or may be deducted from any money due to or that may become due to the Contractor. No certificate which may be given by the Architects shall relieve the Contractor from his liability in respect of unsound work or bad materials.

The work is liable to be technically examined and audited by the Bank's Chief Technical Examiner or Central Vigilance Commission, Govt. of India from time to time. Any defects/ improvements or testing etc. pointed out by the Chief Technical Examiner/ Technical Examiner should have to be carried out by the Contractor at his own cost and any deductions suggested by the CTE/ TE will be affected from the amount payable to the Contractor or from his security deposit etc.

5.24 SITE ENGINEER

The term "Site Engineer" shall mean the person/agencies appointed and paid by the Employer to supervise the work. The Contractor shall afford the Site Engineer every facility and assistance for examining the works and materials and for checking and measuring work and materials. The Site Engineer shall have no power to revoke, alter, enlarge, or relax any requirements of the Contractor 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 Employer.

The Site Engineer shall have power to give notice to the Contractor or to his foreman, of non-approval of any work or material and such work shall be suspended or the use of such materials shall be discontinued until the decision of the Employer is obtained. The work will from time to time be examined by the Architects, Engineer from the Department of the Employer and the Site Engineer if any. But such examination shall not in any way exonerate the Contractor 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 Contractor shall take instructions only from the Employer/Architect or his representative.

5.25 OFFICE ACCOMMODATION FOR THE SITE ENGINEER

The Contractor shall provide, erect, and maintain at his cost a separate simple watertight office accommodation for the Site Engineer office. This accommodation shall be well lighted and ventilated and provided with windows, door with a lock. The site engineer's office shall be a minimum of 150 sq. ft. and the Contractor shall provide a desk, chairs, drawers for keeping drawings, a cupboard having proper lock and a tackboard for displaying drawings. The accommodation shall be demolished, and debris carted away when directed.

5.26 CONTRACTOR'S EMPLOYEES

The Contractor 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 Employer/Architect. The Contractor shall engage at least one experienced Engineer with minimum qualification of B.E/ B.Tech in Civil Engineering as site-in-charge for execution of the work. The Contractor shall employ in connection with the work, persons having the appropriate skill or ability to perform their job efficiently.

The Contractor 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 Contractor to be engaged on the work on day work basis either wholly or partly under the direct order or control of the Employer or his representative shall be deemed to be a person employed by the Contractor.

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

5.26.1 The payment of Wages Act.

5.26.2 Employer's Liability Act

5.26.3 Workmen's Compensation Act.

5.26.4 Contract Labour (Regulation & Abolition) Act. 1970 and Central Rules 1971

5.26.5 Apprentices Act. 1961

5.26.6 Minimum Wages Act

5.26.7 Any other Act or enactment relating thereto, and rules framed there under from time to time.

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

The Contractor shall comply at his own cost with the order for requirement of any Health Officer of the State or any local authority or of the Employer regarding the maintenance of proper environmental sanitation of the area where the Contractor's labourers are housed or accommodated, for the prevention of small pox, cholera, plague, typhoid, malaria and other contagious diseases. The Contractor shall provide, maintain, and keep in good 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 Contractor to prevent nuisance of any kind on the works or the lands adjoining the same.

The Contractor 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 Employer and to the competent Authority where such report is required by law.

5.27 DISMISSAL OF WORKMEN

The Contractor shall on the request of the Employer immediately dismiss from works any person employed thereon by him, who may in the opinion of the Employer be unsuitable or incompetent or who may misconduct himself. Such discharges shall not be the basis of any claim for compensation or damages against the Employer or any of their officers or employee.

5.28 ASSIGNMENT

The whole of the works included in the contract shall be executed by the Contractor and the Contractor 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 Employer and no subletting shall relieve the Contractor from the full and entire responsibility of the contract or from active superintendence of the work during their progress.

Signature of the Contractor

5.29 DAMAGE TO PERSONS AND PROPERTY INSURANCE ETC.

The Contractor 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-Contractor or of any of his or a sub-Contractor'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 Contractor shall indemnify the Employer and hold harmless in respect of all and any expenses arising from any such injury or damages to the person or property as aforesaid and also in respect of any claim made in respect of injury of damage under any acts on compensation or damage consequent upon such claim.

The Contractor shall reinstate all damages 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 of third parties.

The Contractor shall effect the insurance necessary and indemnify the Employer entirely from all responsibility in this respect. The insurance must be placed with a company approved by the Employer and must be effected jointly in the name of the Contractor and Employer and the policy lodged with the letter. The scope of insurance is to include 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 Contractor 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.

The Employer 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 for damages from any sums due or to become due to the Contractor.

5.30 INSURANCE (Contractor's All Risk Policy)

Unless otherwise instructed the Contractor shall insure the works and keep them insured until the virtual completion of the contract against loss or damage (incl. third party) by fire and earthquake, flood, wars, storms etc. The insurance must be placed with a company approved by the Employer, in the joint names of the Employer and the Contractor (the name of former being placed first in the policy) for full amount of contract and for any further sum if called to do so by the Employer, the premium of such being allowed to the Contractor as an authorized extra.

The Contractor shall deposit the policy and receipt for premiums paid with the Employer within 21(twenty-one) days from the date of issue of work order unless otherwise instructed. In default of the Contractor insuring as provided above, the Employer on his behalf may so insure and may deduct the premiums paid from any money due, or which may become due to the Contractor. The Contractor 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 Contractor in case of rebinding or reinstatement after fire shall be entitled to extension of time for completion as the Employer may deem fit.

5.31 ACCOUNTS RECEIPTS & VOUCHERS

The Contractor shall, upon the request of the Employer 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 Contractor shall use materials less than what he is required under the contract, the value of the difference in quantity of the materials he was required to use and that he actually used shall be deducted from his dues. The decision of the Employer shall be final and binding on the Contractor as to the amount of materials the Contractor is required to use for any work under this contract.

5.32 MEASUREMENTS

Before taking any measurement of any work, the Architect/ Bank's Engineer or a subordinate deputed by him shall give reasonable notice to the Contractor. If the Contractor fails to attend at the measurements after such notice or fails to countersign or to record the difference within a week from the date of measurement in the manner required by the Bank's Engineer then in any such event the measurements taken by the Bank's Engineer or by the

subordinate deputed by him as the case may be is final and binding on the Contractor and Contractor shall have no right to dispute the same.

5.33 PAYMENTS

All bills shall be prepared by the Contractor in the form prescribed by the Employer / Architect. Only one running bill prepared subject to minimum value for interim certificate as stated in these documents. 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 Architect shall issue a certificate after due scrutiny of the Contractor's bill stating the amount due to the Contractor from the Employer and the Contractor 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 adhoc advance of 75% of the billed amount may be paid on the request of the Contractor for the smooth progress of the work.

The amount stated in an interim certificate shall be the total completed value of work properly executed, less the amount to be retained by the Employer as retention.

5.33.1 Payment will be made only for completed value of works. No advance will be paid for material procured at site.

The Employer will deduct retention money as described. The refund of retention money will be made as specified.

If the Employer has supplied any materials or goods to the Contractor, the cost of any such materials or goods will be progressively deducted from the amount due to the Contractor 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 removal and taken away and reconstructed, or re-erected or be considered as and admission of the due performance of the contract, or any part thereof in any respect or the accruing of any claim, nor shall, it conclude, determine or affect in any way the power of the Employer 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 Contractor within one month of the date fixed for completion of the work or of the date of certificate of completion furnished by the Architect and payment shall be made within three months.

5.33.2 Final Payment :

The final bill shall be accompanied by a certificate of completion from the Employer / Architect. Payment of final bill shall be made after deduction of Retention Money as specified, which sum shall be refunded after the completion of the Defects Liability Period after receiving the Architect's certificate that the Contractor has rectified all defects to the satisfaction of the Employer/Architect. The acceptance of the payment of the final bill by the Contractor would indicate that he will have no further claim in respect of the work executed.

The Employer shall have a right to cause technical examination and audit of the works and the final bill of the Contractor including all supporting vouchers, abstracts, etc., to be made at the time of payment of final bill. If as a result of this examination or otherwise any sum is found to have been overpaid or over certified, it shall be lawful for the Employer to recover the same from the Contractor from any sum due to him.

In case, after completion of the work and final payment to the Contractor, it is found on account of General Audit, Technical audit and or any other reason whatsoever that any amount is recoverable from the Contractor, it shall be lawful for the Employer, to recover the same from any sum whatsoever payable by the Employer to the Contractor either in respect of this contract or any other contract or on any other account by any other branch/department of the Employer.

5.34 VARIATION / DEVIATION

The tender rates shall be applicable for any increase in the tendered quantities up to variations of +25%. If the quantity of work to be executed varies beyond +25%, the rate for the quantity beyond +25% of such items will be derived as per standard method of rate analysis (coefficients will be adopted as per CPWDINBO analysis of rates

wherever applicable, if coefficients are not available in CPWDINBO, market rate analysis approved by the Bank will be final and binding on the Contractor) based on prevalent fair price of labour (labour rate for various category as per minimum wages act as applicable will be adopted for the purpose of analysis irrespective of higher wages if any paid by the Contractor), material and other components as required including 15% towards Contractor's profit & overheads. In case the quantity decreases or item/s omitted/deleted at the time of allotment, commencement, execution, the Contractor will be paid for the actual work done at the site duly verified by the concerned officials of the Bank. Nothing extra will be paid by the 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 (coefficients will be adopted as per CPWDINBO analysis of rates wherever applicable, if coefficients are not available in CPWDINBO, market rate analysis approved by the Bank will be final and binding on the Contractor) based on prevalent fair price of labour (labour rate for various category as per minimum wages act as applicable will be adopted for the purpose of analysis irrespective of higher wages if any paid by the Contractor), material and other components as required including 15% towards Contractor's profit & overheads.

5.35 SUBSTITUTION

Should the Contractor desire to substitute any materials and workmanship, he/they must obtain the approval of the Employer/Architect in writing for any such substitution well in advance For materials designated in this specification indefinitely by such term as "Equal" or "Other approved" etc., specific approval of the Employer/ Architect has to be obtained in writing.

5.36 PREPARATION OF BUILDING WORKS FOR OCCUPATION AND USE ON COMPLETION

The whole of the work will be thoroughly inspected by the Contractor and deficiencies and defects put right. On completion of such inspection the Contractor shall inform the Employer that he had completed the work and it is ready for inspection.

On completion the Contractor 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 Bank.

5.37 CLEARING SITE ON COMPLETION

On completion of the works the Contractor 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 workmanlike condition to the satisfaction of the Employer/Architect.

5.38 DEFECTS AFTER COMPLETION

The Contractor shall make good at his own cost and to the satisfaction of the Employer all defects, shrinkage, settlements, or other faults which may appear within 12 months after completion of the work. In the default, the Employer 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 Contractor and such damages, loss and expenses shall be recoverable from him by the Employer or may be deducted by the Employer, in lieu of such amending and making good by the Contractor, deduct from any money due to the Contractor 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 Contractor from the amount retained together with any expenses the Employer may have incurred in connection therewith.

5.39 CONCEALED WORK

The Contractor shall give due notice to the Employer/Architect whenever any work is to be buried in the earth, concrete or in the bodies of walls or otherwise becoming inaccessible later on, in order that the work may be inspected and correct dimensions taken before such burial, in default whereof the same shall, at the opinion of the Employer/ Architect be either opened up for measurement at the Contractor's expenses. Should any dispute or differences arise after the execution of, any work as to measurements etc., or other matters which cannot be conveniently tested or checked, the notes of the Employer/Architect shall be accepted as correct and binding on the Contractor.

5.40 SUSPENSION

If the Contractor except on account of any legal restraint upon the Employer preventing the continuance of the work or in the opinion of the Employer 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 Employer shall have the power to give notice in writing to the Contractor 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 Contractor 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 Contractor fails to start the work within seven days after such notice has been given to proceed with the works as therein prescribed, the Employer may proceed as provided in clause **Termination of Contract** by Employer

5.41 TERMINATION OF CONTRACT BY EMPLOYER

If the Contractor being a company go into liquidation whether voluntary or compulsory or being a firm shall be dissolved or being an individual shall be adjudicated involvement or shall make an assignment or a composition for the benefit of the greater part, 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 Contractor in insolvency, shall repudiate the contract, or if a receiver of the Contractor'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 Employer that he is able to carry out and fulfill the contract, and if so required by the Employer to give reasonable security therefore, or if the Contractor 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 Contractor, or shall assign, charge or encumber this contract or any payments due or which may become due to Contractor, 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 Contractor within three clear days after the notice shall have been given to the Contractor in manner hereinafter mentioned requiring the Contractor to observe or perform the same or shall use improper materials of workmanship in carrying on the works, or shall in the opinion of the Employer not exercise such due diligence and make such progress as would enable the work to be completed within due time agreed upon, and shall fail to proceed to the satisfaction of the Employer after three clear days notice requiring the Contractor so to do shall have been given to the Contractor as hereinafter mentioned or shall abandon the contract, then and in any of the said cases, the 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 Employer of the obligations and liabilities of the Contractor the whole of which shall continue in force as fully as if the contract, had not been so determine and as if the works subsequently executed by or on behalf of the Contractor (without thereby creating any trust in favour of the Contractor) further the Employer 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 Contractors or other persons or person to complete the works, and the Contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other Contractors 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 Employer shall give notice in writing to the Contractor to remove his surplus materials and plants and should the Contractor fail to do so within a period of 14 days after receipt by him the Employer may sell the same by Public Auction and shall give credit to the Contractor for the amount so realized.

Any expenses or losses incurred by the Employer in getting the works carried out by other Contractors shall be adjusted against the amount payable to the Contractor by way of selling his tools and plants or due on account of work carried out by the Contractor prior to engaging other Contractors or against the Security Deposit.

5.42 TERMINATION OF CONTRACT BY CONTRACTOR

If payment of the amount payable by the Employer under certificate of the Architect as provided for hereinafter shall be in arrears and unpaid for thirty(30) days after notice in writing requiring payment, the amount as aforesaid shall have been given by the Contractor to the Employer, or if the Employer obstructs the issue of any such certificates, or if the Employer commits any 'Act of Insolvency' or if the Employer (being an incorporated company) shall have an order made against him or pass an effective resolution for winding up either compulsory or subject to the supervision of the court or voluntarily or if the official liquidator or the Employer shall repudiate the contract or if the official liquidator in any such winding up shall be unable within 15 days notice to him requiring him so to do, to know to the reasonable satisfaction of the Contractor that he is able to carry out and fulfill the contract and

to give security of the same or if the works be stopped for any payments due and to become due there under and if required by : months under the order of the Architects of the Employer or by an injunction or other order of any court of law, then and in any of the said cases the Contractor shall be at liberty to determine the contract by notice, in writing to the Employer, to the Architect and he shall be entitled to recover from the Employer, payment for all works executed and for any loss he may sustain upon any plant or materials supplied or purchase or prepared for the purpose of the contract.

In arriving at the amount of such payment the net rates contained in the Contractor's original tender shall be followed or where the same may not apply for extra items.

Matters to be finally determined by the Architects and the Bank, which shall be final, conclusive and binding on the following matters:

- 5.42.1 Instructions
- 5.42.2 Transactions with local authorities
- 5.42.3 Proof of quality of materials
- 5.42.4 Assigning or under letting of the contract
- 5.42.5 Certificates to the causes of delay on the part of the Contactor and Justifying extension of time or otherwise
- 5.42.6 Rectification of defects pointed out during the defect liability period.
- 5.42.7 Notice to the Contractor to the effect that he is not proceeding with due diligence
- 5.42.8 Certificate that the Contractor has abandoned the contract
- 5.42.9 Notice for determination of the contract by the Employer

5.43 ARBITRATION

The Employer's decisions, opinions, directions, certificates with respect to all or any of the matters under clause No.5.2, 5.9, 5.12, 5.13, 5.14,5.22,5.23,5.27,5.32 &5.43 of GENERAL CONDITIONS OF CONTRACT shall be final, conclusive and binding on the parts hereto and shall be without any appeal.

5.43.1 Settlement of Disputes and Arbitration

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

5.43.1.1 If the Contractor considers that he is entitled to any extra payment or compensation in respect of the works over and above the amounts admitted as payable by the Architect or in case the Contractor wants to dispute the validity of any deductions or recoveries made or proposed to be made from the contract or raise any dispute, the Contractor shall forthwith give notice in writing of his claim, or dispute to the SBI and endorse a copy of the same to the Architect within 30 days from the date of disallowance thereof or the date of deduction or recovery. The said notice shall give full particulars of the claim, grounds on which it is based, and detailed calculations of the amount claimed and the Contractor shall not be entitled to raise any claim nor shall the Bank be in any way liable in respect of any claim by the Contractor unless such claim shall have been given by the Contractor to the SBI in the manner and within the time as aforesaid. The Contractor shall be deemed to have waived and extinguished all his rights in respect of any claim not notified to the General Manager I in writing in the manner and within the time aforesaid.

5.43.1.2 The AGM SBI shall give his decision in writing on the claims notified By the Contractor. The Contractor may within 30 days of the receipt of the decision of The AGM SBI submit his claims to the conciliating authority namely the SBI, Amaravati Circle for conciliation along with all details and copies of correspondence exchanged between him and the SBI.

5.43.1.3 If the conciliation proceedings are terminated without settlement of the disputes, the Contractor shall, within a period of 30 days of termination thereof shall give a notice to the concerned The AGM SBI for appointment of an arbitrator to adjudicate the notified claims falling which the claims of the Contractor shall be deemed to have been considered absolutely barred and waived.

5.43.1.4 Except where the decision has become final, binding and conclusive in terms of the contract, all disputes or differences arising out of the notified claims of the Contractor as aforesaid and all claims of the Bank shall be referred for adjudication through arbitration by the Sole Arbitrator appointed by the Chief General Manager/Managing Director. It will also be no objection to any such appointment that the Arbitrator so appointed is a Bank Officer and that he had to deal with the matters to which the Contract relates in the course of his duties as Bank Officer. If the arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever another sole arbitrator shall be appointed in the manner aforesaid by the said Chief General Manager/Managing Director. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.

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

5.43.1.6 It is also a term of this contract that no person other than a person appointed by such General Manager/Managing Director as aforesaid should act as arbitrator.

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

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

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

6.1 TENDER

The project consists of **PROPOSED EXTERNAL CIVIL WORKS AT KADIRI MAIN BRANCH, KADIRI, ANANTAPUR DIST, ANDHRA PRADESH STATE**. The scope of the project is described in the drawings the specifications and schedule of quantities.

6.2 SITE

The site of work is Bank's OWN Building located in Kadiri, Anantapur dist, Andhra Pradesh.

6.3 RATES QUOTED

The rates quoted in the tender shall be for the finished items of work. The rates quoted shall include all the charges required for labour, material, sheds for storage of materials, transportation of material and equipment, tools and plants, Wastage, cleaning of sites during execution of various items of work, overheads etc. and to do all things necessary to provide complete finished items of work consistent with the specifications attached to this tender document. The rates quoted shall also include all duties, royalties cess, income tax, octroi, or any other taxes or local charges or duties etc. as applicable till the completion of work. No extra claim will in any case be entertained. The rates shall be firm and shall not be subjected to exchange variations due to labour conditions or any other conditions whatsoever. **GST will be paid extra as applicable.**

6.4 PAYMENT

Payment will be made by the Employer after receipt and check of the Contractor's bill (GST invoice duly verified) by the Architect and the Bank's Engineer-in-Charge after deduction of TDS Applicable, Security deposit etc. as per statutory rules and terms of tender for the value of work executed as per specifications and drawings. For this purpose, the Contractor must submit his on-account bills on the prescribed form duly accompanying the detailed measurements in support and showing deductions for the provisional payment received by him. The security money thus retained from all bills and initial security deposit will become payable to Contractor as applicable. The Employer is not liable to pay any interest on the security money thus retained.

But all such intermediate payments shall be regarded as part payments by way of advance against the final payment only and not as payments for work actually done and completed and shall not preclude and requiring of bad, unsound and imperfect or unskillful 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 the claim, nor, shall it conclude, determine or affect in any way the powers of the Architect under these conditions or any of them as to the final settlements and adjustment of the accounts or otherwise or in any other way vary or affect the Contractor within three months of the date of the completion of the work. Otherwise, the Architect's certificate of measurements and of the total amount payable for the work and approved by the Bank shall be final. The minimum amount for interim certificate shall be ₹. 16,00,000/- (₹. Sixteen Lakhs only). However, the Employer at his discretion can pay for interim payments of lesser value also.

6.5 VALIDITY OF PRICE

The Contractor shall have no right to ask for the alteration of the rates, terms and conditions quoted by the Contractor and shall be final and to be subsisting and valid for the execution of the work.

6.6 LOWEST TENDER

The Employer shall have the right to reject any or all the tenders and will not be bound to accept the lowest or any tender and the tenderer or tenderers shall have no right to question the acts of the Employer in this respect.

6.7 CO-OPERATION

The Contractor will be required to consult and co-operate with other Contractors whose work may be affected by the work under this contract.

6.8 TREASURE TROVE ETC.

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

6.9 WATER SUPPLY, TOILETS ETC.

The selected tenderer shall make his own arrangements at his own costs for the supply of approved quality water required for construction and for drinking purposes and shall provide at his costs all tubes, fittings and temporary plumbing works required and on completion of the works, shall remove all temporary appliances and make good any work disturbed for making such arrangements to the satisfaction of the Employer.

6.10 ELECTRIC POWER

Tough electric power is available at the site the Contractor shall make his own arrangements for power and supply system for driving plant and machinery for the work and for lighting purpose at his own cost. The cost of running and maintenance of the plants are to be included in his tender prices. He shall pay all fees and charges legally demandable and include the same in his tendered rates and hold the Employer free from all such costs. As bank already secured electric power connection the contractor shall pay the power charges as per the usage.

6.11 METHOD OF MEASUREMENT

Unless otherwise mentioned in the Schedule of Quantities measurements will be on the net quantities of work produced in accordance with up-to-date rules laid down by the Indian Standards Institution. In the event of any dispute in regard to the measurements of the work executed, the decision of the Architect/Bank shall be final and binding on the Contractor.

6.12 COMPENSATION UNDER WORKMEN'S COMPENSATION ACT PAYABLE BY THE CONTRACTORS

In every case in which by virtue of the provisions in Section 12, Sub-section (1) of the Workmen's Compensation Act, 1923, Employer is obliged to pay compensation to the workman employed by the Contractor, in execution of the works. Employer will recover from the Contractor, the amount of the compensation paid, and without prejudice to the rights of the Employer under Section 12, Sub-section (2) of the said Act, Employer shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by the Employer to the Contractor whether under this contract or otherwise.

6.13 NOTICE TO BE GIVEN BEFORE WORK IS COVERED UP

The Contractor shall give not less than 7 days notice in writing to the Architects/ Bank's engineer or his authorized agent before covering up or otherwise placing beyond the reach of measurement, any work in order that the same may be measured and correct dimensions thereof be taken before the same is so covered up or placed beyond

the reach any work without the consent in writing of the Architect. If any work shall be covered up or placed beyond the reach of measurement without such notice having been given or consent obtained, the same shall be uncovered at the Contractor's expenses, or in default thereof no payment or allowance shall be made for such work or the materials, with which the same was executed.

6.14 ACTION WHERE NO SPECIFICATION / CONTRADICTION

6.14.1 In the case of any class of work for which there is no specification in Technical Specifications, such work shall be carried out in accordance with the I.S. Specification and in the event of there being no I.S. Specification, then in such case the work shall be carried out in all respects in accordance with the instructions and requirements of the Architect/Bank.

6.14.2 The work is to be carried out by combining the details in Schedule of Quantities, Drawings and Technical specifications. If there is any discrepancy or contradiction between Schedule of quantities, Drawings and Technical specification, the first preference is given to Description in schedule of quantities, second to drawings and third to Technical Specifications.

6.15 CONTRACTOR NOT TO DEPOSIT MATERIALS IN A MANNER THAT MAY CAUSE INCONVENIENCE TO THE PUBLIC

The Contractor shall not deposit materials on any site which will seriously cause inconvenience to the public. The Employer may require the Contractor to remove any or all materials, which are considered by him to be a danger or inconvenience to the public or cause them to be removed at the Contractor's cost.

6.16 SITE CONDITIONS

The Contractor should inspect the work site, where the works under this contract are to be carried out and obtain for himself at his own responsibility all the information which may be necessary for the purpose of successful execution of the contract.

He must also make himself conversant with all the locations and means of access to the site of work, nature, extent of transport facilities and character of the work and supply of materials conditions affecting labour and other matters that may affect his tender. Employer does not undertake any responsibility to obtain any concessions, permissions from the Owner of the adjoining plot or from any other party of any allowance, access, encroachments etc. whether for the facility of the works of otherwise. No claim therefore will be entertained should the Contractor have failed to comply with this condition.

All fences, trees, shrubs, green and other surfaces about the buildings, or approaches thereto, which are required to be maintained are to be kept free from damages due to preparation in connection with the work.

The site will be made available to the Contractor in its present conditions. Site organization within the site boundaries shall be his responsibilities. No space other than the above site can be made available to the Contractor for the site office, labour camps, storage etc.

6.17 LIQUIDATED DAMAGES

The time allowed for carrying out the work as envisaged in the tender shall be strictly observed by the Contractor and shall be reckoned as 10 days from the date of issue of work order. The work shall throughout the stipulated period of contract be proceeded with, with all the due diligence (time being deemed to be of the essence of the contract, on the part of the Contractor) and the Contractor shall pay to the Employer, without prejudice to other right of the Employer as compensation @ 0.5% of the value of work for every week that the work remains unfinished after the date stipulated in the Appendix as "Date of Completion" or the extended date is given in the general conditions of contract subject to a maximum of 5.0% of value of work but not exceeding the total S.D. as liquidated damages. The Employer may deduct such sum from the Contractor's security deposit and/or any sum payable to the Contractor at that time or later. The "liquidated damages" as stipulated shall be considered as a genuine pre-estimate of the loss/damage suffered by the Employer due to non completion of work in time. Decision of the Employer in this respect shall be final and binding to the Contractor.

6.18 WORK PROGRAMME

The Contractor shall within Seven (7) Days of receipt of intimation that his tender has been accepted, submit to the Architect/Employer a detailed work programme prepared in the form of PERT/CPM network / Bar Chart as

would enable him to complete the work within the time stipulated in the tender and on the basis of detailed work programme enclosed with the tender.

The detailed work programme must indicate date of starting and completion of respective part or sections of the work. The detailed work programme would be subjected to the approval of the Architect/Employer who will have the power of such modifications thereon as found necessary; the actual progress compared with this will be reviewed periodically.

The Contractor at the site of his work at the place or places shown to him shall maintain the following facilities:

- 6.18.1 Printed time schedule displayed properly
- 6.18.2 All the drawings which will be given to him for the execution of the work
- 6.18.3 The Contractor shall keep all the drawings in proper condition and will not be permitted to remove the same from the site of work for any reasons whatsoever. They shall be available for inspection at all times by the Architect and his authorized representatives and Employer/Employer's representatives.
- 6.18.4 One 30m (100'0") and one 15m (50'0") steel measuring tape with I.S.I stamped certificate and two 3m (10'0") feet tapes, box of chalk for marking.
- 6.18.5 Measuring books, copies of bills of work due or certified.

6.19 POSSESSION OF BUILDINGS / WORK COMPLETED

The Contractor shall hand over possession to the Employer of the completed works in stages as and when required and directed by the Architect / Employer.

The Employer will take over the possession of completed works in stages as directed by the Architect and defects liability period will commence only from the date of final handing over of all the works accordingly.

6.20 INFORMATION TO BE SUPPLIED BY THE CONTRACTOR

The Contractor shall furnish the Employer / Architect the following from time to time:

- 6.20.1 Detailed Industrial Statistics regarding the labour employed by him etc., every month (within 11th of succeeding month)
- 6.20.2 The Power of Attorney, name and signature of his authorized representative who will be in charge for the execution of the work.
- 6.20.3 The list of technically qualified persons (to be approved by the Architect) employed by him for the execution of the work within 15 days from date of start of the work.
- 6.20.4 The total quantity and quality of materials used for the works, every month within 5th of succeeding month.
- 6.20.5 The list of plant and machinery employed for this work every month.
- 6.20.6 Failure to submit any of these details in time, shall be treated as a breach of the contract and likely to result in,
 - 6.20.6.1 Levying a fine of ₹. 1000/- for each default for each month and or
 - 6.20.6.2 Withholding payments, otherwise due
 - 6.20.6.3 For the periods for which name of technically qualified persons are not given or for which such persons are not employed, recoveries shall be made at ₹.8000/- per month for each month of default.
- 6.20.7 In all these matters the decision of the Architect shall be final and binding.

6.21 PHOTOGRAPHS

The Contractor at his own cost shall take photographs of site and individual buildings during the progress of the work as directed by the Employer/Architect and submit two copies of each photograph with minimum size 25cm x 40 cm to the Employer/Architect.

6.22 INSPECTION BY THE CHIEF TECHNICAL EXAMINERS (VIGILANCE)

The proposed work covered under this tender, during its progress and/or after completion can also be inspected by the Chief Technical Examiner/Technical Examiner or Officers of the Central Vigilance Commission, Government of India, on behalf of Employer/Architect to ascertain that the execution of the work has been done with materials and workmanship all as stipulated in the contract and as directed. Contractor shall afford all reasonable facilities to the above vigilance staff and also provide them with ladders, tapes, plumb bob, level etc., as required and directed and also necessary labour skilled, unskilled to enable them to complete their inspection / study / technical scrutiny and no extra shall be admissible to the Contractor on this account.

6.23. INCOME TAX

Income tax shall be deducted from the Contractors' bills rules and regulations in force in accordance with Income Tax Act prevailing from time to time. Quoted rates shall be deemed to include this.

6.24. GST TAX:

The quoted rates shall be Exclusive of GST.

6.25. FIRM PRICE

The prices shall be kept Firm till the completion of work and no escalation including statutory variation will be admissible.

6.26. DRAWINGS & DOCUMENTS

The drawings accompanying the tender document are of indicative nature and issued for tendering purpose only. Purpose of these drawings is to enable the tenderer to make an offer in line with requirements of the Employer. However, no extra claim whatsoever shall be entertained for any variation in the "Approved for Construction" and "Tender Drawings" regarding any changes/units. Construction shall be as per drawings / specifications issued / approved by the Engineer-in-Charge during the course of execution of work. Detailed construction drawings on the basis of which actual execution of work is to proceed will be furnished to the Contractor progressively based on the detailed construction program evolved after the award of work and also based on construction progress achieved.

Detailed working drawings on the basis of which actual execution of the works is to proceed, will be furnished from time to time during the progress of the work. The contractor shall be deemed to have gone through the drawings and bring to the notice of the Engineer – in – Charge discrepancies if any, therein before actually carrying out the work.

Copies of all detailed working drawings relating to the works shall be kept at the contractor's office on the site and shall be made available to the Engineer – in- Charge at any time during execution of the contract. The drawings and other documents issued by the Employer shall be returned to the Employer on completion of the works.

6.29. CONSTRUCTION EQUIPMENT

The contractor shall without prejudice to his overall responsibility to execute and complete the work as per specifications and Time schedule, progressively deploy adequate equipments and tools and tackles and augment the same as decided by the Engineer – in -Charge depending on the exigencies of the work so as to suit the construction schedule. The tenderer shall submit a list of construction equipments he proposes to deploy for the subject work along with deployment schedule. No construction equipment shall be supplied by the Employer. Tenderer to ensure deployment of suitable cranes and take all safety precautions during execution of work.

6.30. SITE ORGANISATION

The tenderer shall submit the details of organization proposed by him at site of work for the implementation of the works under the contract, together with bio-data of the key personnel. The contractor shall however without prejudice to his overall responsibility to execute and complete the works as per specifications and time schedule progressively deploy adequate qualified and experienced personnel together with skilled / unskilled manpower and augment the same as decided by Engineer – in – Charge depending on the exigencies of work to suit the construction schedule without any additional cost to Employer.

6.31. CONSTRUCTION

6.31.1. Rules and Regulations

CONTRACTOR shall observe in addition to Codes specified in respective specification, all national and local laws, ordinances, rules and regulations and requirements pertaining to the WORK and shall be responsible for extra costs arising from violations of the same.

6.31.2. Procedures

Various procedures and method statements to be adopted by Contractor during the construction as required in the respective specification shall be submitted to Employer in due time for approval. No such construction activity shall commence unless approved by Employer in writing.

6.31.3. Field Inspection

CONTRACTOR shall have at all times during the performance of the WORK, competent superintendent on the premises. Any instruction given to such Superintendent shall be construed as having been given to the CONTRACTOR.

6.31.4. All the scaffolding materials to be used in the work shall be of **steel material** only.

6.32. TEMPORARY WORKS

All temporary works, ancillary works, enabling works, including dewatering of surface and subsoil water, preparing approaches and working areas, wherever required for execution of the work, shall be the responsibility of the Contractor, and the price quoted by them shall be deemed to have included the cost of such works.

6.33. EXISTING SERVICES / STRUCTURES

Structures, drains, pipes, cables, overhead wires and similar services encountered in the course of the works shall be guarded from injury by the CONTRACTOR at his own cost, so that they may continue in full and uninterrupted use to the satisfaction of the Employer. Should any damage be done by the CONTRACTOR to any structures, mains, pipes, cables or lines (whether above or below ground etc), whether or not shown on the drawings, the CONTRACTOR must make good or bear the cost of making good the same without delay to the satisfaction of the Engineer – in – Charge.

6.34. DISTINCTION BETWEEN FOUNDATION AND SUPERSTRUCTURE

To distinguish between work in foundations and specifications and superstructures, the following criteria shall apply:

- a. For all Equipment pedestals, silos, pipe racks, other foundations and RCC structures, Work done upto 300 mm level above finished grade level will be taken as work in foundations and work above this level will be treated as work in superstructures and payments would be made accordingly.
- b. All works upto level corresponding to ground floor level shall be treated as work in "Foundation and Plinth" and all works above the ground floor level shall be treated as "Work in Superstructure".
- c. Irrespective of what has been stated above, all pavements, RCC retaining wall, all pipe sleepers and any similar item would be take as work done in foundations irrespective of locations, nomenclature and levels given anywhere.
- d. Where not specifically pointed out all works in cellars / sumps, tank pads, cable trenches or such similar items would be taken as work in foundations.

6.35. FRONTS FOR WORKS.

The work involved under this contract includes such works as have to be taken up and completed after other agencies on the job have completed their jobs. The contractor will be required and bound to take up and complete such works as and when the fronts are available for the same and no claim of any sort whatsoever shall be admissible to the contractor on this account. Only extension of time limit shall be admissible, if the availabilities of work fronts to the contractor are delayed due to any reasons not attributable to the Contractor.

6.36. HOUSEKEEPING:

It shall be the Contractor's responsibility to keep the work area clean and tidy always and shall be done on a day-to-day basis. Scrap, debris, oil spills, etc; generated during the course of work shall be disposed at the designated location as directed by the Employer and the transportation for this purpose shall be arranged by the Bidder at his cost.

6.37. 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.

6.38. ABNORMAL RATES

The Contractor is expected to quote rate for each items 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 tenderer unless the Employer is convinced about the reasonableness of the rate on scrutiny of the analysis for such rate to be furnished by the tenderer on demand. Notwithstanding anything there in stand, the rate once accepted by the employer shall be final and shall not be subject to any claim either on account of unworkability of rates or on any other ground whatsoever.

6.39. INSURANCE

6.39.1. Indemnity by the Contractor.

The contractor shall be responsible at all times during the currency of the contract for and shall defend, hold harmless and indemnify the Employer and or the Employer indemnified parties from and against any and all claims, liabilities, costs, damages and expenses (including court cost and legal fees) arising whether by way of indemnity or otherwise, in relation to any and all losses of every kind and nature resulting from damage to or loss or, loss of use or recovery, or destruction of property, or sickness, injury or death suffered by any personnel or consultant of the contractor, its affiliates, agents or sub-contractors and damage to or loss or, loss of use or recovery or destruction of any property or equipment belonging or contracted to or otherwise in the custody of the contractor its affiliates, agents or sub-contractors or its or their personnel or consultants (other than Employer equipment) in connection with the performance of this contract.

6.39.2. Contractor's Personnel and Property.

The contractor shall be liable for and shall indemnify the Employer, the participants and Employer's personnel from and against all claims in respect of any death or injury or contractor's personnel and any damage to contractor's property in each case caused by or arising out of the performance of this contract and whether or not arising in respect of a serious event. The assumption of liability and the indemnity contained in this clause extends to any claims made against the Employer pursuant to any provision of any agreement, whenever effective, under which Employer assumes liability in respect of and or indemnifies and or otherwise compensates any other person or body in respect of the death or injury of contractor's personnel and any damage to contractor's property arising in respect of a serious event.

All contractor's personnel which may include permanent, temporary or casual, servants, agents and / or representatives, contractual or otherwise, either contractor's and / or their sub-contractors, affiliates / subsidiaries / co-ventures shall be covered under contractor's workers compensation of statutory benefits and any damages or compensation payable in respect of accidents of injury as set forth and required by applicable law in the area of operations or such other jurisdiction under which contractor may become obligated to pay benefits.

6.39.3. Personnel Injury And Property Damages.

Contractor shall indemnify and hold harmless the indemnified all claims resulting from personal injury to any personnel, Employees, sub-contractors or agents of contractor or damage to any property of contractor or any Employees or agent or sub-contractors arising out of the performance of the services, whether or not the personnel injury or damage to property is caused by or contributed to by the negligence or other legal fault of the indemnified.

Contractor shall further indemnify and hold harmless the indemnified against all claims resulting from personal injury to any person (s) (other than employee or agent of contractor or employee or agent of Employer) or damage to any property to the extent that the personal injury or damage is contributed to by negligence or other legal fault of the contractor.

6.39.4. Third party and third-party property.

Third party liability insurance shall be provided for liability arising from all operations of contractor including accidental / similar liabilities. The policy shall include coverage for premises and operations including operations offshore. It is expressly the term third party shall mean and include any person in other than that employed by

contractor himself and shall not extend to any person in employment of Employer or sub-contractor / associates / affiliates / subsidiaries / co-ventures and or other similar agencies.

6.39.5. Due Diligence

Apart from complying with the various expressed conditions it is necessary for the contractor to take reasonable precautions:

- : For safety of the property insured.
- : In selection of labour
- : To prevent injury, loss or damage. It is also requires that the insured.
- : To allow the insurer's access to examine the insured's premises plant and equipment
- : To minimize loss in the event of an accident.

6.39.6. Compliance With insurance Warranty:

The contractor is solely responsible for all the insurance warranties attached to the policies taken by him. The Employer should not be held responsible in any manner for non-compliance of the warranty.

6.39.7. Description Not Limitation:

The insurance coverage referred to the relevant clause connected with insurance indemnity shall Be set forth in full in the respective Policy forms, and the foregoing descriptions of such policies are not intended to be complete, nor to alter or amend any provision of the actual Policies and in matters, if any, in which the said description may be conflicting with such instruments, the provisions of the Policies of the insurance mutually agreed by the parties shall govern, provided, however, that neither the content of any Insurance Policy or Certificate nor Employer's approval thereof shall relieve the Contractor of any of its obligations under the Contract.

6.39.8. Any Other Insurance As Required Under Law:

CONTRACTOR shall also carry and maintain any and all other insurance(s) which may be required under any law or regulation from time to time without any extra cost to Employer. Contractor shall also carry and maintain any other insurance, which may be reasonably required

6.39.9. General Insurance Requirement.

All insurance's required under Clause shall be on terms and conditions issued by insurance companies or underwriters acceptable to the Employer.

6.39.10. Non-Performance Of Contractors Insurance Companies:

The insolvency, liquidation, bankruptcy or failure of any insurance company providing insurance for Contractor or its sub-contractors or failure or denial of any such insurance Company to pay claims accruing, shall not be considered a waiver of, nor shall it excuse Contractor from complying with, any of the provisions of this Contract. Nevertheless, such liability shall be to the sole account of the Contractor.

6.39.11. Failure to Provide Required Insurance:

In the event that Employer reasonably disapproves of the insurance companies concerned, or if any of the insurance policies be not procured or maintained pursuant to Employer, at its option, may notify contractor that the failure to provide the insurance is a material omission whereupon it is agreed that Employer, at its sole option, shall have the right either to purchase similar coverage, the cost thereof to be reimbursed forthwith by Contractor to Employer, or alternatively, to be deducted by the Employer from any sum due or thereafter becoming due to contractor from Employer whether under this contract or any other contract to which both Employer and contractor are parties. In any case, the liability in such situations shall be to the sole account of the Contractor. Employer, exercising right to take appropriate policy under the above situation will in no way make themselves liable even if there is any deficiency in the policy so availed of.

6.39.12. No Limitation of Liability:

The required coverage referred to and set forth in the relevant Clause shall in no way affect or limit Contractor's liability with respect to performance of the work or any obligation under the Contract.

6.39.13. Period of The Insurance:

The contractor shall take the required insurance cover as above for this work and shall Effective from the date of signing of agreement with the Employer. Policies shall be renewed regularly till the completion of work in all respects.

6.39.16 CONTRACT DOCUMENT.

The following shall form the contract documents:

- a) Statement of Agreed Variations, if any.
- b) The detailed Letter of Acceptance along with its enclosures.
- c) Fax of Acceptance awarding the works to the contractor.
- d) Addendum/Corrigendum to tender documents issued, if any.
- e) Original tender documents issued with its enclosures.

All other documents and correspondence exchanged prior to issue to Fax of Acceptance/ Letter of Acceptance whichever is earlier, shall be treated as null and void.

6.39.17 UNDERTAKING.

The bidder shall give an undertaking that he has read the SCC and GCC and other terms and conditions of the bid document and agree to abide by all terms and conditions stipulated in the bid document. Also the bidders have to confirm that none of their personnel working in the bidders organization is / area relative of any chairman / Director/ employee or member of SBI / or a Director / Partner of the bidder's company or member of SBI / or a Director / Partner of the bidder's company / Organization / partnership / proprietary concern in any way.

6.40. SUBLETTING OF WORK:

The successful bidder is expected to execute majority of the jobs with their own work force and shall be covered under their company rolls. The tender shall indicate clearly in his offers the works he intends to sublet to the sub-contractors. the contractor from time to time propose any addition or deletion to the list and will submit proposals in the regard to the EIC for approval well in advance well in advance so as not to impede the progress of work. such approval of the EIC will not relieve the contractor from any of his obligations, duties and responsibilities under the contract. In case of sub-letting of work either through SBI enlisted contractors or through other agencies, the contractor shall submit necessary documents about the background, technical & financial capabilities of the Sub-contractor and prior approval shall be obtained.

6.41 SUB CONTRACTOR:

At the commencement of the job the contractor shall supply to the EIC the list of all Sub-contractors or other persons or firms engaged by the contractor to work at the site. Any tenderer who had submitted the bid and pre-qualified for this tender and does not get the contract because of his being not the lowest will be prohibited from working as a sub-contractor for execution of this contract.

6.42 REVIEW MEETINGS AFTER AWARD OF WORK:

The Contractor shall present the programme and status at various review meetings as required.

6.42.1 Weekly Review Meeting:

Level of participation: Contractor's Site in charge and job Engineers.

Agenda:

- a. Weekly programme v/s actual achieved in the past week and programme for next week.
- b. Remedial Actions and hold up analysis.
- c. Employer query/approval
- d. Safety compliance

6.42.2 Monthly Review Meeting:

Level of Participation: Senior Officers of SBI and contractors.

Agenda:

- a. progress status / Statistics.
- b. Completion Outlook.
- c. Major hold ups / slippages.
- d. Assistance required.
- e. Criteria issues.
- f. Employer query/approval.
- g. safety compliance.

6.43. PROGRESS REPORTS TO BE FURNISHED AFTER AWARD OF WORK:

6.43.1 Monthly progress Report:

This report shall be submitted on a monthly basis within ten calendar days from cut-off date as agreed upon, covering overall scenario of the work. the report shall include but not be limited, to the following.

- a) Brief introduction of the work.
- b) Activities executed/achievements during the month.
- c) schedule v/s actual percentage progress & material stocks, resource allocation and overall work.
- d) Areas of concern/problem/hold ups, impact and action plan.
- e) Resources deployment status.
- f) Safety compliance report
- g) Distribution: SBI: Three copies

6.43.2 Weekly Report

This report (3 copies) will be prepared and submitted by the contractor on weekly basis and will cover following items:

- a) Activities programmed and completed during the week.
- b) Resource deployed men and machine.
- c) Qty. acheived against target in construction.
- d) Record of Man-days lost.
- e) Percentage progress, schedule and actual.
- f) safety compliance report.

6.44 TEST CERTIFICATES:

The contractor shall submit the certificates for every batch of materials from recognized laboratories / agencies for approval of the EIC.

6.45 WORKMANSHIP:

The contractor shall maintain workmanship of different items with an idea of providing trouble-free services to the users of different facilities. For this, it is expected that different fittings/fixtures after installation should not need attendance for a period 12 (Twelve) months and throughout the contract period the same has to be attended by the contractor at no extra cost to the Employer. All cement works shall have to be adequately cured as per relevant codes with no extra cost to the Employer.

6.46. SUPERVISION:

The contractor shall have to engage sufficient number of skilled persons to supervise and execute the work. The contractor shall solely be responsible for any defective construction/rectification as a result of poor supervision.

6.47. SPECIFICATIONS/ CODES AND STANDARDS:

All works under this Contract will be executed according to the specifications for works.

Whenever the details are not specifically covered in the specifications, relevant provisions in the latest revision and/ or replacement of the Indian standard specifications (IS) or any other inter-national code of practice /CPWD specifications will be followed. The contractor shall have to procure copies of such codes/ standards for ready reference of his own personnel as well as the Engineers at site at his own cost and without any additional reimbursement.

6.48 MATERIAL AND TRANSPORT: All materials expect mentioned otherwise in the items of the attached bill of quantities, for successful completion of work shall have to be procured and supplied by the successful tenderer at his own cost. The materials supplied by the contractor shall be of approved quality and approval also shall have to be taken from the Engineer at site before using the materials to the work. Rejected materials, if any, shall have to be removed by the contractor with his own labour and transport at his own cost immediately on receipt of the instruction.

6.49 CLEANING DURING EXECUTION AND AFTER COMPLETION:

On completion of the works the contractor shall reinstate and make good at his own expense any property or land which might have been disturbed and/or damaged by his works. He should also clean the site as required during execution and fully clear the site after completion of all the works. The contractor shall forward any usable materials found during the course of construction at the work site dispose of the debris all at his own expense by

his own transport and labour and clean out all part of the work and leave everything clean and tidy to the entire satisfaction to the Engineer.

6.50 EXTRA ITEMS RATES:

The work or extra items shall be started only after the approval of extra items rates by Employer / Architect. 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 and over heads. In case if similar works form a part of the tender the same shall be derive from such tenders rates.

7. SPECIAL CONDITIONS OF CONTRACT

7.1 CONTRACTOR NOT TO DEPOSIT MATERIALS IN A MANNER THAT MAY CAUSE INCONVENIENCE TO THE PUBLIC

The Contractor shall not deposit materials on any site which will seriously cause inconvenience to the public. The Employer may require the Contractor to remove any or all materials, which are considered by him to be a danger or inconvenience to the public or cause them to be removed at the Contractor's cost.

7.2 INFORMATION TO BE SUPPLIED BY THE CONTRACTOR

The Contractor shall furnish the Employer / Architect the following from time to time:

- 7.2.1 Detailed Industrial Statistics regarding the labour employed by him etc., every month (within 11th of succeeding month)
- 7.2.2 The Power of Attorney, name and signature of his authorized representative who will be in charge for the execution of the work.
- 7.2.3 The list of technically qualified persons (to be approved by the Architect) employed by him for the execution of the work within 15 days from date of start of the work.
- 7.2.4 The total quantity and quality of materials used for the works, every month within 5th of succeeding month.
- 7.2.5 The list of plant and machinery employed for this work every month.
- 7.2.6 Failure to submit any of these details in time, shall be treated as a breach of the contract and likely to result in, Levying a fine of 1000/- for each default for each month and or Withholding payments, otherwise due
- 7.2.7 For the periods for which name of technically qualified persons are not given or for which such persons are not employed, recoveries shall be made at .8000/- per month for each month of default.
- 7.2.8 In all these matters the decision of the Architect shall be final and binding.

7.3 PHOTOGRAPHS

The Contractor at his own cost shall take photographs of site and individual buildings during the progress of the work as directed by the Employer/Architect and submit two copies of each photograph with minimum size 25cm x 40 cm to the Employer/Architect.

7.4 INSPECTION BY THE CHIEF TECHNICAL EXAMINERS (VIGILANCE)

The proposed work covered under this tender, during its progress and/or after completion can also be inspected by the Chief Technical Examiner/Technical Examiner or Officers of the Central Vigilance Commission, Government of India, on behalf of Employer/Architect to ascertain that the execution of the work has been done with materials and workmanship all as stipulated in the contract and as directed. Contractor shall afford all reasonable facilities to the above vigilance staff and also provide them with ladders, tapes, plumb bob, level etc., as required and directed and also necessary labour skilled, unskilled to enable them to complete their inspection / study / technical scrutiny and no extra shall be admissible to the Contractor on this account.

7.5. INCOME TAX

Income tax shall be deducted from the Contractors' bills rules and regulations in force in accordance with Income Tax Act prevailing from time to time. Quoted rates shall be deemed to include this.

7.6 GST:

The quoted rates shall be Exclusive of GST.

7.7. FIRM PRICE

The prices shall be kept Firm till the completion of work and no escalation including statutory variation will be admissible.

7.8. DRAWINGS & DOCUMENTS

The drawings accompanying the tender document are of indicative nature and issued for tendering purpose only. Purpose of these drawings is to enable the tenderer to make an offer in line with requirements of the Employer. However, no extra claim whatsoever shall be entertained for any variation in the "Approved for Construction" and "Tender Drawings" regarding any changes/units. Construction shall be as per drawings / specifications issued / approved by the Architect during the course of execution of work. Detailed construction drawings on the basis of which actual execution of work is to proceed will be furnished to the Contractor progressively based on the detailed construction program evolved after the award of work and also based on construction progress achieved.

Signature of the Contractor

Detailed working drawings on the basis of which actual execution of the works is to proceed, will be furnished from time to time during the progress of the work. The contractor shall be deemed to have gone through the drawings and bring to the notice of the Engineer – in – Charge discrepancies if any, therein before actually carrying out the work.

Copies of all detailed working drawings relating to the works shall be kept at the contractor's office on the site and shall be made available to the Engineer – in- Charge at any time during execution of the contract. The drawings and other documents issued by the Employer shall be returned to the Employer on completion of the works.

7.9. CONSTRUCTION EQUIPMENT

The contractor shall without prejudice to his overall responsibility to execute and complete the work as per specifications and Time schedule, progressively deploy adequate equipments and tools and tackles and augment the same as decided by the Engineer – in -Charge depending on the exigencies of the work so as to suit the construction schedule. The tenderer shall submit a list of construction equipments he proposes to deploy for the subject work along with deployment schedule. No construction equipment shall be supplied by the Employer. Tenderer to ensure deployment of suitable cranes and take all safety precautions during execution of work.

7.10. SITE ORGANISATION

The tenderer shall submit the details of organization proposed by him at site of work for the implementation of the works under the contract, together with biodata of the key personnel. The contractor shall however without prejudice to his overall responsibility to execute and complete the works as per specifications and time schedule progressively deploy adequate qualified and experienced personnel together with skilled / unskilled manpower and augment the same as decided by Engineer – in – Charge depending on the exigencies of work to suit the construction schedule without any additional cost to Employer.

7.11 TEMPORARY WORKS

All temporary works, ancillary works, enabling works, including dewatering of surface and subsoil water, preparing approaches and working areas, wherever required for execution of the work, shall be the responsibility of the Contractor, and the price quoted by them shall be deemed to have included the cost of such works.

7.12 EXISTING SERVICES / STRUCTURES

Structures, drains, pipes, cables, overhead wires and similar services encountered in the course of the works shall be guarded from injury by the CONTRACTOR at his own cost, so that they may continue in full and uninterrupted use to the satisfaction of the Employer. Should any damage be done by the CONTRACTOR to any structures, mains, pipes, cables or lines (whether above or below ground etc), whether or not shown on the drawings, the CONTRACTOR must make good or bear the cost of making good the same without delay to the satisfaction of the Engineer – in – Charge.

7.13. DISTINCTION BETWEEN FOUNDATION AND SUPERSTRUCTURE

To distinguish between work in foundations and superstructures, the following criteria shall apply:

- a. For all Equipment pedestals, silos, pipe racks, other foundations and RCC structures, Work done upto 300 mm level above finished grade level will be taken as work in foundations and work above this level will be treated as work in superstructures and payments would be made accordingly.
- b. All works upto level corresponding to ground floor level shall be treated as work in "Foundation and Plinth" and all works above the ground floor level shall be treated as "Work in Superstructure".
- c. Irrespective of what has been stated above, all pavements, RCC retaining wall, all pipe sleepers and any similar item would be take as work done in foundations irrespective of locations, nomenclature and levels given anywhere.
- d. Where not specifically pointed out all works in cellars / sumps, tank pads, cable trenches or such similar items would be taken as work in foundations.

7.14. FRONTS FOR WORKS.

The work involved under this contract includes such works as have to be taken up and completed after other agencies on the job have completed their jobs. The contractor will be required and bound to take up and complete such works as and when the fronts are available for the same and no claim of any sort whatsoever shall be admissible to the contractor on this account. Only extension of time limit shall be admissible, if the availabilities of work fronts to the contractor are delayed due to any reasons not attributable to the Contractor.

7.15. HOUSEKEEPING:

It shall be the Contractor's responsibility to keep the work area clean and tidy always and shall be done on a day-to-day basis. Scrap, debris, oil spills, etc; generated during the course of work shall be disposed/carted away to unobjectionable place and the transportation for this purpose shall be arranged by the Bidder at his cost.

7.16. ABNORMAL RATES

The Contractor is expected to quote the percentage rate after careful analysis of costs involved for the performance of the complete the work consisting all specifications and conditions of the contract. If it is noticed that the rates quoted by the tenderer is unusually high (or) unusually low it will be sufficient cause for rejection of the tenderer unless the Employer is convinced about the reasonableness of the rate on scrutiny of the analysis for such rate to be furnished by the tenderer on demand. Notwithstanding anything there in stand, the rate once accepted by the employer 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.

7.17. INSURANCE

7.17.1. Indemnity by the Contractor.

The contractor shall be responsible at all times during the currency of the contract for and shall defend, hold harmless and indemnify the Employer from and against any and all claims, liabilities, costs, damages and expenses (including court cost and legal fees) arising whether by way of indemnity or otherwise, in relation to any and all losses of every kind and nature resulting from damage to or loss or, loss of use or recovery, or destruction of property, or sickness, injury or death suffered by any personnel or consultant of the contractor, its affiliates, agents or sub-contractors and damage to or loss or, loss of use or recovery or destruction of any property or equipment belonging or contracted to or otherwise in the custody of the contractor its affiliates, agents or sub-contractors or its or their personnel or consultants (other than Employer equipment) in connection with the performance of this contract.

7.17.2. Contractor's Personnel and Property.

The contractor shall be liable for and shall indemnify the Employer, the participants and Employer's personnel from and against all claims in respect of any death or injury or contractor's personnel and any damage to contractor's property in each case caused by or arising out of the performance of this contract and whether or not arising in respect of a serious event. The assumption of liability and the indemnity contained in this clause extends to any claims made against the Employer pursuant to any provision of any agreement.

All contractor's personnel which may include permanent, temporary or casual, servants, agents and / or representatives, contractual or otherwise, either contractor's and / or their sub-contractors, affiliates / subsidiaries / co-ventures shall be covered under contractor's workers compensation of statutory benefits and any damages or compensation payable in respect of accidents of injury as set forth and required by applicable law in the area of operations or such other jurisdiction under which contractor may become obligated to pay benefits.

7.17.3. Due Diligence

Apart from complying with the various expressed conditions it is necessary for the contractor to take reasonable precautions:

- : For safety of the property insured.
- : In selection of labour
- : To prevent injury, loss or damage

It is also requiring that the insured

- : To allow the insurer's access to examine the insured's premises plant and equipment
- : To minimize loss in the event of an accident.

7.17.4. Compliance With insurance Warranty:

The contractor is solely responsible for all the insurance warranties attached to the policies taken by him. The Employer should not be held responsible in any manner for non-compliance of the warranty.

7.17.5. Any Other Insurance As Required Under Law: CONTRACTOR shall also carry and maintain any and all other insurance(s) which may be required under any law or regulation from time to time without any extra cost to Employer. Contractor shall also carry and maintain any other insurance, which may be reasonably required

7.17.6. General Insurance Requirement. All insurance's required under Clause shall be on terms and conditions issued by insurance companies or underwriters acceptable to the Employer.

7.17.7. Non-Performance Of Contractors Insurance Companies:

The insolvency, liquidation, bankruptcy or failure of any insurance company providing insurance for Contractor or its sub-contractors or failure or denial of any such insurance Company to pay claims accruing, shall not be considered a waiver of, nor shall it excuse Contractor from complying with, any of the provisions of this Contract. Nevertheless, such liability shall be to the sole account of the Contractor.

7.17.8. Failure to Provide Required Insurance:

In the event that Employer reasonably disapproves of the insurance companies concerned, or if any of the insurance policies be not procured or maintained pursuant to Employer, at its option, may notify contractor that the failure to provide the insurance is a material omission whereupon it is agreed that Employer, at its sole option, shall have the right either to purchase similar coverage, the cost thereof to be reimbursed forthwith by Contractor to Employer, or alternatively, to be deducted by the Employer from any sum due or thereafter becoming due to contractor from Employer whether under this contract or any other contract to which both Employer and contractor are parties. In any case, the liability in such situations shall be to the sole account of the Contractor. Employer, exercising right to take appropriate policy under the above situation will in no way make themselves liable even if there is any deficiency in the policy so availed of.

7.17.9. No Limitation of Liability:

The required coverage referred to and set forth in the relevant Clause shall in no way affect or limit Contractor's liability with respect to performance of the work or any obligation under the Contract.

7.17.10. Period of The Insurance:

The contractor shall take the required insurance cover as above for this work and shall Effective from the date of signing of agreement with the Employer. Policies shall be renewed regularly till the completion of work in all respects.

7.18 UNDERTAKING.

The bidder shall give an undertaking that he has read the SCC and GCC and other terms and conditions of the bid document and agree to abide by all terms and conditions stipulated in the bid document. Also the bidders have to confirm that none of their personnel working in the bidders organization is / are relative of any chairman / Director/ employee or member of SBI / or a Director / Partner of the bidder's company or member of SBI / or a Director / Partner of the bidder's company / Organization / partnership / proprietary concern in any way.

7.19 SUB CONTRACTOR:

At the commencement of the job the contractor shall submit to the Architect/Employer the list of all Sub-contractors or other persons or firms to be engaged by the contractor to work at the site. Any tenderer who had submitted the bid for this tender and does not get the contract because of his being not the lowest will be prohibited from working as a sub-contractor for execution of this contract.

7.20 REVIEW MEETINGS AFTER AWARD OF WORK:

The Contractor shall present the programme and status at various review meetings as required.

7.20.1 Weekly Review Meeting:

Level of participation: Contractor's Site in charge and job Engineers.

Agenda:

- a. Weekly programme v/s actual achieved in the past week and programme for next week.
- b. Remedial Actions and hold up analysis.
- c. Employer query/approval
- d. Safety compliance

7.20.2 Monthly Review Meeting:

Level of Participation: Contractor, Architect and Senior Officers of SBI

Agenda:

- a.progress status / Statistics.
- b.Completion Outlook.
- c.Major hold ups / slippages.
- d.Assistance required.
- e.Criteria issues.
- f.Employer query/approval.
- g.safety compliance.

8.0 SAFETY CODE

8.1 Scaffolds:

8.1.1 Suitable scaffolds should be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except such short period work as can be done safely from ladders. When a ladder is used an extra mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying material as well, suitable footholds and hand holds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1/4 to 1 (1/4 horizontal and 1 vertical)

8.1.2 Scaffolding or staging more than 4m. above the ground or floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached bolted, braced and otherwise secured at least 3 feet high above the floor or platform of such scaffoldings or staging and extending along the entire length of the outside and ends there of with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

8.1.3 Working platform, gangways, and stairways should be so constructed that they should not sag unduly or unequally, and if the height of the platform or the gangway or the stairway is more than 3.6m above the ground level on the floor level. They shall be closely boarded, should have adequate width and should be suitably fastened, as described in (ii) above.

8.1.4 Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1m. Wherever there are open excavations in ground, they shall be fenced off by suitable railing and danger signals installed at night so as to prevent persons slipping into the excavations.

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

8.1.6 A sketch of the ladders and scaffolds proposed to be used shall be prepared and approval of the Engineer-in-charge obtained prior to construction.

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

8.1.8 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.

8.2 Excavation and Trenching:

8.2.1 All trenches, 1.25m or more in depth, shall at all times be supplied with at least one ladder for each 30m in length or fraction thereof. Ladder shall be extended from bottom of the trench to at least 1m. above the surface of the ground. The side of the trench which are 1.5m or more shall be sloped back to give suitable slope or securely held by timber bracing, so as to avoid the dangers of sides to collapse. The excavated material shall not be placed within 1.5m. of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.

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

8.3 Demolition:

8.3.1 Before any demolition work is commenced and also during the process of the work.

8.3.1.1 All roads and open areas adjacent to work site shall either be closed or suitably protected;

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8.3.1.2 No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged.

8.3.1.3 All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.

8.4 Personal Safety Equipments:

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

8.4.2 Worker employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.

8.4.3 Those engaged in white washing and mixing or stacking of cement bags or any material which is injurious to the eyes shall be provided with protective goggles.

8.4.4 Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

8.4.5 When workers are employed in sewers and manholes, which are in use, the Contractor shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into the manholes and manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public.

8.4.6 The Contractor shall not employ men below age of 18 years and women on the work of painting with products containing lead in any form. Wherever men above the age of 18 years are employed on the work of lead painting, the following precautions should be taken.

8.4.7.1 No paint containing lead or products shall be used except in the form of paste or readymade paint.

8.4.7.2 Overalls shall be supplied by Contractors to the workmen and adequate facilities shall be provided to enable the worker painters to wash during the cessation of work.

8.4.6 When the work is done near any place where there is risk of drowning, all necessary equipment should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work

8.5 Hoisting Machines:

8.5.1 Use of hoisting machines and tackle including their attachment, anchorage and supports shall conform to the following standards or conditions:

8.5.1.1 These shall be good mechanical construction, sound material and adequate strength and free from patent defect and shall be kept in good repair and in good working order.

8.5.1.2 Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.

8.5.2 Every crane driver or hoisting applications operator shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding which give signals to operator.

8.5.3 In case of every hoisting machine and of every chain, hook, shackle swivel and fully block used in hoisting or as means of suspension for safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting

machine having a variable safe working load, each safe working load of the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

8.5.4 In case of department machines, the safe working load shall be notified by the Engineer-in-Charge. As regards Contractor's machines the Contractor shall notify the safe working load to the machine to the Engineer-in-Charge whenever he brings any machinery to site of work and get it verified by the Engineer-in-charge concerned.

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

All scaffolds, ladders and safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use.

8.5.6 To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by that Contractor shall be open to inspection by the Labour Officer, Engineer-in-Charge of the department or their representatives.

Notwithstanding the above clauses from 9.5.1 to 9.5.5 there is nothing in these to exempt the Contractor from the operation of any other Act or Rule in force in the Republic of India.

8.6. Penalties for Violation/Non-adherence of safety procedures and practices:

Event	Penalty
Absence of Resident Engineer of Contractor in site	Rs.1000 per Meeting
For non-use of Personal Protective Equipment (Helmet, goggles, gloves, Safety belts, etc.,)	Rs.250/- per day/ item / person
Working at height / depth without permit and / or failure to arrange fall-protection arrangement (while works continue at heights / depth, i.e., 1.5 mtrs)	Rs.1000/- case/day
Failure to have regular site safety Inspection (by contractors themselves) every week	Rs.1000/- Week
Working without clearance	Rs.5000/- per occasion
Hot work without proper Clearance/ permit	Rs. 10000/- per occasion
Non-Display of name board Permit etc.	Rs.500/- per occasion
Non fencing of excavated area	Rs.1000/- per occasion
Inadequate First Aid Box	Rs.500/- per occasion
For not providing shoring/ strutting/ proper slope and not keeping the excavated earth at least 1.5M away from the excavated area	Rs.5000/- per occasion

The rate of above penalty shall be double in case of violation of aforesaid acts more than three times during the pendency of the contract. In case of accidents depending on the seriousness of injury etc. in addition to the hospitalization / Treatment charges and Group insurance amount, compensation shall be paid by the Contractor to the affected person / his family members in presence of Engineer-in-Charge as per Workmen Compensation Act.

9. MODEL RULES FOR THE PROTECTION OF HEALTH AND SANITARY ARRANGEMENTS FOR WORKERS EMPLOYED BY CONTRACTORS

9.1 Application:

These rules shall apply to the Contractor of PROPOSED EXTERNAL CIVIL WORKS AT KADIRI MAIN BRANCH, KADIRI, ANANTAPUR DIST, ANDHRA PRADESH STATE. The scope of the project is described in the drawings the specifications and schedule of quantities.

9.1.1 "Workplace" means a place at which, at an average 50 or more workers are employed in connection with construction work.

9.1.2 "Large Workplace" means a place at which, at an average 500 or more workers are employed in connection with construction work.

9.2 First Aid:

9.2.1 At every workplace, there shall be maintained in a readily accessible place first aid appliance including an adequate supply of sterilized dressings and sterilized cotton wool. The appliances 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 the working hours.

9.2.2 At large workplaces, where hospital facilities are not available within easy distance of the work. First Aid post shall be established and be run by a trained compounder.

9.2.3 Where large workplaces are remote from regular hospitals, indoor ward shall be provided with one bed for every 250 employees.

9.2.4 Where large workplaces are situated in cities, in towns or in their suburbs and no beds are considered necessary owing to the proximity of city or town hospitals, suitable transport shall be provided to facilitate removal of urgent cases to the hospitals. At other workplaces, some conveyance facilities, such as a car, shall be kept readily available to take injured person or persons suddenly taken seriously ill to the nearest hospital.

9.3 Drinking Water:

9.3.1 In every work place, there shall be provided and maintained at suitable places easily accessible to labour, a sufficient supply of cold water fit for drinking.

9.3.2 Where drinking water is obtained from an intermittent public water supply, each work place be provided with storage where such drinking water shall be stored.

9.3.3 Every water supply storage shall be at a distance of not less than 15m. from any latrine, drain or other source of pollution. Where water has to be drawn from an existing well which is within such proximity of latrine, drain or any other source of pollution, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with a trap door which shall be dust and water proof.

9.3.4 A reliable pump shall be fitted to each covered well the trap-door shall be kept locked and opened only for cleaning or inspection which shall be done at least once in a month.

9.4 Washing and Bathing place:

9.4.1 Adequate washing and bathing places shall be provided, separately for men and women.

9.4.2 Such places shall be kept in clean and drained condition.

9.5 Scale of Accommodation in Latrines and Urinals:

There shall be provided within the precincts of every work place latrines and urinals in an accessible place, and the accommodation, separately for each for each of them, shall not be less than the following scale:

	No. of Seats
9.5.1 Where the number of persons does not exceeds 50,	2
9.5.2 Where the number of persons exceeds 50 but does not exceed 100	3
9.5.3 For every additional 100	3 per 100

9.6 Latrines and Urinals for Women:

If women are employed separate latrine and urinals, screened from those of men and marked in the vernacular in conspicuous letter. "For Women Only" shall be provided on the scale laid in 6.0. Those for men shall be similarly marked "For Men Only". A poster showing the figure of a man and a woman shall also be exhibited at the entrance of latrines for each sex. There shall be adequate supply of water close to the urinals and latrines. laid in 6.0 Those for men shall be similarly marked "For Men Only". A poster showing the figure of a man and a woman shall also be exhibited at the entrance of latrines for each sex. There shall be adequate supply of water close to the urinals and latrines.

9.7 Latrines and Urinals:

Except in work places provided with water flushed latrines connected with a water borne sewerage system, all latrines shall be provided with receptacles on dry earth system which shall be cleaned at least four times daily and at least twice during working hours and kept in a strictly sanitary condition. The receptacles shall be tarred inside and outside at least once a year.

9.8 Construction of Latrines:

The inside walls shall be constructed of masonry or some suitable heat-resisting non-absorbent material and shall be cement-washed inside and outside at least once a year. The dates of cement washing shall be noted in a register maintained for the purpose and kept available for inspection. Latrines will not be of a standard lower than borne-hole system and should have thatched roofs.

9.9 Disposal of Excreta:

Unless otherwise arranged for by the local sanitary authority arrangements for proper disposal of excreta shall be made by septic tank or leach pit in conformity with the requirements of local public health authorities.

9.10 Provision of Shelters during rest:

At every work place there shall be provided, free of cost, two suitable sheds one for meals and the other for rest separately for men and women for the use of labour. The height of the shelter shall not be less than 11 feet from the floor-level to the lowest part of the roof. The sheds should be roofed with at least thatch and mud flooring will be provided with a dwarf wall around not less than 750mm. Sheds should be kept clean and the space should be on the basis of at least 0.50 Square meters per head.

9.11 Creches:

9.11.1 At every work place, at which 50 or more women workers are ordinarily employed there shall be provided two huts for the use of children under the age of 6 year belonging to such women. One hut shall be used for infant's games and play and the other as their bed-room. The huts shall not be constructed on a lower standard than the following:

9.11.1.1 Thatched roofs:

9.11.1.2 Mud floor and walls:

9.11.1.3 Planks - spread over the mud floor and covering matting. The huts shall be provided with suitable and sufficient openings for light and ventilation. There shall be adequate provision of sweepers to keep the place clean. There shall be two ayahs in attendance. Sanitary utensils shall be provided to the satisfaction of the Health Officer of the area concerned. The use of the hut shall be restricted to children their attendants and mothers of the children.

9.11.2 Where the number of women workers is more than 25 but less than 50, the Contractor shall provide at least one hut and one ayah to look after the children of women workers.

9.11.3 The size of creche or creches shall vary according to the number of women workers.

9.11.4 The creches or creche shall be properly maintained and necessary equipment like toys, etc. shall be provided.

The above rule shall be incorporated in the contracts and in notices inviting tenders and shall form an integral part of the contract.

10.0 TECHNICAL SPECIFICATIONS

This specification establishes and defines the requirements of various materials to be used in Civil and Structural works.

Whenever any reference to IS Codes is made, the same shall be taken as the latest revision (with all amendments issued thereto) as on the date of submission of the bid.

Apart from the IS Codes mentioned in particular in the various clauses of this specification, all other relevant codes related to specific job under consideration regarding quality, tests, testing and/ or inspection procedures shall be applicable. Reference to some of the Codes in the various clauses of this specification does not limit or restrict the scope of applicability of other referred or relevant codes.

In case of any variation / contradiction between the provision of I.S. Codes and this specification, the provision given in this specification shall be followed.

All materials shall be of standard quality and shall be procured from renowned sources / manufactures approved by the Engineer-in-Charge. It shall be the responsibility of the Contractor, to get all materials / manufactures approved by the Engineer-in-Charge for his approval. If so desired by the Engineer-in-Charge, tests shall be conducted in the presence of the Engineer-in-Charge or his authorized nominee.

Quality and acceptability of materials not covered under this specification shall be governed-by the relevant I.S.Codes. In case IS code is not available for the particular-material, other codes e.g.-B.S. or DIN or API/ASTM shall be considered. The decision of Engineer-in-Charge, in this regard, shall be final and binding on the Contractor.

Whenever asked for, the Contractor shall submit representative samples of materials to the Engineer-in-Charge for his inspection and approval. Approval of any sample does not necessarily exempt the Contractor from submitting necessary test reports for the approved material as per the specification /relevant IS Codes.

The Contractor shall submit manufacturer's test reports on quality and suitability of any material procured-from them and their recommendation on storage, application, workmanship etc. for the intended use. Submission of manufacturer's test reports does not restrict the Engineer-in-Charge from asking fresh test results from an approved laboratory of the actual material supplied from an approved manufactures/source at any stage of execution of work.

All costs relating to or arising out of carrying out the tests and submission of test reports and or samples to the Engineer-in-Charge for his approval during the entire tenure of the work shall be borne by the contractor and included in the quoted rates.

Materials for approval shall be separately stored and marked, as directed by the Engineer-in-Charge and shall not be used in the works till these are approved.

All rejected materials shall be immediately removed from the site by the contractor at his own cost.

SUBHEAD - EXCAVATION EARTH WORK AND ANTI-TERMITE TREATMENT

10.1 General

The work to be done under this subhead comprises of supply of all labour, plant materials and other performance of all work necessary for excavation with necessary close timbering, strutting, shoring and bailing/pumping out water including disposing of all surplus excavated material from the site as directed by Engineer in charge / Architect.

10.2 Site Clearance: Before the start of work, the area of the plot shall be cleared of all shrubs, vegetation, grass, bush wood, shrubs etc. All the building shall be laid out to ensure that the layout plan fits at site. After completion of the work, the entire area of the plot shall be cleared from all debris, unwanted materials and level/slope of ground as required at site upto peripheral roads, The debris and unwanted material shall be disposed off away from site without extra cost .

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10.3 Site Levels: After site clearance and before commencement of excavation or filling, the Contractor shall take levels at 3.0 mtr. intervals in either directions or at lesser intervals as considered necessary at site for the entire plot. A record of these levels shall be signed jointly by Contractor, Engineer in charge and Architect. These records shall be kept by the Engineer in charge.

10.4 Setting out of works: The Contractor shall set out the works and shall provide and fix all setting out apparatus required and solely be responsible for the true and perfect setting out the same and for the correctness of the position, levels, dimensions and alignment of all buildings as per the drawings. The contractor shall take in writing the approval of the Engineer in charge/ Architect for setting out and levels before starting the works. These approvals shall be recorded in the stage passing register and signed by the Architect and contractor and countersigned by the Engineer in charge.

10.5 Surface Excavation: The surface area to be occupied by the building shall be cleared of all debris, shrubs and plants, grass all round the building including ramps if any. All roots and organic material shall be cleared from the filling area inside the building.

10.6 Precious objects, Relics and Antiquities

All precious metals, precious stones, coins, treasure trove, relics, antiquities minerals ; archeological and other finds of historical importance felled trees, other usable materials of any description and the like found in or upon the site shall be the property of the Employer and deliver the same to such person or persons as the Employer may from time to time authorize or appoint to receive the same.

10.7 Classification

All materials to be excavated shall be classified by the Engineer-in-charge into one of the following classes and shall be paid for at the rates quoted for such particular class of material. No distinction shall be made between materials that are dry, moist or wet. The decision of the Engineer-in-charge regarding the classification of the material shall be final and binding on Contractor and may not be opened up or reviewed or amended in any arbitration:

10.7.1 Ordinary and Hard soils

These shall include all kinds of soils containing kankar, sand, silt, murum and/or shingle, gravel, clay, loam, peat, ash, shale and the like which can generally be excavated by spade, pick axe and shovel and which is not classified under " soft and decomposed rock" and/or " hard rock" as defined below. This classification, however, shall include embedded rock boulders not longer than 1(one) metre in any direction and not more than 200mm in either one of the other two directions.

10.7.2 Soft and Decomposed Rock.

These shall include rock, boulders, slag, chalk, slate, hard mica schist, laterite, old lime or masonry foundations and the like and which in the opinion of the Engineer-in-Charge comprise rock, but which do not need blasting and can be removed with picks, hammer, crow bars, wedges and pneumatic breaking equipment. The fact that the contractor resorts to blasting for his own purposes shall not qualify the excavated material for classification under "hard rock" as defined below. This classification shall also include excavation in macadam and tarred roads and pavements, rock boulders not longer than 1(one) meter in any direction and not more than 500m in anyone of the other two directions and random rubble of any type, thickness, size, shape or any masonry to be dismantled.

10.7.3 Hard Rock

This shall include all rock occurring in large continuous that cannot be removed except by blasting. No blasting shall be permitted without the prior written consent of the Engineer-in-Charge. Harder varieties of rock with or without varies and secondary minerals, which in the opinion of the Engineer-in-Charge require blasting, shall be considered as hard rock. Boulders of rock occurring in such sizes and not classified under either (a) or (b) above shall also be classified as hard rock. This classification shall also include both reinforced and unreinforced concrete to be broken out unless separate provision in the bill of Quantities. The Engineer-in-charge may direct in certain, extreme cases that rock be excavated by heating and sudden quenching for splitting. Removal of rock using these process shall be paid for at the same rates as for blasting.

10.8 Excavation in Trenches

a) Earth work in excavation in any type of soil as existing at site for foundations of columns and walls shall be carried out as indicated on drawings.

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b) The finished floor level of Stilt floor shall be fixed at site by the Engineer-in-Charge and Architect. The work shall be executed at site as per levels shown on drawings / approved by the Engineer-in-Charge / Architect.

c) Immediately after the execution of the foundation work and before covering the same the record of the following levels as actually executed at site separately for each block / other building shall be recorded in the measurement books and jointly signed and dated by the Engineer-in-Charge and Contractor.

- (i) Existing ground level.
- (ii) Level of bottom of lean concrete, under footings of columns and walls.
- (iii) Finished flooring level of academic area and ground floor residential units.

d) If Trenches or foundations are excavations beyond the specified dimensions due to bad workmanship of contractor, the extra excavation shall be filled with lean concrete 1:4:8, cement: 4 coarse sand: 8 graded stone aggregate of 40mm nominal size) by the contractor without any extra cost to Employer.

10.9 Excavation over Areas:

Excavation over areas shall be carried out to the required depths and profiles for which suitable arrangements shall be made by the Contractor. The sides of the trench shall be kept vertical upto a depth of 2 mtr. From the bottom. For a greater depth, the excavation profiles shall be widened by allowing steps of 50 cm on either side after every 2 mtr. from the bottom. Alternately the excavation can be done so as to give slopes of 1:4. Where the soil is soft, loose or slushy, the width of steps shall be suitably increased or side sloped or the soil shored up as directed by Engineer in charge. It shall be the responsibility of the Contractor to take complete instructions in writing from Architect/Employer regarding the stepping, sloping or shoring to be done for excavation deeper than 2 mtr.

10.10 Slips:

The Contractor shall take all necessary precautions to prevent slips in excavation and shall at his own expense make good any damage or defect and remove top soil dumps and any surplus material caused by slips.

10.11 Plinth Filling & outside area filling

a) Earth obtained from excavation or approved earth brought from outside for extra payment shall be filled in layers not more than 20 cm. in depth at a time, spread, leveled, watered and well consolidated around foundations, under floors and other locations. The earth used for filling shall be free from all grass, roots debris etc.

b) Testing of filling layers: After compaction of each layer, samples shall be taken from the compacted layer and tested for dry density as per IS practice. The next layer of filling shall not be permitted to be deposited until the Engineer-in-Charge / Architect is satisfied that the previous layer has achieved required compaction. the contractor shall inform the Engineer-in-Charge / Architect in writing for inspection after filling and completion of each layer. if any particular layer fails to meet the required compaction, it shall be recompacted as directed by the Engineer-in Charge / Architect and fresh samples shall be taken to ascertain the compaction density. such recompaction shall be continued till the desired compaction (90%) is achieved.

10.12 Sand Filling: Sand shall be of approved grade and free from dust, organism, and foreign matters. fine sand filling under floors shall be of specified thickness as shown on drawing. These shall be dry River fine sand watered and consolidated including dressing and leveling.

10.13 Disposal of Surplus Soil/Material: Surplus soil/earth if any, shall be disposed off to unobjectable place away from the site. All excavated material not so used shall only be disposed off to unobjectable place away from the site.

10.14 Anti-termite Treatment

This shall be provided to bottom of trenches sides, including treating the back fill, under floors and other locations as specified in IS-6313 Part II for preconstruction soil treatment with any of the followings:

CHEMICAL CONCENTRATION BY WEIGHT PERCENT

(i) Chloropyrophos emulsifiable concentrates to IS 8944-1978:20

(a) The work of anti-termite treatment shall be got executed by a specialist firm which must be member of IPCA and approved by the Engineer in charge/ Architect and shall be carried out as per IS 6313 Part I & II of 1981 for pre-construction soil treatment. The firm shall render a ten-year guarantee to the employer through the

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contractor who will be the principal guarantor. The period of ten year shall be reckoned from the date of completion of work as in completion certificate. The contractor should store the total required consumption of chemical at site within 7 days of the start up of the work. The contractor shall stock all old used drums/cans till the completion of the project.

b) Such guarantee shall be directly given by the specialist agency to the employer through the contractor in the form approved by the employer. In the event of reinfestation at any time during guarantee period, the specialist agency shall undertake such treatment as may be necessary to render the structure free from termite infestation including breaking and reinstalling any other work that may be necessary for the treatment at no extra cost.

c) Time of Application

Soil treatment should start when foundation trenches and pits are ready to take mass concrete in foundations. Laying of mass concrete should start when the chemical emulsion has been absorbed by the soil and the surface is quite dry. Treatment should not be carried out when it is raining or when the soil is wet with rain or sub-soil water. The foregoing applies also in the case of treatment to the filled earth surface within the plinth area before laying the sub-grade for the floor.

d) Termite Mound Treatment

If termite mounds are found within the plinth area, these shall be destroyed by breaking open the Earthen structure, making holes with crowbars and pouring into the mound, at several places approximately 4 liters of emulsion per cubic metre of mound.

e) Treatment of column pits, foundations, trenches and basement excavations.

The bottom surface and the sides (upto a height of 300mm above concrete foundation level) of the excavations for column pits, wall trenches and basements shall be treated with the chemical at the rate of 5 liters per square metre of surface area. after constructing the column foundation and retaining walls of the basement, the back fill in immediate contact with the proposed program, methods and details of plant and equipment to be used for / batching and mixing of concrete.

a) Reports for Inspection and Testing

During concreting operations, the Contractor shall conduct inspection and testing and all reports thereon shall be submitted in summary form to the Engineer in charge/ Architect.

b) Schedules

The Contractor shall prepare working schedule for dates and rate of placing of concrete for each item of work and submit the same to the Engineer in charge/ Architect when requested.

10.15.3 Materials

Before bringing to the site, all materials for cement concrete shall be approved by the Engineer in charge/ Architect. All approved samples shall be deposited in the office of the Engineer in charge/ Architect. The Engineer in charge/ Architect shall have the option to have any of the material tested to find whether they are in accordance with specifications at the Contractor's expenses.

a) Cement: shall be ordinary Portland and shall be stored in a dry waterproof go down.

b) Fine Aggregate: For all concrete work, it shall be coarse sand conforming to the grading given below: - (Zone I or II only applicable to concrete). Silt content not to exceed 8% by volume. The grading of fine aggregate shall be within the limits given in the following table and shall be described as fine aggregate grading Zone I and II

IS Sieve Designation	Percentage Passing for	
	Grading Zone I	Grading Zone II
10mm	100	100
4.75mm	90-100	90-100
2.36mm	60-95	75-100
1.18mm	30-70	55-90
600 micron	15-34	35-59
300 micron	5-20	8-30
150 micron	0-10	0-10

(c) Coarse aggregate: For concrete it shall be crushed stone graded coarse aggregate. Grading shall be within the limits as given in the following table:-

(d) Coarse aggregate of all grades shall be from the crushers of approved source.

IS Sieve Designation	Percentage Passing for graded aggregate of Nominal size			
	40mm	20mm	16mm	12.5mm
80mm	100	-	-	-
63mm	-	100	-	-
40mm	95-100	100	-	-
20mm	30-70	95-100	100	100
16 mm	-	-	90-100	-
12.5mm	-	-	-	90-100
10mm	10-35	25-55	30-70	40-85
4.75mm	0-5	0-10	0-10	0-10
2.36mm	-	-	-	-

NOTE: If directed by Engineer in charge/ Architect, the aggregate (fine as well as coarse) shall be washed at Contractor's expense.

e) Broken Brick aggregate:- Broken brick aggregate shall be prepared from well burnt bricks. These shall be free from under burnt particles and adherent coating of soil or silt.

f) Water

Water used in construction for all civil & structural works shall be clean and free from injurious amount of oil, acid, alkalis, organic matters or other harmful substances which may be deleterious to concrete, masonry or steel. The pH value of water samples shall be not less than 6. Potable water shall be considered satisfactory. Under ground water can also be used with the prior approval of Engineer-in-Charge, if it meets all the requirements of IS:456

Tests on water samples shall be carried out in accordance with IS: 3025 and they shall fulfill all the guidelines and requirements given in IS:456

The Engineer-in-Charge may require the contractor to prove, that the concrete prepared with water, proposed to be used, shall not have average 28 days compressive strength lower than 90% of the strength of concrete prepared with distilled water.

The Engineer-in-Charge may require the contractor to get the water tested from an approved laboratory before starting the construction work and in case the water contains any oil / organic matter or an excess of acid, alkalis or any injurious amount of salts etc., beyond level) of the excavations for column pits, wall trenches and basements shall be treated with the chemical at the rate of 5 liters per square meter of surface area. After constructing the column foundation and retaining walls of the basement, the back fill in immediate contact with the foundation structure shall be treated at the rate of 15 liters per square meter of the vertical surface of the sub-structure for each side. If water is used for ramming the earth fill, the chemical treatment shall be carried out after ramming operation is completed by rodding the earth at 150mm c/c close to wall surface and spraying the chemical above dose. As earth is spilled layers the treatment shall be carried out in similar stages. The chemical emulsion shall be directed towards the concrete or masonry surfaces of the columns and walls so that the earth in contact with these surfaces is well treated with the chemicals. In the case of R.C.C framed structure with columns, plinth beams and R.C.C basements, the treatment shall start at the depth of 500mm below ground level from this depth the back fill around the columns, beams and R.C.C basement wall shall be treated at the rate of 15 liters per square meter of vertical surface

g) Termite Proof Course or DPC in Plinth

If plinth level damp proof course is provided, the termite proof course shall be located just below the level of the filled earth. The plinth surface should be treated at 5 liters per square meters immediately after the course is laid and the concrete is green.

If there is no provision of a damp proof course, the top surface of the masonry course just below the level of plinth filling mentioned above should be soaked with the chemical emulsion at the rate of 5 liters per square meter of the

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surface area. This application should be carried out slowly to enable the masonry surface to absorb the emulsion properly. Both steps (a) & (b) above help in creating a barrier which is impervious to termite entry.

h) Termite Treatment at junction Of Walls and Floor

Rodding shall be carried out along the junction of walls and earth filling at 15 cm interval down to or slightly lower than the DPC or the chemical barrier described above. Emulsion shall be sprayed along the wall junction at 1 liter per linear meter so that it mixes intimately with the broken up soil and seeps to the DPC level or chemical barrier thus establishing continuity on the anti termite layer. the disturbed earth is then tampered back in place.

i) Treatment Of Top Surface Of Plinth Filling

after the plinth area earth filling is completed and before the rubble packing of sub grade is laid, the entire surface of the filled earth shall be treated with the chemical emulsion at the rate of 5 liters per square meters. Light rodding may be carried out in the soil surface to facilitate saturation of the soil with chemical emulsion. Where construction has advanced already for facility of construction, the treatment could also be done effectively, over the base concrete (lean mix) under the floor taking care that the emulsion, at the rate of 5 liters per square meter soak fully into the concrete.

the above application effectively prevents entry of termites through the floor structure.

j) Treatment of Soil along External Perimeter

Earth around the external perimeter of the building upto a depth of 30cm, shall be treated at the rate of 5 ;0 liter per running meter of the external wall. To facilitate this treatment solid MS rods should be driven into soil as close as possible to the plinth wall at intervals of 15cm, and upto a depth of 30cm , and the rods move at backwards and forwards in a direction parallel to the wall to break up the soil so that the emulsion mixes intimately with the soil.

K) Spraying equipment

A pressure pump shall be used to carry out spraying operations to facilitate uniform spraying and penetration of chemical into the earth. The chemical concentration and dosage for horizontal and vertical surfaces are based on IS: 6313 (Part II) code of practice for antitermite measures in building.

f) Measurement

Measurement for payment of pre-construction treatment as detailed above shall be for actual area covered by building at ground level on plan in square meter.

10.15 SUBHEAD - CONCRETE (PLAIN AND REINFORCED)

10.15.1 General

This subhead covers the requirements for furnishing of cement concrete including materials proportioning batching, mixing, testing, placing, compacting, finishing, jointing, curing and all other work as required for cast-in-place/plain cement concrete/RCC.

10.15.2 Submittals

a) Materials Reports

Prior to start of delivery of materials required for cement concrete the following shall be submitted by the Contractor to the Engineer in charge/ Architect for approval.

(i) Recommended suppliers and / or sources of all ingredients for making concrete including cement fine and coarse aggregates, Water and additives.

(ii) Quality Inspection Plan to ensure continuing quality control of ingredients by periodic sampling, testing and reporting to the Engineer in charge / Architect on the quality of materials being supplied.

b) Plant & Equipment

The Contractor shall submit the following to Engineer – in - charge / Architect well in any change in source of water, water samples shall be tested again to meet the specified requirements.

Water shall be stored in tin barrels, steel tanks or water-tight reservoirs made with bricks / storm or reinforced concrete, brick / stone masonry reservoirs shall have R.C.C base slab and shall be plastered inside, with one part of cement and four part of sand and finished with neat cement punning. These reservoirs shall be of sufficient capacity to meet the water requirement, at any stage of construction. Water for curing shall be of the same quality as used for concreting and masonry works. sea water shall not be used for preparation of cement mortar, concrete as well as for curing of the plain / reinforced concrete and masonry works. Sea water shall not be used for hydro testing and -checking the leakage of liquid retaining structures also.

g) Admixture & Additives

Chemically admixtures are not to be used until permitted by the Engineer in charge/ Architect 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 Engineer in charge/ Architect for approval.

10.15.4 Mixing: All cement concrete (plain or reinforced) shall be mixed in mechanical mixers.

10.15.5 Consolidation: Concrete for all reinforced concrete works in column footings, columns, beams, slabs and the like shall be deposited and well consolidated by vibrating, using portable mechanical vibrators. The rest of the concrete such as shelving etc. shall be deposited and well consolidated by pouring and tamping. Care shall be taken to ensure that concrete is not over vibrated so as to cause segregation.

10.15.6 Grade of Concrete :- The compressive strength of various grades of concrete shall be given as below:-

SL.NO.	GRADE DESIGNATION	COMPRESSIVE STRENGTH ON 15cm CUBES min.7 Days (N/mm ²)	SPECIFIED CHARACTERISTI CS COMPRESSIVE STRENGTH AT 28 Days (N/mm ²)	MINIMUM CEMENT CONTENT (Kg.per Cub.mtr)	MAXIMUM WATER CEMENT RATIO
(i)	M-20	As Per Design	20	320	0.55
(ii)	M-25	As per Design	25	340	0.50
(iii)	M-30	As Per Design	30	360	0.45
(iv)	M-35	As Per Design	35	380	0.40

NOTE: -

i) In the designation of a Concrete mix letter M refers to the mix and the number of the specified characteristic compressive strength of 15 cm – cube at 28 days expressed in N/mm².

ii) It is specifically highlighted that in addition to the above requirements, the maximum cement content for any grade shall be limited to 500 kg/cubic meter. The limitations shall apply to all types of cements of all strengths.

iii) The minimum cement content for design mix concrete shall be maintained as per the quantity mentioned above. Even in the case where the quantity of cement required is higher than the minimum specified above to achieve desired strength based on an approved mix design, nothing extra for extra cement used shall become payable to the contractor.

10.15.6.1 The first concrete mix design / laboratory tests, with admixture will be carried out by the contractor through any one of the reputed laboratories /Test houses.

10.15.6.2 The contractor shall submit the report on design mix from any of above approved laboratories for approval of Engineer-in-Charge within 30days from the date of issue of letter of acceptance of the tender No. concretion shall be done until the design mix is approved. In case of white Portland cement and the likely use of admixtures in concrete with ordinary Portland cement, the contractor shall design and test the concrete mix by using trial mixes with white cement and / or admixtures also, for which nothing extra shall be payable.

10.15.6.3 In case of change of source or characteristic properties of the ingredients used in the concrete mix during the work, a revised laboratory mix design report conducted at laboratory established at site shall be submitted by the contractor as per the direction of the Engineer-in-charge.

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10.15.6.4 All cost of mix designing and testing connected therewith including charges payable to the laboratory shall be borne by the contractor.

10.15.6.5 Batching and Laying:

a) Ready Mix Concrete (RMC) obtained from the automatic batching plant shall be used. Transit mixtures shall transport the concrete to site. All the precautions shall be taken during the transportation and handling of concrete has to get the approval from Engineer-in-Charge regarding source of ready-mix concrete. Nothing extra on account of R.M.C & its transportation at site of work shall be paid.

b) The concrete shall be placed in position using tower crane or concrete pumps of adequate capacity to lift upto machine room level. use of mechanical hoists shall not be permitted for lifting of concrete to various levels. For pumping of concrete the design of concrete mix shall be done separately. Nothing extra for laying concrete using concrete pumps or for extra concrete mix. design shall be paid. in other words, charges of carrying out concrete mix re-design due to change of source of raw material or re-design for pump able concrete etc. shall not be paid.

10.15.6.6 All other operations in concreting work light mixing, slump, laying, placing of concrete, compaction, curing etc., shall be as per latest IS codes.

10.15.6.7 Test specimen, Frequency of sampling, test results of samples, lot size, and standard of acceptance: -

10.15.6.8 The contractor has to arrange at site the centering and shuttering for 1700 Sqmt. Before start of work. Only M.S centering / shuttering and scaffolding material unless and otherwise specified shall be used for all R.C.C work to give an even finish of concrete surface. However, marine - ply shuttering in exceptional cases as per site requirement may be used on specific request from contractor as approved by the Engineer-in-Charge. Nothing extra shall be paid for the centering and shuttering circular in shape whenever the form work is having a mean radius exceeding 6m in plan.

10.15.6.9 In order to keep the floor finish as per architectural drawings and to provide required thickness of the flooring as per specifications, the level of top surface of R.C.C shall be accordingly adjusted at the time of its centering, shuttering and casting for which nothing extra shall be paid to the contractor.

10.15.6.10 As per general Engineering practice, level of floors in toilet / bath , balconies, shall be kept 12 to 20 mm a required lower than the general floors shuttering should be adjusted accordingly, Nothing extra is payable on this account.

10.15.6.11 in respect of all projected slabs at all levels including cantilever, canopy, the payment for the R.C.C work shall be made under the item R.C.C slabs. No extra payment will be made for shuttering, it should inclusive in R.C.C item.

10.15.6.12 Nothing extra shall be paid for providing drip course or moulding in the R.C.C projected surfaces whenever required.

10.15.6.13 Nothing extra shall be paid for laying in slanting position of centering, shuttering, reinforcement and R.C.C work for the slabs and beams of sloping roofs.

10.16 Form Work

General: The steel / Plywood form work shall be designed and constructed to the shapes, line and, dimensions shown on the drawings. All forms shall be sufficiently watertight to prevent leakage of mortar. Forms shall be constructed in such a way so that it can be removed easily without disturbing the structure. Maximum height of column for which concrete can be placed at a time shall not be more than 1.5mtr. Floor height upto 3.66111 shall be considered as one floor.

10.17 Props may be hard wood / steel. Timber used in centering and props should be suitable and strong. Pre moulded cement cubes or plastic blocks will be planned between form work and reinforced cement to achieve uniform cover of concrete.

10.18 Cleaning and Treatment of Forms: All rubbish, particularly chippings, shavings and saw dust, shall be removed from the interior of the forms (steel / ply) before the concrete is placed the form work in contact with the

concrete shall be cleaned and thoroughly wetted or treated with an approved composition to prevent adhesion between form work and concrete. Care shall be taken that such approved composition is kept out of contact with the reinforcement.

10.19 Verticality of Frame Structure: All the columns of the frame will be checked for plumb by plumb-bob as well as by the theodolite as the work proceeds to upper floors. Internal columns will be checked by taking measurements from outer row of columns for their exact position.

10.20 Stripping Time: Form shall not be struck until the concrete has attained a strength at least twice the stress to which the concrete may be subjected at the time of removal of form work. The strength referred to shall be that of concrete using the same cement and aggregates with the same proportions and cured under conditions of temperature and moisture similar to those existing on the work. Where so required form work shall be left longer in normal circumstances and where ordinary Portland cement is used, forms may generally be removed after the expiry of the following periods.

a) Walls, columns and vertical faces of all structural members	2 days
b) Removal of props under slabs :	
(i) Spanning upto 4.5 mtr.	7 days
(ii) Spanning over 4.5 mtr.	14 days
c) Removal of props under beams:	
(i) Spanning upto 6.0 mtr.	14 days
(ii) Spanning over 6.0 mtr.	21 days

d) In case of cold weather the periods may be increased at the discretion of the Engineer-in-Charge / Architect. For other cement (like pozzolana etc.) stripping time recommended for ordinary portable cement may be suitably modified. The number of props left under, their size and disposition shall be such as to be able safely carry full dead load of the slab beam or arch, as the case may be together with any live load likely to occur during placing of concrete, curing or further construction.

10.21 Removal of Form work: Form work shall be removed in such a manner as would not cause any shock or vibration that would damage the concrete. Before removal of surface and props, concrete surface shall be exposed to ascertain that the concrete has sufficiently hardened.

10.22 where the shape of element is such that from work as re-entrant angles, the form work shall be removed as soon as possible after the concrete has to avoid shrinkage cracking occurring due to the restraint imposed.

10.23 Finish to Concrete Work

a) All concrete while placing against form work shall be worked with vibrators rods and trowels as required so that good quality concrete is obtained.

b) All exposed surface of R.C.C lintels, beams, columns etc. shall be plastered to match with adjoining plastered face of walls after suitable hacking the concrete surface.

c) All surface of R.C.C slabs loft for cupboard slab, shelves and working platform in kitchen etc. and other exposed surface of R.C.C work continuous to brick work shall be plastered (12mm thick) with cement mortar 1:4 (1cement : 4 fine sand) to given an even and smooth surface.

d) The top of loft slabs and shelves shall be smooth finished while the concrete is green with a flooring coat of neat cement to give a smoother and even surface. The exposed front face shall be finished in cement plaster 1:4 (1 cement : 4 is coarse sand) to bring it in line and level and finished i neat cement. such thin slabs shall be carefully cast so that they can be finished within their specified thickness. Additional thickness of plaster which makes this elements look unnecessarily heavy will be not allowed.

e) chicken wire mesh 24 gauge and 200101 mesh will be provided all along R.C.C surface adjoining brick work giving 1500101 lapping on either side using nails etc., for fixing mesh while plastering.

f) the rate shall be deemed to include for chicken wire mesh as given above and incidental labour such as chamfer splays, rounded or curved angles, grooves, rebate and with moulds / courses.

10.24 Sampling and Testing of Concretes:

Samples from fresh concrete shall be taken as per IS-456-2000 (sampling and testing of strength of concrete) and cubes shall be made, cured and tested at 7th and 28days. for testing cement concrete the contractor shall arrange for all the tools / moulds for making necessary cubes and shall bear all the charges for making the cubes, curing and testing through an approved laboratory. Further the contractor shall make available laboratory equipment at site. A temporary room of adequate size having these facilities shall be constructed by the

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contractor it is expense. After completion of work the contractor shall remove the equipment, dismantle the room and clear the site.

10.25 Compressive strength test at 7 days may be carried out in addition to 28 days compressive strength test for o quicker idea of the quality of concrete. in all cases the 28 days, compressive strength alone shall be the criteria for the acceptance or rejection of the concrete.

10.26 Test Specimen: Three test specimens shall be made from each sample for testing at 28 days. Additional cubes may be required for such purposes as to determine the strength of concrete at 7 days or to check the testing error.

10.27 Test strength of samples: The test strength of the sample shall be the average of the strength of three specimens. The individual variation shall not be more than ± 15 percent of the average.

LOT SIZE: -

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

QUANTITY OF CONCRETE IN THE WORK (CUBIC METRE PER DAY)	NUMBER OF SAMPLES (having 3 samples each)
1 - 5	1
6 - 15	2
16 – 30	3
31 – 50	4
51 & above	4 Plus one additional sample for each additional 50 cubic metre of part thereof.

NOTE: At least one sample shall be taken from each shift.

10.28 Mix of cement concrete/reinforced cement concrete required to be used in various locations/ situations shall be shown on drawing. Wherever not mentioned shall be as under: -

(a)Cement concrete in floors (self finished) and concrete as under layer for terrazzo floor cast in situ shall be PCC 1:2:4 (1 cement: 2 coarse aggregates: 4 graded stone aggregate 12:5 nominal size).

(b)Cement concrete for RCC work in wall, columns footings, beams/Roof/floor slabs, landing, fins, lintels, chajjas, shelves, staircases, balconies, Loft slabs shall be of M20 Grade mix cement concrete and in Pedestals and Columns shall be of M25 Grade mix cement concrete

(c)Cement concrete in PCC filling for pressed steel frames, hold fast blocks and rainwater pipes etc. shall be 1:3:6 (1 cement :3 of coarse sand: 6 stone aggregate 20 mm nominal size).

(d)The mix (1:2:4) shall conform to M 15 (nominal) and mix (1:1.5:3) shall conform to M 20 (nominal) as per IS 456-2000 for the purpose of testing and acceptance based on 28 days strength.

(f)Lean cement concrete below columns/walls footings and in sub flooring of stilt floor shall be of mix 1:4:8 (1 cement: 4 coarse sand : 8 stone aggregate 40 mm nominal size).

10.29 Bearing Plaster

This shall consist of cement plaster 1:3 (1 cement :3 fine sand) 20mm thick finished with a coat of neat cement laid on top of walls as bearing for RCC lintels, beams and slabs, when dry, a thick coat of lime wash shall be given before starting, shuttering. The shuttering shall be started after minimum one day of bearing plaster so that it is set.

10.30 Concrete filling for sunken and lowered portions of slab: This shall be cement concrete 1:5:10 (1 cement : 5 coarse sand: 10 brick ballast 40mm nominal size) in the entire sunken portions or cinder filling as per specifications shall be provided.

10.31 Damp Proof Course:

(a) This shall consist of 40mm thick PCC 1:2:4 (1 cement: 2 coarse sand :4 graded stone aggregate :12.5mm nominal size) with water proof compound conforming to IS-2645) as per manufacturer's specifications.

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(b) DPC as specified above shall be provided 40mm thick at level with finish floor to the full width of walls (Ground floor only).

(c) No DPC shall be provided over dwarf walls but floors shall be carried over to the full width over the dwarf wall finished 10mm projecting over from the wall.

(d) The dried-up surface of DPC shall be cleared with brushes and finally with the piece of cloth soaked in kerosene oil and then applied with hot bitumen using 1.7 Kg. per sqmt. of DPC area.

(e) Vertical Damp proof course shall be provided at ground floor on common walls between floors at different levels and shall consist of 20mm thick plaster of mix 1:4 (1 cement: 4 coarse sand) with water proofing compound as per manufacturers specification and as in (d) above before filling earth/sand is carried out.

10.32 Plinth Protection

PCC 1:3:6 (1 cement: 3 coarse sand: 6 graded stone aggregate 20mm nominal size) 50mm thick of width as shown on drawing shall be provided and laid in alternate bays in slope over 75mm hard core of rammed dry brick aggregates of 40mm nominal size over well rammed and consolidated earth base with brick edging all around the buildings except in portions covered by steps, ramps and platforms. A joint of 10mm shall be left through depth of concrete all along with junction between wall and plinth protection at all turnings and across at every 2.5m. these joints shall be filled with a mixture of blown grade Bitumen 85/25 and sand. The surface shall be finished smooth without using extra cement. Brick edging shall be laid on header with cement mortar 1:4 (1 cement:4 Coarse sand) as per detail as shown on drawings.

10.33 SUB HEAD - BRICK WORK

10.33.1 MATERIAL

12.33.1.1 Sand for Masonry Mortars: Unless otherwise indicated, sand for masonry mortars shall consist of natural river sand (generally termed as coarse sand) conforming to IS 2116-1965 specifications for sand for masonry mortars. Sand shall be hard, durable, clean and free from adherent coatings and impurities such as iron particles, alkalis, salts, coal, mica, shale or similar laminated or other materials exceeding the specified limit. Grading of sand shall be as under:

Percentage Passing by weight	IS Sieve	
	Un reinforced masonry	Reinforced masonry
4.75mm	100	100
2.36mm	90-100	90-100
1.18mm	70-100	70-100
600 micron	40-100	40-100
300 micron	5-70	5-70
150 micron	0-75	0-10

10.33.1.2 The maximum quantities of clay, fine silt and fine dust in sand shall not be more than 8 percent by volume, Organic impurities shall be below that obtained by comparison the standard solution on specified in 6-2-2 of IS 2386 (Part II 1983). The coarse/fine sand shall be from river Krishna or from any other source conforming to the above standards.

10.33.1.3 Common Burnt clay building brick : Common burnt clay building bricks (herein-after termed as bricks shall conform to the requirements laid down in IS-1077-1976 for common burnt clay building bricks. Bricks shall be class designation 75, sub Class 'A' as per parameters given in the IS regarding edges, dimensions etc. The overall dimensions shall however be as per local practice of moulds. Water absorption after immersion in cold water for 24 hours shall not exceed 20% and grading for efflorescence shall be less than moderate. Bricks shall be free from cracks, flaws and nodules of free lime. Dimension shall be all within tolerance. Under/over burnt bricks and warped bricks shall be totally rejected.

10.33.1.4 Test check on random samples from each lot of bricks brought at site shall be carried out for compressive strength and water absorption test. Results of these tests duly signed and dated by Contractor; Architect and Engineer in charge shall be recorded in a separate register, which shall be kept with the Engineer in charge.

WORKMANSHIP - MASONRY MORTARS

10.33.2 Preparation of Cement Mortars: Mortar shall be of mix as indicated. The mixing specified is by volume. Mixing shall be done in a mechanical mixer. The mortar shall be mixed at least three times after adding of water. The cement mortar shall be freshly mixed for immediate use. Any mortar which has commenced to set shall be discarded and removed from the site.

12.33.3 Bond: All brick works shall be built in English bond, unless otherwise indicated. Half brick walls shall be built in stretcher bond. Header bond shall be used for walls curve on plan for better alignment, header bond shall also be used in foundation, stretchers may be used when the thickness of wall renders use of header impracticable. Where the thickness of footings is uniform or a number of courses, the top course of the footings shall be of headers. Brick courses at DPC level and at all slab levels below the bearings of slab shall be as bricks on edges.

10.33.4 Half or cut brick shall not be used except where it is necessary to complete the bond.

10.33.5 Overlap in stretcher bond is usually half brick and is obtained by commencing each alternate course with a half brick. The overlap in header bond which is equally half the width of the brick is obtained by introducing a three quarter brick in each alternate course at quoins. In general, the cross joints in any course of brick work shall not be nearer than a quarter of brick length from those in the course below or above it.

10.33.6 Curing: The bricks shall be adequately wet before use and brickwork shall be constantly kept wet for atleast seven days.

10.33.7 Half Brick Walls: The bricks shall be laid in stretcher bond in cement and sand mortar 1:4 (1 cement : 4 coarse sand) or as indicated. The reinforcement shall be 2 Nos. MS round bars or as indicated and as described in SUBHEAD VII steel and Ironwork. The diameter of bars shall be 6mm. The first layer of reinforcement shall be used at second course and then at every fourth course of brick work. The bars shall be properly anchored (min. 150mm) at their ends where the portions and or where these walls join with other walls columns. The inland steel reinforcement shall be completely embedded in mortar. Overlap in reinforcement if any, shall not be less than 30 cm. The cover i.e. the mortar interposed between the reinforcement bars and brick shall not be less than 6mm. The mortar covering in the direction of joints shall be not less than 15mm.

10.33.8 Brick work in foundation upto plinth: Brickwork in foundation shall be with brick of class designation 75 upto plinth level in cement mortar 1:6 (1 cement: 6 coarse sand).

10.33.9 Brick work in Super structure: Brickwork in superstructure including parapets shall be bricks of class designation 75 in cement mortar 1:6 (1 cement: 6 coarse sand).

10.33.10 Brick work in Steps of staircase: Brickwork in steps of staircase shall be in bricks of class designation 75 in cement mortar 1:6 (1 cement: 6 coarse sand).

10.33.11 Parapets and Railings: Parapets and railing shall be provided to balconies, Terraces, roof tops and stair landing etc. of upper floors as per details shown on drawings.

10.33.11 70mm Thick Brick Work

70mm thick brick work shall be provided with bricks of class designation 75 in cement mortar 1:3 (1 cement: 3 coarse sand) wherever shown in the drawings.

10.34 SUB HEAD - JOINERY WORKS

10.34.1 General

The type of shutters for doors, windows, ventilators etc. viz. paneled glazed wire gauzed and flush shall be as indicated and detailed in the drawing.

10.34.2 TIMBER:

a) Quality: Unless otherwise specified timber used in woodwork shall be of approved quality from the species of wood listed in IS 399-1963.

b) Timber shall be well seasoned, proper dressed, of uniform colored and durability of reasonably straight grains and shall be free from knots, cracks, shakes, splits, cross grains, decay and sapwood etc.

c) Teak Wood: Moisture content of timber used in woodwork shall be as close as possible to the lower values laid down in the table below.

S.No.	Type of Woodwork	Recommended range of moisture content (%)
1	Frames of doors and windows etc.	16 to 18 %
2	Shutters of doors and windows etc.	15 to 16 %
3	Framework for ceiling, cladding etc.	16 to 18 %

10.34.3 Flush Door shutters: Door shutters shall be 35 mm thick craft master wooden moulded door having hard wood timber frame of 29 mm th. Core and door facing plates (wooden fiber plates) pasted on both sides with overall thickness of doors to be 35 mm. The core shall be solid core using machine filled rigid expanded polyurethane foam of density 45 kg / cubic meter. Minimum width of frame shall be 65 mm th. with additional wooden blocks for fixing of locks etc. door facing plates shall be 3.2 mm thk. Phenolic bonded passing the test as required vide IS 2380 and formaldehyde test as per IS and boil test as per is 4020. Water absorption should be less than 16% after 2 hours and less than 36% after 24 hours. Moisture content should not be more than 8%.

10.34.4 Testing of Flush Door / Wooden Moulded Door Shutters: On receipt of the shutters at site the Engineer in charge SBI or The Architect shall be entitled to get the samples of door shutters tested in any approved laboratory. From each lot of approximately 100 shutters, one shutter shall be selected at random by the Engineer in charge/ Architect. The cost of replacement of the door shutters selected as samples, their transportation to the laboratory and cost of testing by the laboratory shall be borne by the Contractor.

10.34.5 Glazed & Gauzed Door Shutters: Shutters shall be 35/40 mm thick. These shall consist of second-class Teak wood styles, top, bottom and lock rails as per details shown on drawings. Timber to be used for these shutters shall be of good quality, seasoned of material growth and conforming to IS 4021-1963. Seasoning and ASCU treatment shall be done as per IS-402-1962. Styles and rails of shutters shall be in one piece only. Styles and rails shall be jointed to each other by tenon or mortice at right angles. Mountings and glazing bars shall have joints and shall be strub tenoned to the maximum depth which the size of member would permit.

10.34.6 Wire gauge shutters : Provisioning and fixing of 35mm thick wire gauge shutters to all openable windows is in the scope of work of this contract. Wire cloth shall be securely housed in rebates by giving a right angled bend and fixing by means of suitable staples at intervals of 75mm. Over this wooden bead of specified size shall be fixed with nails, or screws, where indicated to cover the rebate fully. The space between the beading and the rebate shall be filled with putty to give it a neat finish. Exposed edges of the beads shall be rounded.

10.34.7 Door and windows shutters shall be provided as per details shown on the drawings.

10.34.8 The bottom of door shutters shall be 5mm above the finished floor level.

10.34.9 The glass panes shall be free from flaws, specks or bubbles and shall have square corners and straight edges. The glass panes shall be so cut that it fits slightly loose in the frames. The glass pane shall be fixed to the shutter with first glass hardwood beading of size as indicated properly screwed to the shutter with steel nails and necessary adhesive as per details as shown on drawings.

10.34.10 Glazing to windows/doors shutters shall be as follows of quality as approved by Engineer in charge and Architect.

- | | | | |
|-----|-----------------------------|---|---|
| (a) | Fan light of Doors shutters | : | 5.5 mm thick plain sheet glass. |
| (b) | Door Shutters partly glaze | : | 5.5mm thick plain sheet glass with itching. |
| (c) | Windows (openable & fixed) | : | 5.5mm thick tinted glass. |
| (d) | Ventilators | : | 5.5mm thick pin head glass. |

10.34.11 Polishing and finishing: Polishing to all wood work is to be done with 3 to 4 coats of melamine polish, including the necessary pigments to get the proper colour and shade as by the Architect / Engineer in charge. Before polishing the base of wooden surface should be properly prepared by applying base primer and filling. The surface should be smoothened by applying sand paper on base. The polish work should be up to the satisfaction of Engineer in charge /Architect.

10.35 SUBHEAD – ALUMINIUM DOORS, WINDOWS & VENTILATORS.

10.35.1. The Aluminium extruded sections shall conform to Designation 63400 given in IS 737-1986 and shall be of manufacturers such as JINDAL or Hindalco or INDAL or equivalent manufacturers to be approved by the Engineer in charge/ Architect.

10.35.2. The Aluminium Doors, Windows, Ventilators and Glazing sections shall be anodized (anodic coating shall conform to IS 1868) As per colour approved by the Engineer in charge/ Architect.

10.35.3. The fabrication shall be carried out having mechanical joints, accurately machined and fitted to form hairline joints, with the vertical and horizontal sections at the corners to meet in 45 degrees mitred. The jointing shall be either with accessories such as cleats and cleating screws or by crimping with Hydraulics Press on to heavy duty extruded Aluminium cleats. The relevant arrangement shall be got approved by the Architects/ Engineer in charge. The glazing shall be fabricated and anchored to withstand wind pressures as per the Indian Standard.

10.35.4. Before proceeding with any manufacture, Shop Drawings for each typical elevation shall be submitted for the approval of the Architect and no work shall be performed until the approval of the shop Drawings is obtained.

10.35.5. All Glazing shall be air tight and water tight, using appropriate extruded EPDM gaskets/ as manufactured by MODI or equivalent; and sealant which shall be of high quality and performance requirements.

14.35.6. Each Glazing shall be tailor-made as per openings at Site. No cutting and making good of exposed grit wash plaster surfaces shall be permitted.

10.35.7. All the Aluminium sections shall be wrapped with self-adhesive non-staining thick layer of PVC tapes as approved by the Architects, and shall be duly packed for avoiding scratches or blemishes to the powder coated surface of the sections till the installation is completed.

10.35.8. The frames shall be fixed to concrete/masonry/brick work with dash fasteners and the method of fixing shall be got approved by the Engineer in charge before installation. The drilling of holes for inserting the dash fasteners shall be carried out with drilling machines and the frame shall be fixed in plump, line and level at jambs, sills and heads.

10.35.9. The perimeter gap between the outer frame and the masonry shall be sealed with polysulphide sealant as per the make approved by the Engineer in charge.

10.35.10. Glazing: The glass panes shall be free from flaws, specks or bubbles and shall have square corner and straight edges. The glass panes shall be so cut that it fits slightly loose in the frames. The glass pane shall be fixed to the shutter with Aluminium beading and E.P.D.M. gasket properly snapped on as per the drawing. The glass panes shall be of approved make.

10.36 SUB HEAD - BUILDERS HARDWARE

10.36.1. Mongery shall be provided to all doors, windows and ventilator shutters with necessary matching screws of suitable size.

10.36.2. Fittings and fixtures to all doors shall be of Brass material from JYOTHI manufacturing company and for window and ventilators etc. fittings and fixtures shall be UPVC ISI marked of approved make. The contractor shall obtain the approved of the name of the manufacturer and brand of fittings from Engineer in charge/ Architect before placing the supply order. If demanded an approved copy of Bureau of Indian Standard letter under which the manufacturer has been issued the license and authorized to make the items of builder hardware with ISI marking should be attached and one sample of each fittings of the particular brand duly ISI marked shall be given by Contractor.

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10.36.3. Handles for window shutters shall be 75mm long and door shutters shall be 125mm D-Type Aluminium anodized unless mentioned BOQ.

10.36.4. Magic eye for entrance door shall be wide angle best quality. This shall be fixed at 1400 mm height from finished door level.

10.36.5. One sample piece of each fitting shall be produced for approval of Engineer in charge/ Architect. The bulk supply order shall be placed by the Contractor only after approval is accorded by Engineer in charge/ Architect.

10.37 Schedule of Builder's Hardware

10.37.1 Schedule of Hardwares/fitting to door, window and ventilator shutters shall be as per drawings.

10.37.2 Mortice Latch (Vertical Type)

Mortice latch (Vertical type) shall conform to IS 5930-1970, Specification for mortice latch (Vertical Type). These latches shall be capable of being operated inside and outside and shall be provided with a pair of Aluminium anodized lever handle fitted on the handle plate in order to close the door. The latches shall be of brass alloy. Face plate shall be provided in front of the ease plate, size of latch shall be 65mm.

Mortice Locks

These shall conform to IS 2209-1976. Specification for Mortice locks (Vertical Type). These shall have body, body covers, cast plate, faceplate, skirting plate lever, follower of cast brass and locking bolt and latch bolt extruded brass. Lever spring and latch spring shall be of phosphor bronze. The locks shall be supplied with 2 Nos. stainless steel keys. Locks shall be 6 lever. The lock shall be easily working with lever and shall be capable of being opened with from both inside and outside and shall be provided with a pair of Aluminium anodized lever handles on the handle plate in order to close the door from both side.

10.37.3 Hydraulic Door Closer (Floor Type)

The Contractor shall provide double acting Hydraulic Door Closer (floor type) model No. F-32, Cat No. 1204 with SS Plate. Capacity to carry door weight upto 380 Kg. of EVERITE brand. OR Cat No. OFS 9621 of OPEL brand. These shall be approved brand and manufacturer as above (Conforming to IS 6315) for Aluminium door including cost of cutting floor as required, embedding in floors and cover plate etc.

NOTE:-

1. If any of the fittings are not manufactured as ISI marked there shall be of the same brand of other the ISI marked fittings approved by Engineer in charge.

10.38 SUB HEAD - STEEL & IRON WORK

10.38.1 Quality of steel shall conform to the following specifications: -

(a)	Mild steel (Misc.)	IS 432-1966 Part I
(b)	MS reinforcement bars	IS 432 Part II 1962
(c)	Structural steel works	IS 226-1962
(d)	Steel Deformed Bars	IS-1786/1979

10.38.2 Reinforcement:

- Reinforcement bars 6mm dia shall be MS bars.
- All reinforcement bars 8mm and above shall be deformed twisted steel bars.
- Laps and crossing shall be tied with mild steel binding wire of size not less than 0.9 mm dia.
- The Contractor shall be responsible for accurate fixing and placing of reinforcement shown in drawing and shall not place the concrete until the reinforcement has been checked, passed and recorded by the Architect and Engineer in charge.
- Reinforcement shall be bent and fixed as per IS-2502-1963.
- Laps in reinforcement for columns, beams and slabs etc. will be as stipulated in IS. Or as shown on drawings.

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10.38.3 Holdfasts: Holdfasts shall be made out of MS flats of size as specified with split fish tail ends coated with anti rust paint/tar. Holdfast shall be welded to door/windows frame as specified.

10.38.4 Steel Door frame and shutters: Size of door and locations shown on drawing and shall be comprising of frame and shutter fabricated and welded out of MS angle, plate & sheet and 10mm square tie bar. The door shall be painted with two or more coats of synthetic enamel paint of approved quality & shade over one coat of steel primer. Each MS gate shall have hold fast - 6 Nos. Butt hinges 125mm - 3 Nos. MS handles 100mm - 2 Nos. and MS sliding bolts 300 x 16mm - 2 Nos. (1 inside and 1 outside). Hold fasts shall be embedded in PCC block (1:3:6) of size 23 x 23 x 15cm.

10.38.5 Grills: MS grills manufactured out of flat iron, MS square tubes and round bars and of pattern as shown on drawing shall be provided to all windows openable/fixed, glazed portion of doors and fanlight of doors. All grills shall be fabricated and welded to frames.

10.38.6 Railing to staircases, landings, passages, balconies & parapets shall be provided as mentioned in BOQ.

10.38.7 Exhaust Fan opening: In Toilets provision for fixing of exhaust fan shall be made with a circular hole 300 mm dia in window / wall as shown on drawings. This opening shall be covered by bird guard fabricated out of galvanized iron sheet 18 gauge as shown in drawing.

SUBHEAD - ROOF COVERING, WATER PROOFING & RAINWATER PIPES.

10.39.1 Exposed roof at terrace floor level: Roof slabs and Sunken slabs shall be cleaned thoroughly and following treatment/covering shall be provided

SPECIFICATION: -

Treatment to wall and slab junction

1. Surface shall be prepared by wire brushing and cleaning to remove loose particles and finally cleaned with copious amount of water and allowed to dry.

2. Bonding coat using a slurry of Nitobond SBR a polymer mixed with cement and water in the ratio of 1: ½ :1, shall be applied.

3. Coving shall be made along the joint using cement mortar 1:3 admixed with Nitobond SBR at 3 Lts, per bag of cement, shall be prepared and applied onto the primed surface and finished smooth. This shall be applied when the bonding coat reaches touch hard state.

Waterproof coating

1. Surface shall be mechanically scrubbed, to remove loose particles or any laitance, followed by acid etching and water wash and allowed to dry.

2. The prepared surface shall be coated with ready to use, 2 component polymer modified, cement based, waterproofing slurry Brushbond @ 2mm thick in two coats as per manufacturer's specification and instruction.

3. On top of the coating a 15mm thick cement sand mortar (1:3) admixed with cement waterproofing compound like Conplast X4211C (Fosroc) conforming to IS 2645 at the rate specified by the manufacturer shall be applied and the plastered shall be finished smooth with a steel trowel using cement slurry. The surface shall be cured for 3 to 4 days.

The work is to be carried by approved specialist waterproofing agencies like FOSROC or equivalent as approved by Bank / Architects. Work shall be done carefully after all the sanitary and waste pipes & specials are properly installed and connected, without causing any damage to the sanitary installations) (below 100mm thk. CC (1:2:4) paid separately) up to floor two level.

10.39.2 TERRACE WATERPROOFING TREATMENT

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Packing and grouting pipe crossing in slabs and beams of toilets sunken slab and beams. Preparing, shuttering, mixing, grouting and curing the pockets holes left for pipe line crossing in the slabs and beams by using Nitobond AR and cement slurry in ratio 1:1:3 (one of NITOBOND AR, one of water and one of cement by volume) applied on the prepared clean surface and immediately mixing and applying CONBEXTRA GPI using 3 to 6mm hard blue metals at ratio (1: ½) by weight and restrained against upward expansion, etc., complete. Necessary care should be taken to prepare the mechanical key on the PVC pipelines on surface of contact to the grouts.

Surface Preparation

The surface to receive the waterproofing shall be cleaned of all dust dirt, loose material, debris, mortar droppings, laitance, oil, grease or any other form of foreign matter and shall be saturated with water.

Providing Chamfers

Chamfers shall be provided at the junction of slab and Parapet wall with 100 x 100mm fillet using cement sand mortar 1:4 mixed water proofing admixture Conplast X421IC @ 150 ml., per bag of cement and cement modifier Nitobond SBR @ 2 Lit. per bag of cement.

Pressure Grouting

1. Water shall be stagnated for 3 days and cold joint and weak spots shall be identified.
2. 10mm dia holes shall be drilled along the cold joint identified weak spots and construction joints of the roof slab and beams hammer drill at spacing not exceeding 500mm c/c.
3. The depth of nozzles shall be adequate to push the grout at all depth. PVC nozzles shall be fixed in the holes drilled using rapid setting mortar Renderoc Plug.
4. Cement slurry mixed with grout admixture Cebex 100 @ 225 gms per of cement shall be prepared to the required consistency and injected through the prefixed nozzles under pressure using grout pump to fill all possible pores and gaps left within the concrete mass. When the flow of the grout stops the grout mains shall be disconnected.
5. The PVC nozzles shall be sealed off with quick setting water proofing agent Renderoc Plug after the injection operation is over.
6. The grout holes shall then be finished after cutting the projected nozzles.

Water proof Coating

The prepared surface shall be coated with ready to use, 2 component polymer modified, cement based waterproofing coating Brushbond @ 1mm thick in two coats and allow to dry completely.

Protective Screed

On top of the coating a 20mm thick plastering using cement sand mortar (1:4) admixed with cement waterproofing compound Conplast X421IC @ 125 ml per bag of cement and polypropylene fibers @ 125 gms per bag of cement, shall be provided and finished smooth.

The work is to be carried by approved specialist waterproofing agencies like FOSROC or equivalent as approved by Bank / Architects. Work shall be done carefully.

10.39.3 Coving/Gola: Providing coving 75 x 75 in cement concrete 1:2:4 (1 cement: 2 coarse sand : 4 stone aggregate 10mm and down gauge) at the junction of RCC slab and wall and junction of tiles and parapet/wall including finishing exposed surfaces with cement mortar 1:4 (1 cement : 4 fine sand) as per drawing. Gola shall be done before plastering of parapet. The rates included in item of roof treatment.

10.39.4 Khurras: Making khurras 600 x 600 with average minimum thickness of 50mm cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 stone aggregate 10mm nominal size) finished with 6mm cement plaster 1:4 (1 cement: 4 coarse sand) and coat of neat cement including rounding of edges and making and finishing the outlets complete as per standard design/ COBA treatment. The rate included in the item of roof treatment.

10.39.5 Chajjas :- Slab shall be cleaned thoroughly and following treatment/covering shall be provided:

Finishing with 12mm plaster in cement mortar 1:4 (1 cement: 4 coarse sand) mixed with water proofing compounds as per manufacturer's specifications OR @ 5% of amount by weight. This shall be applied after thoroughly cleaning surface.

NOTE: All CI/GI pipes and fittings passing through the wall of the sunken portion shall be laid/ fixed before the treatment as specified above is carried out.

10.39.6 Unplasticized Rain Water Pipes:

a) The rain water pipes and fittings shall be provided with unplasticized PVC pipes conforming to IS-4985-81 and ISI marked. The u PVC pipes shall be of outside diameter 110 mm, 90mm and 165mm as shown on drawings and of working pressure 6 Kg./sq. cm. Internal & external surfaces of the pipes shall be smooth and clean, reasonably free from grooving and other defect. The U PVC pipes shall be jointed with PVC solution for concealed pipes and for exposed pipes with PVC collars by using lubricating solvent solution. Fittings shall be injection moulded or fabricated type conforming to IS-8008-1976 (Part I and IV) and/or IS 8360-1970 (Part-I to III) and/or as per manufacturers recommendations. The pipe shall start from 150mm above plinth protection at ground level with bend and a tee junction shall be provided at all terrace levels to collect water from khurras and vertical pipe shall be extended upto top of parapet. At top PVC cowl shall also be fitted.

b) Cast iron chamber and grating at the top and outlet of every rain water pipe shall be provided and shall fit in snugly on the socket end of the pipe. The perforations in the grating shall be at least 60% of the total area of gratings.

c) Where the rain water pipes are to be provided concealed within masonry the pipes shall be embedded in the walls with PCC 1:3:6 (1 cement: 3 coarse sand :6 stone aggregate 20mm down gauge) encasing all round. External surface of the pipes shall be painted with PVC adhesive and than coarse sand shall be sprinkled before embedding the pipe in the concrete for proper griping with concrete.

d) Rain water pipes running down along the walls/columns shall be firmly fixed to the wall/ column at all joints and one meter spacing on pipe with PVC clips as per manufacturer instructions.

e) Provide angled end pieces CI shoes at bottom and splash stones of size 450 x 300 x 20mm embedded in plinth protection. Stones shall be quartzite chisels dressed.

SUBHEAD - FLOOR FINISHING, SKIRTING & DADO

10.40.1 General

a) This SUBHEAD shall cover all flooring and wall tilling work as shown in the drawing. No work under this SUBHEAD shall be started until specifically allowed by the Engineer in charge/ Architect and until all other major works such as plastering, embedding of conduits and pipes, channels, windows fixing etc. have been completed. Samples of adequate size representing the quality, size, texture after polishing of the tiles to be used in the flooring work fully shall be prepared for all work and got approved from the Engineer in charge/ Architect before proceeding. The approved samples shall be retained up to the end.

b) Floor shall be laid to level and or to slope as shown on drawings and as required and directed by Engineer in charge/ Architect. Floor shall be carried through all the doors and other openings and over dwarf walls. Exposed edge of floors shall be finished in the same manner as for top surfaces. Skirting shall match with the floor finish.

10.40.2 Sub Flooring

a) For Ground Floor:

Sub floors (base concrete under floor finish) 75mm thick lean concrete in 1:4:8 (1 cement:4 coarse sand & 8 aggregate 40mm nominal size) for all locations

b) For Upper Floors

(i) Sunken/lower portion of slabs: Sub base shall be in lean concrete in 1:5:10 (1 cement : 5 coarse sand and 10 brick ballast 40mm nominal size).

(ii) Other floors: Where ever required/directed lean concrete 1:5:10 (1 cement : 5 coarse sand and 10 brick aggregate 40mm nominal size) of required thickness laid over RCC slab.

(iii) Floors under cupboards/book shelves/kitchen counters etc. in 1:5:10 lean concrete (1 cement : 5 coarse sand and 10 brick aggregate 40mm nominal size).

10.40.3 Plain cement concrete flooring:

Cement concrete 1:2:4 (1 cement:2 coarse sand : 4 graded stone aggregate 12.5mm nominal size) flooring of specified thickness. The thickness of flooring finished shall be 40mm/50mm as specified in schedule of quantities with grooves of 10mm wide shall be left through depth of the flooring (finishes) to form bays as specified in para 5 (b) hereinafter OR. The top surface shall be finished with floating coat of neat cement using steel float while the concrete is green. With 6 mm PVC strips. As specified in Schedule of quantities.

10.40.4 Skirting: To match PCC floors 18mm thick plaster in cement mortar of mix 1:3 (1 cement: 3 coarse sand) finished with a floating of neat cement shall be applied to skirting. The skirting shall be 100 high and it shall be projecting uniformly from the plastered surfaces of walls and columns and separated with horizontal groove of 10 mm x 10mm.

10.40.5 Glazed tiles

a) The tiles shall be of first quality and shall generally conform to IS : 777. These shall be flat, and true to shape and free from cracks, crazing, spots, chipped edges and corners. The glazing shall be of uniform shade and shall be provided in Dado of kitchen and toilets. The tiles shall be set over screed/ plaster 12mm thick with cement mortar 1:3 (1 cement: 3 coarse sand) to all surface, set and jointed with laticecrete Adhesive. The joints shall be neat and fine. Tiles face shall be kept flush with the skirting below.

b) Size of glazed tiles both for toilets, Baths, WC and kitchen shall be as shown on drawings.

c) The color of tiles shall be white/colored and the sample shall be got approved before fixing.

d) Height of glazed tiles dado above skirting in toilets and in kitchen, above kitchen platform shall be as shown on the drawings.

10.40.6 The glazed tiles shall be first quality vitreous china and of the following makes:-

- (a) Kajaria.
- (b) Johnson
- (c) NITCO

10.40.7 Finish of working plat forms in kitchens

Finish of the working platform in kitchen shall be with 20mm thick Granite stone slabs diamond cut and mirror polished laid over RCC slab with 20mm cement mortar 1:4 (1 cement: 4 coarse sand). Granite shall be jointed with white cement slurry including grinding smooth and polishing complete

10.40.8 (a) Marble flooring: 20-25 mm thick marble (Makrana Adanga Doongri marble) stone slabs laid over sub floor with 20mm thick base cement mortar 1:4 (1 cement: 4 coarse sand) Marble shall be jointed with white cement slurry including grinding smooth & mirror polishing complete.

(b) Marble Skirting: The marble stone slabs for skirting shall be as specified in clause 12 (a) above and of thickness 15 - 20mm. The stone shall be laid over 12mm thick cement mortar plaster 1:3 (1 cement : 3 coarse sand), jointed with white cement slurry including grinding smooth and mirror polishing.

10.40.9 NON- SKID CERAMIC TILES:

Where indicated in Schedule of finishes shall be laid with cement mortar 1:3 (1 cement : 3 coarse sand) and jointed with white cement paste pigmented to the tile shade.

(b) NON-SKID CERAMIC TILES SKIRTING: Where shown/indicated in the drawing/ schedule of finishes shall be provided 100mm height over 10mm thick cement mortar 1:3 (1 cement : 3 coarse sand) and jointed with white cement paste pigmented to the tile shade.

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10.40.10 VITRIFIED TILE

1. Where shown/indicated in the drawing / schedule of finishes, Double charged vitrified tiles of 605 x 605 x 10mm size of approved make (as per drawings) set over a base coat of CM (1:6) 12mm thick shall be provided and jointed with white cement paste pigmented to the tile shade. (**as per the BOQ**)
2. The tile to be used should be of first quality, equal size and of same shade as approved by Engineer in charge / Architect.
3. The vitrified tiles shall be made from granite granules and bonding agent in the hydraulic press. The size of granite granules shall be uniform and there shall be no appreciable colour deviation. The shade and size of tiles shall be as shown in architectural drawings or as directed by Engineer in charge. Necessary cutting of tiles where required shall be done.
4. Measurement and rates shall be same as for marble flooring/ skirting

10.40.11 VITRIFIED PAVED TILE FLOORING FOR PARKING:

1. Where shown / indicated in the drawing / schedule of finishes, vitrified paved tiles of NITCO make or equivalent as approved by engineer-in-charge, 16mm thick of size 300mm x 300mm set over a base coat of CM (1:6) prop. 12mm thick shall be provided and jointed with white cement paste pigmented to the tile shade.
2. The tile to be used should be of first quality, equal size and of same shade as approved by engineer in charge / Architect.

CLAY PAVERS:

MATERIAL SPECIFICATIONS OF INTERLOCKING CLAY PAVERS

Shape: Tri-Hexagon shaped hard burnt Paver.

Three Hexagon shaped pieces combined to make a single unit with each side measuring 57mm x 57 mm. Thickness should be 50mm to allow for any kind of load bearing capacity. All sides of the Paver having beveled edges 8-10 mm for greater edge strength.

Colour: Natural Brick red/ Terracotta red with no pigments used.

Material: Clay & clay components.

Compressive Strength of the paving units shall be 400 Kgs. /cm²

Water Absorption of the paving units should not exceed 15%.

Efflorescence: NIL

Anti skid/ Anti slip: The pavers should comply to the property of being anti skid/ anti slip. The pavers should be resistant to acid and should not disintegrate when acid poured on them.

Pavers to be coated with a chemical/acrylic coating on the face, further reducing the water absorption and making them resistant to stains.

The pavers when struck with a metallic object or against each other should give a metallic ring.

Laying of Interlocking Clay Pavers

METHOD OF LAYING IN SAND

(i) Preparation of Ground: Ensure you have root and rubble free compacted sub-base of at least 50mm thick. The sub-base should be roughly leveled and damped down before tamping down firmly with hand or mechanical compactor. Hand compaction is usually enough for most domestic applications. Mechanical compaction should be used when paving vehicle traffic areas.

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(ii) Spreading Sand: Spread the sand to get the level 1. For level 2. The sand should be screened and spread with guide rods to achieve a uniform thickness of 30mm.

(iii) Laying the Pavers: Commence at a straight fixed edge if possible. Start laying pavers in the desired direction starting from the edge restraint. Start laying the pavers in the desired pattern placing each paver on the sand and tapping lightly with a rubber mallet or hand tamper.

(iv) Brushing in Sand: After the pavers have been laid use a compactor to push pavers into soft sand. Spread dry screened sand over the laid pavers so that the sand fills the grooves. For heavy traffic repeat this process once again.

10.41 SUBHEAD - WALL FINISHES

10.41.1 General

a) Scope

This SUBHEAD shall cover internal and external plastering/rendering works as shown in the drawings.

b) Mortar: The mortar of specified mix shall be used.

c) Scaffolding

Stage scaffolding shall be provided for plastering work as per standard practice and as directed by Engineer in charge/ Architect. This shall be independent of the walls.

d) Preparation of Surfaces

Joints of brickwork wall shall be raked-out properly. Dust and loose mortar shall be brushed out. Efflorescence if any shall be removed by brushing and scraping., shuttering imperfections of all concrete shall be roughened by hacking with chisel and all resulting dust and loose particles cleaned and the surface shall be thoroughly hacked or bush hammered to the satisfaction of Engineer in charge/ Architect. The surface shall be thoroughly washed with water, cleaned and kept wet before plastering is commenced.

e) Approval of Engineer in charge/ Architect to be taken

No plastering work shall be started before all conduits, pipes fittings and fixtures clamps, hooks etc. are embedded, grouted and cured and all defects removed to the satisfaction of Architect/ Engineer in charge. Special approval shall be taken from Engineer in charge/ Architect before starting each plastering work. No cutting of finished plaster shall be allowed. No portion shall be left out initially to be patched up later on.

f) Mixing

The ingredients shall be mixed in specified proportions by volume. The mixing shall be done in a mechanical mixer. The cement and sand shall first be mixed thoroughly dry in the mixer. Water shall then be added gradually and wet mixing continued for at least a minute until mortar attains the consistency of a stiff paste and uniform colors Mortar shall be used within 30 minutes of addition of water. Mortar which has partially set shall not be used and removed from the site immediately.

10.41.2 Internal Surfaces

i) Plastering shall be started after the completion of ceiling plaster from top and gradually worked down towards floor. It shall not, at any place be thinner than as specified. To ensure even thickness and a true surface plaster of about 15cm x 15cm shall be first applied horizontally and vertically at not more than 2m interval over the entire surface to serve as gauges. The mortar shall then be applied to the wall/ surface between the gauges and finished even. All corner junctions and rounding shall be truly vertical or horizontal and finished carefully. In suspending work at the end of the day plaster shall be cut clean to line where recommencing the plastering, edge of old work shall be scrapped, cleaned and wetted with cement putty before restarting plastering.

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ii) Cement plastering internally on all internal surfaces including soffits of RCC slabs, chajjas, lintels, around shelves, inner side of parapets and around of parabolas etc. shall be as shown on drawing. Wherever not shown it shall be as under:-

a) 15mm thick plaster in cement mortar 1:6 (1 cement: 6 parts 75% fine sand & 25% coarse sand) over brick and concrete surfaces. Rubbing out wherever required (i.e. bringing up the undulation on the rough face of brick work in level with proudest points) shall also be executed in the same mix along with rendering coat.

b) 12 mm thick plaster in cement mortar 1:3 (1 cement: 3 fine sand) for all ceiling surfaces and on soffits of RCC slabs, chajjas and kitchen platforms and around of shelves and pergolas.

10mm x 6mm grooves shall be provided in ceiling plaster at junction of wall and ceiling.

10.41.3 EXTERNAL SURFACES:

A. EXPOSED BRICK WORK

Facing Bricks (Machine Made Brick Tiles)

The facing bricks made from suitable soils shall be free from cracks, flaws, nodules of free lime warpage and organic matter. These shall be thoroughly burnt and shall have plane rectangular faces with parallel sides and sharp straight right-angled edges. Facing bricks shall have uniform colour and even texture. Unless otherwise specified, facing bricks shall be machine moulded. Selected hand moulded bricks may also be used as facing bricks where specified. As far as possible, total requirement of facing bricks for a work shall be arranged from the same kiln. Bricks with chipped edges and broken corners shall not be used.

Dimensions and Tolerances

The standard sizes of machine moulded facing bricks shall be as under:

The brick may be modular or non-modular. Sizes of both types of bricks/tiles shall be as per Table 1. While use of modular bricks/tiles is recommended, non-modular (FPS) bricks/tiles can also be used where so specified. Non-modular bricks/tiles of sizes other than the sizes mentioned in Table 1 may be used where specified.

TABLE 1

Type of Bricks/tiles	Nominal size mm	Actual size mm
Modular Bricks	200 x 100 x 100 mm	90 x 90 x 90mm
Modular tile bricks	200 x 100 x 40 mm	190 x 90 x 40mm
Non-modular tile bricks	229 x 114 x 44 mm	225x111x 44 mm
Non-modular bricks	229 x 114 x 70 mm	225x 11 x 70 mm

TABLE 2

The permissible tolerances shall be as under:

	Dimension mm	Tolerance (for Machine moulded bricks) mm
Length	190 or 225	+ 3
Width	90 or 111	+ 1.5
Thickness	40 or 44	+ 1.5

Note: Tolerance and Dimensions for selected hand moulded bricks + 4mm in length and + 3mm in width and thickness.

Sampling and Tests:

Samples of bricks shall be subjected to the following tests:

- (a) Dimensional tolerance.
- (b) Water absorption.
- (c) Efflorescence.
- (d) Compressive strength.

Sampling:

For carrying out compressive strength, water absorption, efflorescence and dimensional tests, the samples of bricks shall be taken at random according to the size of lot as given in Table 3 below. The sample thus taken shall be stored in a dry place until tests are made. For the purpose of sampling, the following definition shall apply:

(a) Lot : A collection of bricks of same class and size, manufactured under relatively similar conditions of production. For the purpose of sampling a lot shall contain a maximum, of 50,000 bricks.

In case of consignment has bricks more than 50,000 of the same classification and size and manufactured under relatively similar conditions of production, it shall be divided into lots of 50,000 bricks or part thereof.

(b) Sample: A collection of bricks selected for inspection and/or testing from a lot to reach the decision regarding the acceptance or rejection of the lot.

(c) Defective: A brick failing to meet one or more of the specified requirements.

The samples shall be taken as below:

(i) Sampling from a stack: When it is necessary to take a sample from a stack, the stack shall be divided into a number of real or imaginary sections and the required number of bricks drawn from each section. For this purpose bricks in the upper layers of the stack shall be removed to enable units to be sampled from places within the stack.

NOTE: For other methods of sampling i.e. sampling in motion and sampling from lorries or trucks, IS: 5454 may be referred.

Scale of sampling and criteria for conformity for visual and dimensional characteristics:-

(i) Visual characteristics: The bricks shall be selected and inspected for ascertaining their conformity to the requirements of the relevant specification.

The number of bricks to be selected from a lot shall depend on the size of lot and shall be in accordance of Col. 1 and 2 of Table 3 for visual characteristics in all cases and dimensional characteristics if specified for individual bricks.

(ii) Visual Characteristics: All the bricks selected above in accordance with Col. 1 and 2 of Table 3 shall be examined for visual characteristics. If the number of defective bricks found in the sample is less than or equal to the corresponding number as specified in Col. 3 of Table 3 the lot shall be considered as satisfying the requirements of visual characteristics, otherwise the lot shall be deemed as not having met the visual requirements.

(iii) Dimensional Characteristics: The number of bricks to be selected for inspecting the dimensions and tolerance shall be in accordance with Col. 1 and 4 of Table 3. These bricks will be divided into groups of 20 bricks at random and each of the group of 20 bricks thus formed will be tested for all the dimensions and tolerances. A lot shall be considered having found meeting the requirements of dimensions and tolerance if none of the groups of bricks inspected fails to meet the specified requirements.

TABLE-3

Scale of sampling and permissible number of defectives for visual and dimensional characteristics.

in	No.of for individual bricks the lot	For visual characteristics specified group of 20 bricks		For dimensional characteristics for -No.of bricks to be selected	bricks
		No.of bricks to be selected	Permissible No. of defective in the sample		
	(1)	(2)	(3)	(4)	
	2001-10000	20	1	40	
	10001-35000	32	2	60	
	35001-50000	50	3	80	

Note: In case the lot contains 2000 or less bricks the sampling shall be as per decision of the Engineer-in-charge.

(iv) Scale of sampling and criteria for physical characteristics.

The lot which has been found satisfactory in respect of visual and dimensional requirements shall be next tested for physical characteristics like compressive strength, water absorption, efflorescence as specified in relevant material specification. The bricks for this purpose from those already selected above. The number of bricks to be selected for each of these characteristics shall be in accordance with relevant columns of Table 4.

TABLE 4

Scale of sampling for physical characteristics

(1)	Lot size sample size for compressive strength, water absorption and efflorescence	(2)	(3)
	2001-10000	5	0
	10001-35000	10	0
	35001-50000	15	1

Note: In case the lot contains 2000 or less bricks the sampling shall be as per decision of the Engineer-in-charge.

(v) A lot shall be considered having satisfied the requirements of physical characteristics if the condition stipulated herein are all satisfied.

(a) From the test results or compressive strength, the average shall be calculated and shall satisfy the requirements specified in relevant material specification.

Note: In case any of the test results for compressive strength exceeds the upper limit for the class of bricks, the same shall be limited to the upper limit of the class for the purpose of averaging.

(b) Wherever specified in the material specification, the compressive strength of any individual bricks tested in the sample shall not fall below the minimum average compressive strength specified for the corresponding class of brick by more than 20 per cent.

(c) From the test results for water absorption, the average for the bricks in the sample shall be calculated and shall satisfy the relevant requirements specification in material specification.

(d) The number of bricks failing to satisfy the requirements of the efflorescence specified in the relevant specification should not be more than the permissible no. of defectives given in Col. 3 of Table -4.

Physical Requirements

Facing bricks shall be of class designation 75 unless otherwise specified. Average compressive strength shall not be less than 7.5 N/mm² water absorption shall not exceed 20 per cent by weight and efflorescence rating shall be nil when tested in accordance with the procedure laid down and tolerance in dimensions shall be checked as per the procedure laid down in Appendix A-2.

Mortar, Soaking of Bricks and laying:

Mortar: The mortar for the brick work shall be as specified, and conform to accepted standards. Lime shall not be used where reinforcement is provided in brick work.

Soaking of Bricks: Bricks shall be soaked in water before use for a period for the water to just penetrate the whole depth of the bricks. Alternatively bricks may be adequately soaked in stacks by profusely spraying with clean water at regular intervals for a period not less than six hours. The bricks required for masonry work using mud mortar shall be soaked. When the bricks are soaked they shall be removed from the tank sufficiently early so those at the time of laying these are skin-dry. Such soaked bricks shall be stacked on a clean place where they are not again spoiled by dirt earth etc.

Note I: The period of soaking may be easily found at site by a field test in which the bricks are soaked in water for different periods and then broken to find the extent of water penetration. The least period that corresponds to complete soaking will be the one to be allowed for in construction work.

Note II: If the bricks are soaked for the required time in water that is frequently changed the soluble salt in the bricks will be leached out, and subsequently efflorescence will be reduced.

Laying : Bricks shall be laid in English Bond unless otherwise specified. For brick work in half brick wall, bricks shall be laid in stretcher bond. Half or cut bricks shall not be used except as closer where necessary to complete the bond. Closers in such cases, shall be cut to the required size and used near the ends of the wall. Header bond shall be used preferably in all courses in curved plan for ensuring better alignment.

Note: Header bond shall also be used in foundation footings unless thickness of walls (width of footing) makes the use of headers impracticable. Where thickness of footing is uniform for a number of courses, the top course of footing shall be headers.

Joints in the exposed brick work shall be truly horizontal and vertical and kept uniform with the help of wooden or steel strips. The thickness of all types of joints including brick wall joints and cross joints shall be such that four course and three joints taken consecutively shall measure as follows:

- (i) In case of modular bricks conforming to IS: 1077 specification for common burnt clay buildings bricks, equal to 39 cm.
- (ii) In case of non-modular bricks, it shall be equal to 31 cm.

Note: Specified thickness of joints shall be of 1 cm. Deviation from the specified thickness of all joints shall not exceed one-fifth of specified thickness.

Curing and Scaffolding

Curing: The brick work shall be constantly kept moist on all faces for a minimum period of seven days. Brick work done during the day shall be suitably marked indicating the date on which the work is done so as to keep a watch on the curing period.

Scaffolding: Scaffolding shall be strong to withstand all dead, live and impact loads which are likely to come on them. Scaffolding shall be provided to allow easy approach to every part of the work.

Double Scaffolding: Where the brick work or tile work is to be exposed and not to be finished with plastering etc. double scaffolding having two independent supports, clear of the work, shall be provided.

B) Designer Tiles / Dholpur stone / Red stone work

- 1 All concrete/plastered surfaces to receive stone cladding shall be properly hacked and cleaned of all loose particles and wetted with sufficient water.
- 2 Dholpur/Red stone slab of required size, 20-25 mm thick to be fixed over Laticrete adhesive.
3. Laticrete is a dry set adhesive, use with water or latex additives.
4. The stone shall be secured to the bracing by means of clamps @ 4 min/ Sqm.
5. Measurement: The finished length accurate to second decimal shall be measured.
6. Rate shall include all materials, labour and other accessories required to complete the work at all heights and depths as required at the site.

10.41.4 LATICRETE ADHESIVE FOR WALLS

a) Material for Plastering: The product shall be a mix of cement and clean sand in a ratio of 1:6, the applied plaster shall be cured for at least 7 days prior to fixing tiles. Standard procedures shall be adopted to install a plaster of high strength with a good bond between the masonry surface and the new plaster, The plaster should be free of cracks for durable installation of tiles.

b) Material for fixing Tiles: The product shall be laticrete 111 crete filler powder mixed with Laticrete 73, latex admix as manufactured by Laticrete International/ Laticrete India Pvt. Ltd. The tile adhesive formed shall have high bond strength, weather, thermal and shock resistance.

c) Material for Grouting: Material for grouting i.e joint filling shall be Laticrete 500 series grout mixed with laticrete 282 grout admix for joints 3mm-12mm as manufactured by Laticrete International/ Laticrete India Pvt. Ltd. The grout formed shall be strong, resistant to weather, cracking and discoloration.

C. Flakes – Granite Finish on cement plaster

Flakes – Granite finish' shall given on the external surfaces of building as per detailed elevation drawings.

"Flakes – Granite finish" is a textured surface coating material manufactured by Bakelite Hylam Limited/ Spectrum.

"Flakes – Granite finish" comes in three packs comprising 'Dry Granite Flakes' 'Flakes Bonding Agent' and Top coat (HGTC). Dry Granite Flakes are made from china clay, pigments (primarily inorganic), Homo-polymer emulsion, mica etc. 'Flakes Bonding Agent' is made from pure acrylic co-polymer emulsion, broad-spectrum fungicide etc. Topcoat (HGTC is made from solvent based acrylic polymer.

The 'Dry Flakes' are mixed with 'Flakes Bonding Agent' is recommended quantity of water. The dough is then trowelled on to the substrate to be coated to get an average coating thickness in the range of 0.8-1.2mm. After through drying of coated Granite flakes the surface is sanded and dust is removed. Top coat is then applied using a brush.

Granite finish" shall be applied only be an authorized dealer of Bakelite Hylam Limited/ Spectrum, with the help of a trained applicator, in accordance with the Company's 'Application Instructions'.

10.41.5 SUBHEAD – PLASTIC EMULSION AND FINISHING (PAINTING)

1. Emulation shall be provided to all ceiling and internal surfaces of lofts staircase, stair lobby and of all building as shown on drawings.
2. Emulation of approved shade shall be provided to all internal surfaces of walls as shown on drawings.
3. Before application of Emulation the surfaces shall be prepared to a clean and even surface.
4. Emulation shall be carried out in three coats.
5. Emulation shall be carried out over white cement-based putty as per manufacturer instructions to give even shade.

6. Emulsion shall be applied in specified coats by using flat brushers or spray pumps. Each coat shall be allowed to dry before next coat is applied, if additional coats than what have been specified are necessary to obtain uniform and smooth finish, it shall be given at no extra cost.
7. The finished dry surface shall not show any signs of cracking and peeling nor shall it come off readily on the hand when rubbed.

10.41.6 WALL PUTTY :

BIRLA PUTTY APPLICATION

1. Before applying remove all loosely adhering material from the wall surface with sand paper, putty blade or wire brush.
2. Moisten the walls with sufficient quantity of water.
3. Mix the putty with 40- 50% water to make a workable paste.
4. Apply the first coat of putty on moistened surface from bottom to up words uniformly and left to dry for at least 3 hours.
5. Apply second coat and allows to dry for one day and finally rub the surface with fine emery paper to remove unevenness and to get glossy white surface.
6. Emulsion shall be applied in specified coats by using flat brushers or spray pumps. Each coat shall be allowed to dry before next coat is applied, if additional coats than what have been specified are necessary to obtain uniform and smooth finish it shall be given at no extra cost.
7. The finished dry surface shall not show any signs of cracking and peeling nor shall it come off readily on the hand when rubbed.

10.41.7 PAINTING

1. Exterior Emulsion / Texture Paint: Before the application of Apex, the surface shall be cleaned and wetted with water. Two or more coats of cement base paint shall be applied to give even shade on all external cement plaster surfaces, internal cement plaster surfaces of parapets, soffits of chajjas, lintels, beams, and sills as shown on drawings. The shade of the paint shall be used as approved by Engineer in charge/ Architect. Each coat shall be cured well by wetting surfaces for at least three days. This shall apply to all buildings.
2. Painting to Steel Surfaces: All exposed steel surfaces shall be prepared, cleaned with sand paper to completely remove scales and rusts and shall be painted with two or more coats of synthetic enamel paint to give an even shade over one coat of steel primer. The shade of synthetic enamel paint shall be as approved by Engineer in charge/ Architect.
3. Painting to CI and GI Pipes: All exposed CI and GI pipes shall be painted by applying two or more coats of synthetic paint. The shade and quality shall be as approved by Architect/ Engineer in charge.

10.41.8 MODE OF MEASUREMENTS: The method of measurement for various items in the tender shall be generally in accordance with the IS : 1200 subject to the following :

The following multiplying factors for obtaining equivalent areas shall be adopted.

S.No.	Description of Work.	How Measured	Factor Multiplying
(1) 1.	(2) Panneled or framed each and braced ledged and battened and braced joinery including CHOWKAT of frame Edges chocks, cleats, etc., shall be deemed to be included in the item.	(3) Measured flat (not githered)	(4) 1.30 (for side)
2.	Flush joinery including CHOWKAT	Measured flat (not githered)	1.20 (for side)

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of frame Edges
chocks, cleats, etc.,
shall be deemed to be
included in the item.

3.	Fully glazed or guazed joinery including CHOWKAT of frame Edges chocks, cleats, etc., shall be deemed to be included in the item.	Measured flat (not githered)	0.80 (for each side)
4.	Partly panned and partly glazed or guazed joinery including CHOWKAT of frame Edges chocks, cleats, etc., shall be deemed to be included in the item	Measured flat (not githered)	1.00 (for side)
5.	Fully venetioned or louvered joinery including CHOWKAT of frame Edges chocks, cleats, etc., shall be deemed to be included in the item	Measured flat (not githered)	1.80 (for each side)
6.	Weather boarding supporting framework shall be measured seperately	Measured flat (not githered)	1.20(for each side)
7.	Wood shingle roofing	Measured flat (not githered)	1.10(for each side)
8.	Boarding with cover Fillets and match	Measured flat (not githered)	1.05(for each side)
9.	Tile and slate Battening	Measured flat (not githered) No deduction shall be made for open spaces.	0.80 (for painting all ove)
10.	Trellis (or JAFRI work) one- way or Two way	Measured flat over all , no deduction shall be made for open spaces, supporting Members shall not be measured separately.	2.00 (for painting all over)
11.	Guard bars balustrade, gates grating, grills	Measured flat over all , no deduction shall be made for	1.00 (for painting all over)

	expanded metal railing	open spaces, supporting Members shall not be measured separately.	
12.	Gates and open palisade fencing including standards Braces, Rails Stays etc.	Measured flat over all , no deduction shall be made for open spaces, supporting Members shall not be measured separately.	1.00 (for painting all over)
13.	Carved or enriched work	Measured flat	2.00(for each side)
14.	Steel rollers shutters	Measured flat (size of opening) overall jamb guides, bottom rails and locking arrangement etc. shall be included in the item (top cover shall be measured separately)	2.00(for each side)
15.	Plain sheet shall Doors and windows including frames edges etc.	Measured flat (not githered)	1.10(for each side)
16.	Fully glazed or guazed steel doors including and windows frames edges etc.	Measured flat (not githered)	0.50(for each side)
17.	Partly panneled and partly glazed or Guazed steel doors including frames edges etc.	Measured flat (not githered)	8.80(for each side)
18.	Collapsible gate	Measured flat (size opening)	1.00 (for painting all over)

NOTE: The height shall be taken from the bottom of the lowest rail, if the palisades do not go below it (or from the lower end of palisades, if they project below the lowest rail) upto the top of palisades, but not upto the top of the standards, if they are higher than the palisades. Similarly for gates depth of roller shall not be considered while measuring the height.

10.41.9 EXPANSION JOINT

10.41.9.1POLYSULPHIDE SEALANT: -

- It should conform to BS – 4254 – 1983
- Surface should be clean, dry and free from any loose material.
- Masking tapes are to be used on edge of the joint.
- Sealant shall be applied by using suitable gun.
- Immediately after filling the joints, the sealant shall be tooled either with stainless steel or wooden spatula of the size of the joint, while tooling the spatula should be wetted with soap water for wetting.
- The rate shall be inclusive of all operation i.e labour, material, T & P, scaffolding etc. complete. Nothing extra shall be payable on any account.
- Skin contact shall be avoided.

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10.41.9.2 POLYURETHANE SEALANT: -

- Surface should be clean, dry and free from any loose material.
- Expanded polyethylene backup rod of diameter (diameter of the rod should be 5mm greater than the width of the joint) of density not less than 28 kg/cum should be provided to allow unrestrained stretching of the sealant.
- Masking tapes are to be used on edge of the joint.
- Filling the joint up to a depth of 12mm / 15mm for joint width 25m/40mm respectively.
- Immediately after filling the joints, the sealant shall be tooled to ensure neat and clean finish of the joint.
- Skin contact shall be avoided.
- Rates shall be inclusive of all operations including labour material, backup rod, T&P scaffolding etc. complete. Nothing extra shall be payable on any account.

10.41.10 SUBHEAD - INTERNAL PLUMBING WORK (INTERNAL WATER SUPPLY, PLUMBING, INTERNAL DRAINAGE)

10.41.10.1 GENERAL

1. (a) The form of contract shall be according to the "Conditions of Contract". The following clauses shall be considered as an extension and not in limitation of the obligation of the Contractor .

(b) Work under this contract shall consist of furnishing all labor, materials, equipment and appliances necessary and required. The Contractor is required to completely furnish all the plumbing and other specialized services as described hereinafter and as specified in the schedule of quantities and/or shown on the plumbing drawings.

2. Scope of internal water supply, plumbing, internal sewerage and drainage shall consist of providing and fixing of the following for each blocks as shown on drawings.

- (a) GI pipe with fittings and valves for cold and hot water supply.
- (b) Sanitary fixtures, CP fittings and accessories.
- (c) Soil, waste, vent, rainwater pipes and fittings.
- (d) Overhead water tank at Terrace with supports.
- (e) Internal Drainage including gully traps.

3. The entire work shall be carried out by licensed plumbers.

Water Supply

4. Scope of internal water supply will include the following for each Blocks: -

(a) One overhead water tank of capacity as specified 3 layered PEF insulated for each block complete with all fittings including Manhole cover, Ball valve and necessary supports for fixing on terrace/roof, as per details shown on the drawings.

(b) All CPVC pipes and fittings from over head tank to all taps, wall mixers, wash basins, cisterns, sinks, geyser points, washing machine and showers as shown on drawings.

(c) Provision of hot and cold-water supply lines in all toilets and kitchen.

NOTE: External water supply distribution mains including water services connection of each Block up to OH tanks (at terrace) and control valves for water supply lines.

10.41.10.2 MATERIALS

1. All CPVC pipes shall be ISI marked of approved makes.
2. All CPVC fittings shall be ISI marked.
3. Valve shall be heavy Gun metal full way conforming to IS-778-1971 class I and ISI marked.

10.41.10.3 LAYING, FIXING AND FITTINGS OF CPVC PIPES

1. All CPVC pipes below ground shall be laid in trenches and shall have minimum cover of 600mm.

2. The runs of the pipes shall be straight and pipes shall not run diagonally. Proper bends, elbows, tees at turnings/corners shall be used.

3. All CPVC pipes with necessary fittings wherever they are laid on internal faces of the walls shall be concealed in chase. On external faces they will be laid on walls fixed with G.I. clamps or on M.S. angle iron brackets as shown in drawings.
4. In the concealed portion of plumbing no joints shall be provided in the pipe lines except in the fittings i.e., bends, elbows, tees and nipples where required.
5. All CPVC pipes for water supply (Hot or cold) within toilets and kitchen shall be laid in walls only.
6. For each block the size of down comers, branch pipes from the ring (at terrace) from over head tank and branch pipes from down comers shall be of sizes as shown on drawing.
7. Pipes and fittings shall be jointed with screwed fittings, care shall be taken to remove burs from the end of the pipe after cutting by a round file. Genuine white/red lead and a few strands of cotton thread shall be applied. All pipes shall be fixed in accordance with layout shown on the drawings. Care shall be taken to avoid air pockets. CPVC pipes inside toilets shall be fixed in wall chases at least 30cm above the floor.
8. CPVC pipes in shafts and other locations shall be supported by GI clamps of design as indicated in the Typical detail. Pipes in wall chases shall be anchored by iron hooks.
9. Unions: Contractor shall provide adequate number of unions on all pipes to enable dismantling later. Unions shall be provided near each gun metal valve, stop cock, or check valve and on straight runs as necessary at appropriate locations as per direction of Engineer in charge of SBI/ Architect.
10. Puddle Flanges: Puddle flanges shall be provided to all connection i.e. inlet overflow and scour of the over head tank wherever required.
11. Pipe Protection: All pipes in chase or under floors or below ground shall be protected against corrosion by applying two coats of bitumen paint, covered with polythene tape and finished with final coat of bitumen paint.
12. Painting: All exposed pipes shall be painted with two coats of oil paint over one coat of primer. Pipes shall be painted to standard color code as approved by Engineer in charge/Architect.

10.41.10.4 Over Head Tanks

- (a) SINTEX Over Head Water Tanks shall be provided at terrace as shown in the drawing & as per the specification given in the BOQ.
- (b) Each overhead tank shall be complete with the following:
 - © Inlet, outlet, overflow (25mm), scour pipe (20mm) and Air vent pipe with all fittings.
 - ii) Mosquito proof coupling shall be provided to overflow and air vent pipes.
 - iii) The inlet pipe to the overhead tank shall be provided with ISI marked full way gunmetal brass valve and each outlet pipe shall be provided with ISI marked full way gunmetal valve of size of outlet pipe as shown in the drawing.
 - iv) The overflow pipes shall be brought down up to the finished terrace level on terrace.
- (d) Vent pipes: Each down take pipe shall be provided with a vent pipe. The height of the vent pipe shall be 150mm above the top of the water tank.

10.41.10.5 Testing of CPVC pipes

- (a) All pipelines shall be tested hydraulically to pressure of 7Kg./Sq.cm. for a minimum period of 24 hours for leakage.
- (b) The pipeline in chase of under floors/ground shall be covered up only after the testing is carried out satisfactorily and passed by the Engineer in charge/Architect.
- (c) The instrument, equipment and water for testing shall be arranged by the contractor without extra charges. (i.e. Hydraulic testing machine with pressure gauge).
- (d) A test register shall be maintained by the Engineer in charge and all entries shall be signed and dated by the Contractor, Engineer in charge/Architect.

10.41.10.6 Insulation

Hot water line in chases shall be provided with 20mm thick insulation by wrapping 6mm dia asbestos rope and finishing with a coat of 85% magnesia.

10.41.10.7 Approval of layout of GI pipes and position of fixtures at site

The Contractor shall mark the location of all fixtures and fittings and layout of GI pipes on the terrace walls/ground at site and taken approval of Engineer in charge/Architect before commencement of cutting chases for GI pipes within the building and digging trenches outside the building.

10.41.10.8 Sanitary Fixture and CP Fittings and Accessories

a) All sanitary ware shall be first quality white-vitreous china and shall be inclusive of all fixing devices nuts, bolts and hangers/Brackets.

These shall be from one of the following manufactures: -

- i) Hindustan Sanitary Ware
- ii) Parry Ware
- iii)Hydrobath

b) It will be ensured that all sanitary fixtures are from one manufacturer only for the entire work. However, if due to any reason contractor proposes to provide part quantity from other manufacturer as approved above, then he may be permitted, but he will have to obtain specific approval of Engineer in charge/Architect for this change in brand. This will be subject to that all items and fixtures in any particular block/other buildings shall be always of one manufacturer only. In no circumstances items of two manufacturers shall be used in all of the toilets of particular block/other buildings.

10.41.10.9 Kitchen sink and draining Board:

a) Kitchen sink and draining boards shall be of stainless steel (NIRALI) make. The sink and draining board shall be in one piece of following sizes with rectangular compartment/bowl. Each sink shall be provided with one CP brass waste and PVC waste pipe.

b) Kitchen Sink shall be supported on RCC platform having suitable cut for the bowl of the sink as per the details shown on the drawings.

c) All bib cocks, stop cocks, angle-valves, pillar taps, mixtures, showers rose & arm, bottle traps, CP waste and inlet connections and other minor fittings shall be brass chromium plated. These shall be ISI marked where manufactured. Contractor shall obtain the approval of the name of the manufacturer and brand of CP brass fittings from Engineer in charge/Architect before placing the supply order. If demanded, a copy of the Bureau of Indian Standard letter under which the manufacturer has been issued the license and authorized to mark the five items of CP brass fittings as listed in hereinafter below with ISI marking should be submitted One sample of each fittings of the particular brand duly ISI marked shall be given by Contractor.

e) If any of the CP brass fittings which are not manufactured as ISI marked these shall be of the same brand of other ISI marked CP brass fittings approved by Engineer in charge SBOP.

f) All chromium plated brass fittings and accessories shall be provided with CP cast brass wall flanges.

g) For fixing of CP brass fittings wherever required CP brass extension pieces shall be provided.

h) Fixing screws shall be half round head chromium plated brass screws with CP washers.

i) All exposed pipes, if any, within the toilets and near the fixtures shall be chromium plated brass except otherwise specified.

Schedule of Sanitary and CP Brass fittings in each Block shall be as under: -

(a) Kitchen

- (i) Stainless steel Sink with drain board of overall size 510x1060 with bowl size of 500x 400 x 200 mm.
- (ii) CP Brass waste coupling.
- (iii) Sink Mixer
- (iv) GI Waste pipe 40mm dia from CP Waste to floor drain grating.

(b) Toilets: All vitreous china sanitary wares. The fittings and fixtures in toilets of each Block shall be as under:

(A) Wash Hand Basin

- i)Vitreous china first quality wash basin 550x400mm countertop type
- ii)CP Brass waste 32mm dia with overflow.
- iii)CP Brass bottle trap with CP brass pipe to wall with CP brass wall flange.

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iv)CP Brass Basin Mixer.

v)CP Brass angle valves with PVC connecting pipes with nuts and washers.

NOTE: Outlet of CP brass bottle trap shall be connected to nearest floor trap by GI waste pipe (concealed) as per details shown on drawings.

(B) Water Closets and Cisterns

i) European type white vitreous china ware pedestal type and cistern

ii) White 6.00 litre capacity low level flushing cistern with fittings and C.I /M.S brackets.

iii) W.C with concealed type flush bend, overflow arrangements, mosquito proof coupling.

iv) CP brass angle valve with PVC connecting pipe with nut and washer.

v) Bakelite solid type seat and cover ISI marked Type 1A (IS-2548-1983) with CP brass Hinges commander brand (white colour).

vi) G.P jet spreader complete set with concealed stop cock.

(D) Urinals

White vitreous chinaware flat back urinal of size 630 x 400 x 420 mm with 12 mm angle valve, C.P spreader, C.P dome grating, C.P brass flush pipe.

(E) Shower and Taps

(i) CP brass wall mixer with bend for overhead shower with central control knob for three positions, for supply to spout, second to stop and third for supply of shower.

(ii) 100mm dia CP brass shower rose 15mm with ball joint and 230mm long CP brass extension pipe.

(F) Towel Rail

i) CP brass towel rail 20mm dia 16-gauge 600 mm long including brackets.

(G) Towel Ring

i) CP brass towel ring 200 mm dia with CP brass brackets fixed to wall with flanges and CP brass screws.

(H) Mirror of size as specified in the items and 4mm thickness over every wash hand basin. The mirrors shall be of make Modi float or Atul Brand made from Tata Ashi float glass. The mirror shall have marine ply backing 9mm thick with teak wood moulding all-around of size 1-1/2" x 3/4 "

(I) Peg Sets: Aluminum Anodized with 3 hooks.

(J) Gratings:

(i) All floor traps (FT) and floor drains (FD) shall be provided with 100mm round stainless-steel gratings respectively of approved design and shape. The weights of 100mm dia gratings shall not be less than 100 gms.

(ii) Gratings for floor drain (FD) below sink in kitchen shall have suitable hole for passing GI waste pipe from sink.

Geysers: Scope for arrangement of fixing of Geysers included in this contract is as under :-

(a) Arrangement for fixing electric geyser vertical type on each in toilets.

(b) At the inlet pipe of all Geysers one number CP brass angle valve shall be provided.

(c) The ends of inlet and outlet pipes shall be connected with on PVC connecting pipe with CP brass nuts and washers. This is to pass the water from inlet to outlet till Geyser is installed at a later date.

(d) Provisioning and fixing of Geysers is beyond the scope of this contract.

10.41.10.10 Installation of Sanitary Fittings

(a) European Type water closets shall be fixed with brass screws of suitable length with PVC plugs or phill plugs embedded in the floor after drilling hole in floor. It should be coupled with low level flushing cistern complete with rubber cone adapters etc, all as per manufacturer instructions.

(b) Wash hand basins shall be fixed firmly to wall with MS angle iron brackets. The brackets shall be given two coats of white enamel paint over a coat of primer. In addition the wash basin shall be securely fixed to walls with a

pair of 25x3mm MS clips screwed with rawl plugs to walls (placing of basin over the brackets without secure fixing on wall shall not be accepted).

(c) Indian type Water Closets shall be embedded firmly in the floor and its surrounding packed with cement concrete (1:3:6) 40mm graded aggregate below the level of top of the Closet to receive the top layer of floor finish. WC shall be set in the CI trap in cement concrete 1:3:6 (1 cement:3 coarse sand:6 graded stone aggregate 20mm nominal size), joint between WC and Flush pipe will be made in the pre-moulded rubber joint.

- (d) Urinals: Urinals shall be flat back white glazed vitreous china of first quality and size 630 x 400 x 420 mm size.
- (i) Urinals shall be provided C.P spreader, 32mm dia CP domical waster and C.P angle valve and shall be fixed to wall by one CI bracket and two CI wall clips complete as recommended by manufacturer's directives/Engineer in charge.
 - (ii) Half stall urinals shall be fixed with C.P. brass screws.
 - (iii) Flush pipes shall be G.I. pipes concealed in wall chase but with chromium plated bends at inlets and outlets.
 - (iv) Urinals may be flushed with flush valves as described in the item.
 - (v) Waste pipes for urinals shall be any of the following.

a) CPVC. pipes. b) Rigid PVC.

Waste pipes may be exposed on wall or concealed chase as directed by the engineer-in-charge.

Specifications for waste pipes shall be same as given in SUBHEAD II.

10.41.10.11 Internal Drainage:

Scope of internal sewage disposal and drainage system for all buildings/under this contract will include the following and shall be provided as per the layout/locations shown on drawings:

- (a) GI floor drains in toilets and kitchen.
- (b) HCI waste pipes and their connections up to Gully traps.
- (c) HCI soil pipes and their connections up to nearest manholes.
- (d) Vent pipes with vertical stacks
- (e) All floor traps and gully traps.

NOTE: SWG sewerage lines from Gully Trap and nearest manholes onwards shall be measured and paid separately.

Soil, Waste, Vent and Rainwater Pipes: All pipes shall be sand cast iron and shall comply to IS-1729 of 1979 and shall be ISI marked. Where shown on drawings the floor drains (FD) shall be of GI pipe medium grade ISI marked.

All cast iron pipes fittings like bends, branches, floor traps, tees 'Y' junctions, in waste, soil and vent pipes shall be sand cast iron comply with IS 1729 and shall be ISI marked. These shall be spigot and socket "Access door shall be made up with 3mm thick insertion rubber washer and white lead. The bolts shall be lubricated with grease or white lead for easy removal later. The fixing shall be air and watertight".

Cast Iron Traps:

Floor trap shall be cast iron, deep seal with an effective seal of 50mm. The trap and waste pipes shall be set in cement concrete blocks firmly supported on the structural floor. The blocks shall be in cement concrete 1:2:4 (1 cement:2 coarse sand: 4 graded stone aggregate 20mm nominal size) and extended to 40mm below finished floor level. The concrete portion at top of the floor trap inlet shall be finished smooth and water proofed by applying neat cement slurry mixed with water proofing compound. Size of the blocks shall be 30x30cms of the required depth. The trap shall be 100mm inlet and 100mm outlet for kitchen and for toilets. Traps shall have extension pieces to receive waste lines as indicated in typical details.

Urinal Traps: shall be cast iron P&S trap with or without vent and set in cement concrete block specified in para above without extra charge.

Clean out Plugs

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Contractor shall provide cast brass cleanout plugs as required. Cleanout plugs shall be thread and provided with key holes for openings. Cleanout plugs shall be fixed to the pipe by a G.I. socket lead caulked.

Laying and Joining of CI (Cast Iron) Pipes:

- (a) Pipes and fittings shall be fixed truly vertical horizontal or in slope as required in a neat workmanship. Pipes shall be fixed in a manner as to provide easy accessibility for repairs and maintenance and shall not cause obstruction in shafts etc.
- (b) All vertical pipes shall be fixed by MS clamps truly vertical Branch pipes shall be connected to the stack at the same angle as that of fittings. No collar shall be used in HCl pipes laid in sunken portion of slabs and vertical stacks. Each stack shall be terminated at top with a cast iron COWL and to the height as specified hereinafter.
- (c) MS clamps shall be standard design and fabricated from MS flat 40x3mm thick anchored directly to walls, concrete slabs, beams or column or as indicated in detailed drawings or and as directed by Engineer in charge/Architect.
- (d) Joints in cast iron soil, waste, vent and rain water pipes shall be lead caulked joints. Quantity of lead to be used for each joint shall be 1.2Kg. for 100 dia pipes, 1.00 Kg. for 75 mm dia pipe and 0.80 Kg. for 50mm dia pipe.
- (e) The water closet in ground, first and second floor shall be connected to the common soil pipe coming vertically downwards along the external face of walls with single branch connections with necessary bends/Y junction containing access doors. A vent pipe shall be provided from the single branch connection at the last floor level (as a continuation of the soil pipe) taken vertically upwards up to 800mm above the top of parapet wall and shall be provided at top with cast iron cowl.
- (f) CI/GI waste pipes and HCl soil pipes laid under floors shall rest in cement concrete 1:2:4 (1 cement:2 coarse sand:4 parts stone aggregate 20mm, 70mm thick minimum) 300mm wide. All pipes and fittings shall also be encased all-round with concrete 1:2:4 70mm thick.
- (g) Floor traps shall have extension pieces to receive waste pipes. Waste pipes from floor traps shall be connected to common waster pipe coming downward along the external face of walls with single branch connections with necessary bends/Y junctions containing access doors. The common waste pipe shall run vertically downwards up to gully trap. A vent pipe shall be provided from the single branch connection at top of parapet wall and shall be taken vertically upward up to 800mm above the top of parapet wall and shall be provided at top with a cowl and fixed with iron clamps.
- (h) Cast iron drainpipes passing under the building shall be laid before commencement of works in foundations and where passing through concrete work inserts/sleeves should be left before casting the concrete.
 - (i) Drain pipe shall be laid to levels/slopes indicated in drawings.
 - (ii) Soil, waste, vent and rainwater pipes in exposed location in shafts and pipe space shall be painted with two or more coats of oil paint to give an even shade. G.I. pipes in chases shall be painted with two coats of bitumen paint.

Gully Traps

- (a) Gully traps shall be of the same quality as described for stoneware pipes.
- (b) After excavation gully traps shall be fixed on 100 mm thick cement concrete 1:5:10 mix (1 cement:5 coarse sand:10 stone aggregate 40mm nominal size). After fixing the gully trap and pipe a brick masonry chamber 1'x1' inside in 4-1/2" thick brick work around the gully trap in cement mortar 1:5(1 cement: 5 coarse sand) shall be constructed up to the ground level. The space between chamber wall and the trap shall be filled in with cement concrete 1:5:10 (1cement: 5 coarse sand:10 stone aggregate 49mm nominal size). The upper portion of the chamber shall be plastered inside with cement mortar 1:3 (1 cement: 3 coarse sand) finished with a floating coat of neat cement with all corners rounded off sloping towards the grating. A square CI grating shall be fixed on trap inlet.

Testing:

- a) HCl soil and waste and vent pipes. These shall be tested to hydraulic test of 8 mtr. head.
- b) The joints of CI pipes coming under floors/walls shall be covered up only after testing is carried out satisfactorily and passed by Engineer in charge/Architect.
- c) For SWG pipes test as indicated in particular specification part III shall be carried out.
- d) A test register shall be maintained which shall be signed and dated by Contractor, Engineer in charge and Architect.

Approval of layout of waste/soil/GI/CI/SWG pipes, Floor traps, gully traps and manholes. The Contractor shall mark the location of these pipes, floor traps, gully trap and MG on floors / walls/ground at site and take approval of

Engineer in charge/Architect before commencement and cutting of holes in walls, digging of trenches and laying of pipe lines. Record of these approvals should be recorded in a register and kept in Engineer in charge's office.

On completion of the works, the following tests shall be performed to the satisfaction of the architects/ Employer before issue of virtual completion certificate, if so be required

- a. Smoke test.
- b. Hydraulic test .
- c. Self inducted test for fixtures .
- d. Test for anti syphonage system.
- e. Pump rating and output.
- f. Inseption of all units and fixtures.

**11. LIST OF APPROVED MANUFACTURERS / NATURAL SOURCES OF MATERIALS TO BE USED IN THE CIVIL WORKS SUBJECT TO THE APPROVAL OF SAMPLES BY THE CONSULTANT.
(ALL THE MATERIALS USED HAVE TO CONFIRM TO GREEN INTERIOR NORMS OF IGBC)**

S.No	MATERIAL NAME.	BRAND / MANUFACTURER.
1.	CEMENT	L&T, BIRLA, ACC, ULTRATECH 43 GRADE FOR plastering AND 53 GRADE FOR RCC WORKS
2.	ANTI-TERMITE CHEMICALS	CHLOROPYROPHOS, EMULSIFIABLE CONCENTARATES
3.	CLAY BRICKS	GOOD QUALITY BRICKS
4.	UPVC WINDOWS, DOOR FRAMES & SHUTTERS	NCL, LG & FENESTA
5.	PAINTS	ASIAN, NEROLAC, JOTUN, BIRLA EXTERIOR GRADE AND INTERIOR GARDE
6.	HYSD / MILD Steel (TMT)	TATA, SAIL, VSP
7.	SAND	RIVER SAND
8.	TEXTURE PAINT	BIRLA, SPECTURM, ASIAN
9.	GROUTS & EPOXY	LATECRETE EPOXY, BOSTIK EPOXY, DR FIXIT
10.	WATER PROOFING	FORSOC, ALGI PROOF, DR FIXIT
11.	EXTERNAL PUTTY	BIRLA, ASIAN
12.	SINKS	NIRALI or any other approved brand
13	VITRIFIED TILES, WALL GLAZED TILES AND FLOOR ANTI SKID TILES	JOHNSON, KAJARIA, RAK
14	M.S STEEL TUBULAR HOLLOW SECTIONS SOILD SECTIONS, FLATS	TATA, SAIL, VSP, JSW, MITTAL
15	CURTAIN WALL GLAZING and ALUMINIUM SECTIONS	JINDAL, NALCO, BALCO, Hindalco
16	GLASS FOR CURTAIN GALZING AND WINDOWS	SAINT GOBIN, ASHI FLOAT, MODI GUARD
17	EXTERNAL CLADDING PLANKS AND BOARDS	SHERA, VISAKA ,
18	INTERLOCKING TILES/ PARKING TILES	CLASSIC, RAISE STONES, SUPREME

NOTE: The contractor shall use only above-mentioned material. All other materials shall confirm to the specifications laid down. The tenderer shall take this into account while tendering rates / prices.

LIST OF REGISTERS / RECORDS TO BE MAINTAINED AT SITE BY THE CONTRACTOR FOR THE FOLLOWING MATERIALS / ITEMS

- Cement
- Steel
- Anti – termite chemical
- Test Reports
- Brick work
- Hindrance
- Labour wages
- Site Order Book

Apart from the above, some other registers also to be maintained as and when required.

12.0 INDIAN STANDARD (IS) CODE

IS - 3764	-	Safety Code for Excavation Work.
IS - 2720	-	Part - II - Determination of Moisture Content Part - VII - Determination of Moisture Content Dry Density Relation using Light Compaction. Part - VIII - Determination of Moisture Content Dry Density Relation using Heavy Compaction. Part -XXVIII- Determination of Dry Density of Soils, in-place, by the Sand Replacement Method. Part - XXIX - Determination of Dry Density of Soils in-place, by the Core Cutter Method.
IS-6313 (Part I) :		Code of practice for Anti-termite treatment in buildings constructional measures.
IS-6313 (Part II):		Code of practice for Anti-termite treatment measure in building (pre- constructional chemical treatment).
IS 269		Specification for Ordinary, rapid-hardening and low heat Portland cement.
IS 455		Specification for Portland Blast Furnace Slag Cement.
IS 1489		Specification for Portland-Pozzolona cement.
IS 4031		Method of physical tests for hydraulic cement.
IS 650		Specification for Standard Sand for Testing of Cement.
IS 383		Specification for coarse and fine aggregates from natural sources for concrete.
IS 2386		Methods of tests for aggregates for concrete (Parts I to VIII)
IS 516		Method of tests for strength of concrete.
IS 1199		Method of sampling and analysis of concrete.
IS 3025		Methods of sampling and test (physical and chemical) water used in industry.
IS 432		(Parts I & II) Specification for mild steel and medium tensile steel bars and hard drawn steel wire for concrete reinforcement.
IS 1139		Specification for hot rolled mild steel and medium tensile steel deformed bars for the concrete reinforcement.
IS 1566		Specification for plain hard drawn steel wire (Part I) fabric for concrete reinforcement.
IS 1785		Specification for plane hard drawn steel wire for prestressed concrete.
IS 1786		Specification for cold twisted steel bars for concrete reinforcement.
IS 2090		Specification for high tensile steel bars used in prestressed concrete.
IS 4990		Specification for plywood for concrete shuttering work.
IS 2645		Specification for integral cement water-proofing compounds.
BS 4461		Cold worked steel bars for the reinforcement of concrete.
IS 10262		Recommended

Equipment

IS 1791	Specification for batch type concrete mixers.
IS 2438	Specification for roller pan mixer.
IS 2505	Specification for concrete vibrators, immersion type.
IS 2506	Specification for screed board concrete vibrators.
IS 2514	Specification for concrete vibrating tables.
IS 3366	Specification for pan vibrators.
IS 4656	Specification for form vibrators for concrete.
IS 2722	Specification for portable swing weigh batchers for concrete (single and double bucket type.)
IS 2750	Specification for steel scaffoldings.

Codes of Practice

IS 456	Code of Practice for plain and reinforced concrete.
IS 1343	Code of Practice for prestressed concrete.
IS 3370	(Parts I to IV) Code of Practice for concrete structures for storage of liquids.
IS 3935	Code of Practice for composite construction.
IS 3201	Criteria for design and construction of precast concrete trusses.
IS 2204	Code of Practice for construction of reinforced concrete shell roof.
IS 2210	Criteria for the design of R.C.shell structures and folded plates.

IS 2751	Code of Practice for welding of mild steel bars used for reinforced concrete construction.
IS 2502	Code of Practice for bending and fixing of bars for concrete reinforcement.
IS 3558	Code of Practice for use of immersion vibrators for consolidating concrete.
IS 3414	Code of Practice for design and installation of joints in buildings.
IS 4014	Code of Practice for steel tubular, scaffolding (Parts I & II)
IS 2571	Code of Practice for laying in situ cement concrete flooring.
IS 13920	Code of Practice for ductile detailing of reinforced concrete structures subjected to seismic forces.

Construction Safety

IS 3696	(Parts I & II) Safety Code for scaffolds and ladders.
IS 383	Coarse aggregates for concrete, except as stated above and for other than light weight concrete
IS 4031	Test blocks shall be prepared and tested in accordance with the requirements of IS 4031.
Water	Method of Test (Clause Ref. IS 3025-1964)

MASONRY

a) RUBBLE MASONRY

IS 1129 (1972)	Stone; Dressing
IS 8348 (1977)	Stone; slabs, stacking and packing for transportation
IS 1805 (1973)	Glossary of terms: quarrying and dressing
IS 1121 (1957)	Compressive, transverse and sheer strength determination
IS 8759 (1977)	Maintenance and preservation of stone
IS 4348 (1973)	Permeability determination
IS 1122 (1957)	Specific gravity and porosity determination
IS 4121 (1967)	Water transmission rate through natural building stone
IS 1706 (1972)	Wear resistance, determination by abrasion method

Coursed Rubble (First Sort) in Superstructures IS 1597 (Part I).

BRICKWORK AND BLOCK WORK

IS 1077	Specification for Common Burnt Clay Building Bricks
IS 2116	Specification for Sand for Masonry Mortar
IS 2212	Code of Practice for Preparation and Use of Masonry Mortar
SP 27	Handbook of Method of Measurement for Building Works
IS 432	Specifications for Mild Steel and Medium Tensile Bars
IS 2185	Specification for Cement Concrete Block
IS 2572	Code of practice for Construction of Concrete Walls
IS 9103	Specification for Admixture of Concrete

CONCRETE BLOCK WORK

- Hollow or solid concrete blocks shall conform to IS 2185
- Mortar for Brickwork and Block work: IS 2250
- Sand shall be natural sand in accordance with: IS 383
- Workmanship for Brickwork: IS 2212

WALL AND CEILING FINISHES

IS 383	Specification for Coarse and Fine Aggregates
IS 412	Specification for Expanded Metal Sheets for General Purposes
IS 1542	Specification for Sand for Plaster

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IS 1635	Code of Practice for Field Slaking of Building Lime and Preparation of Putty
IS 1661	Code of Practice for the Application of Cement and Cement-lime Plaster Finishes
IS 2394	Code of Practice for the Application of Lime Plaster Finish
IS 2402	Code of Practice for External Rendered Finishes
IS 2645	Specification for Integral Cement Waterproofing Compound MATERIALS

Cement shall be ordinary Portland cement conforming to IS 269

Lime shall conform to IS 712.

Sand shall conform to IS 1542

Pigments mixed with cement shall conform to IS 2114.

Integral waterproofing compound shall conform to IS 2645.

Expanded metal backgrounds for plastering and/or rendering shall conform to IS 412.

PAINTING

IS 427	Specification for distemper – dry colour
IS 428	Specification for distemper – oil emulsion colour
IS 1477	Code of Practice for painting of ferrous metals in buildings – Parts I and II (Pre-treatment and Painting)
IS 2395	Code of Practice for painting concrete, masonry and plaster surfaces
IS 2932	Specification for enamel synthetic exterior undercoating and finishing
IS 2933	Specification for enamel exterior undercoating and finishing
IS 3140	Code of Practice for painting asbestos cement building products
IS 3537	Specification for ready-mixed paint, finishing, interior, for general purposes to IS colours
IS 3631	Specification for ready-mixed paint for finishing interior, alkyd and non-alkyd for general purposes to IS colours
IS 5410	Specification for coloured cement paints
IS 6005	Code of Practice for phosphating iron and steel
IS 6278	Code of Practice for whitewashing and colour washing

Washable oil bound distemper shall conform to IS 428

EXTERNAL SANITARY WORKS

IS 651 – 1992	Specification for Salt Glazed stoneware pipes and fittings (fifth revision).
IS 6924 – 1973	Code of practice for construction of refuse chutes in multistoried buildings
IS 1200 (Part 1)	Method of measurement of building earthwork IS 1200 (Part 16) Method Of measurement of laying of water and sewer lines including appurtenant
IS 1200 (Part 19)	Method of measurement of Water supply, plumbing and drains.
IS 783 – 1959	Code of practice for laying of concrete pipes
IS 13592 –IS 1992	Specification for unplasticized PVC pipes for soil and waste discharge system inside building including ventilation and rainwater.
IS 2527 – 1984	Code of practice for fixing rainwater gutters and down pipes for roof drainage.
IS 458 – 1988	Specification for precast concrete pipes (with or without reinforcement)
IS 782 – 1978	Specification for Caulking Lead.(Third revision)
IS 1172 – 1983	Code of basic requirements for water supply, drainage & sanitation (revised).
IS 1239 – 1990	Specifications for mild steel tube, tubular and other steel pipe (Part I) fittings.
IS 1239 – 1992 (Part II)	Specifications for mild steel tube, tubular and other steel pipe fittings.
IS 1726 – 1991	Code for cast iron manhole frame and cover (third revision).
IS 1742 – 1983	Code of practice for building drainage.(Second revision)
IS 2065 – 1983	Code of practice for water supply to buildings.
IS 3114 – 1985	Code of practice for Laying of CI pipes
IS 4111 – 1986	Code of practice for Ancillary structures in sewerage system
IS 1536 – 1976	Specification for centrifugally cast (spun) iron pressure pipes for water, gas and sewage.
IS 1537 – 1976	Specification for vertically cast iron pressure pipes for water, gas and sewage.