TENDER FOR CIVIL, INTERIOR FURNISHING, ELECTRICAL, AIR CONDITIONING AND ALLIED WORKS OF EXISTING PREMISES OF BOB UDHNA BRANCH, SURAT, GUJARAT, INDIA.

ENVELOPE -I (TECHNICAL BID)

START DATE OF TENDER: 01.02.2025
LAST DATE OF SUBMISSION: 21.02.2025 up to 3.00 PM
PRE-BID MEETING DATE: 12.02.2025 at 11:30 A.M.

Tender will be addressed & submitted to

BANK OF BARODA,
SURAT CITY REGION, BARODA ZONE
8th Floor, Baroda Sun Complex,
Ghod Dod Road, Surat - 395007.

CONSULTING ARCHITECT:
M/S. SHAW ARCHITECTS,
Sf-218, Samanvay Silicon,
Nr. Dairy Den Circle, Ghod Dod Road,
Vadodara – 390005, Gujarat.
Contact Detail: +91-9898213973 / 8320448791
E- mail: shawvijendra@gmail.com

1	**NAME OF THE WORK**	TENDER FOR INTERIOR FURNISHING, ELECTRICAL, AIR CONDITIONING AND ALLIED WORKS OF EXISTING PREMISES OF BOB UDHNA BRANCH, SURAT, GUJARAT, INDIA.
2	**ESTIMATED COST**	**Approx. Rs.49.97 Lakh excluding GST**
3	**TIME AND LAST DATE OF SUBMISSION OF TENDER**	**21.02.2025 UP TO 3.00 PM**
4	**PLACE & ADDRESS FOR SUBMISSION OF TENDER**	The Regional Manager, Bank Of Baroda, Surat City Regional Office, 8th Floor, Baroda Sun Complex, Ghod Dod Road, Surat-395007, Gujarat, India.
5	**CONTACT PERSON WITH TELEPHONE NO**	AR. VIJENDRA SHAW PH. **9898213973** REGIONAL OFFICE: 0261 2294806 pe.surat@bankofbaroda.com
6	**DATE, TIME AND PLACE OF OPENING OF TENDERS**	TECHNICAL BID OPENING :21.02.025 AT 03:30 PM AT Bank of Baroda, SURAT CITY REGIONAL OFFICE, 8th Floor, Baroda Sun Complex, Ghod Dod Road, Surat-395007, Gujarat, India. BIDDERS ARE REQUESTED TO BE PRESENT FOR TENDER OPENING FOR WHICH NO SEPARATE INFORMATION WILL BE GIVEN. ONLY TECHNCIALLY QUALIFIED BIDDERS WILL BE INFORMED TO JOIN FOR OPENING OF THEIR FINANCIAL BID.
7 A	**EARNEST MONEY DEPOSIT (EMD) IN THE FOR OF DD/BC TO BE SUMITTED ALONG WITH TECHNICAL BID ONLY**	RS.49,900/- DRAWN IN FAVOUR OF BANK OF BARODA, SURAT CITY REGION, PAYABLE AT SURAT.
7 B	**(ISD) INITIAL SECURITY DEPOSIT (PAYABLE BY L1 BIDDER AFTER AWARD OF THE WORK)**	2% OF VALUE OF THE TENDER VALUE INCLUDING EMD PAID BY L-1 BIDDER WITHIN 07 DAYS FROM THE WORK ORDER.
8	**RETENTION MONEY**	DEDUCTIBLE IN RUNNING BILLS: 10% OF

		THE VALUE OF EACH INTERIM BILL AND TOTAL DEDUCTIBLE AS DETAILED IN THE TENDER DOCUMENT.
9	**TERMS OF PAYMENT OF BILLS, IF ANY. SPECIFY THE MINIMUM VALUE OF WORK FOR PAYMENT OF RUNNING ACCOUNT BILLS.**	INTERIM BILLS OR PERIODICAL RUNNING BILLS ON SATISFACTORY COMPLETION OF MINIMUM VALUE OF WORK OF RS 20 LAKHS. NO ADVANCE OR MOBILIZATION ADVANCE SHALL BE PAID IN ANY CIRCUMSTANCES.
10	**(PENALTY CLAUSE) LIQUIDATED DAMAGES**	IN CASE OF DELAY A PENALTY @ THE RATE OF 1% OF ESTIMATED COST PER WEEK SUBJECT TO A MAXIMUM OF 10% OF ACCEPTED CONTRACT SUM BUT NOT EXCEEDING THE TOTAL SECURITY DEPOSIT. (INITIAL PLUS RETENTION) WOULD BE STRICTLY IMPOSED.
11	**STIPULATED TIME FOR COMPLETION OF THE WORK/SUPPLY.**	30 DAYS
12	**VALIDITY PERIOD OF THE TENDER.**	THREE MONTHS FROM DATE OF OPENING OF FINANCIAL BID
13	**TAXES**	RATES QUOTED SHOULD INCLUDE ALL TAX (EXCLUDING GST) AND OTHER CHARGES LIKE TRANSPORTATION, LOADING/UNLOADING ETC. HOWEVER I.T AND TDS WILL BE DEDUCTED AT SOURCE AS APPLICABLE.
14	**ELECTRONIC PAYMENT**	ELECTRONIC PAYMENT SHALL BE PREFERRED.
15	**INSURANCE OF THE WORK**	WITHIN -7-DAYS FROM THE DATE OF ACCEPTANCE OF THE WORK (CAR POLICY)
16	**DATE OF COMMENCEMENT**	FROM THE DATE OF THE WORK ORDER OR HANDING OVER THE SITE (WHICHEVER IS THE EARLIER)
17	**PERIOD FOR CERTIFICATION OF INTERIM BILLS BY THE ARCHITECT**	8 DAYS FROM THE DATE OF RECEIPT OF THE BILL BY THE ARCHITECT
18	**PERIOD OF CERTIFICATE OF FINAL BILL BY ARCHITECT**	15 DAYS FROM THE DATE OF RECEIPT OF BILL BY THE ARCHITECT.
19	**DEFECT LIABILITY PERIOD**	12 MONTHS
20	**RELEASE OF INITIAL SECURITY DEPOSIT**	AFTER SATISFACTORY COMPLETION OF THE WORK AND CERTIFICATION OF FINAL BILL
21	**RELEASE OF RETENTION MONEY IN 2 PARTS**	50% OF THE RETENTION AMOUNT IS REFUNDED ON ISSUE OF COMPLETION CERTIFICATE BY THE ARCHITECT, BALANCE 50% WILL BE REFUNDED 14 DAYS AFTER DEFECT LIABILITY PERIOD PROVIDED ALL DEFECTS ARE ATTENDED SATISFACTORILY IN ACCORDANCE WITH CONTRACTOR.

NOTICE INVITING TENDER

PROJECT: CIVIL, INTERIOR FURNISHING, ELECTRICAL, AIR CONDITIONING AND ALLIED WORKS OF EXISTING PREMISES OF BOB UDHNA BRANCH, SURAT, GUJARAT.

Sir/Madam,

1. Sealed tenders are invited for the proposed work by the

The Regional Manager,
Bank of Baroda, Surat City Regional Office,
8th Floor, Baroda Sun Complex, Ghod Dod Road,
Surat-395007, Gujarat, India.

2. Sealed tenders comprising TECHNICAL BID and PRICE/FINANCIAL BID, must be duly filled and signed in the prescribed form and to be kept in two separate sealed envelope respectively super-scribed as Technical Bid and Price/Financial Bid and both these two separate sealed envelopes to be kept in One Big envelope and should be addressed to the **THE REGIONAL MANAGER, BANK OF BARODA, SURAT CITY REGIONAL OFFICE, 8TH FLOOR, BARODA SUN COMPLEX, GHOD DOD ROAD, SURAT-395007, GUJARAT, INDIA.**
The main envelope containing both aforesaid bids should be super scribed **CIVIL, INTERIOR FURNISHING, ELECTRICAL, AIR CONDITIONING, AND ALLIED WORKS OF EXISTING PREMISES OF BOB UDHNA BRANCH, SURAT, GUJARAT.**

a. **ENVELOPE NO.1: TECHNICAL BID** - TO CONTAIN CONTRACTOR'S TERMS AND CONDITIONS, WORK ORDERS, PERFORMANCE/COMPLETION CERTIFICATES, ALL REQUIRED PAPERS AS REQUIRED IN BASIC INFORMATION TECHNICAL ASSUMPTIONS ALONG WITH DEMAND DRAFT/BANKER'S CHEQUE FOR **RS.49, 900/-** IN FAVOR OF **BANK OF BARODA, SURAT CITY REGIONAL OFFICE** AS E.M.D ISSUED DURING TENDER NOTICE PERIOD OF PERIOD FROM **01.02.2025 TO 21.02.2025** WILL ONLY BE ACCEPTED SUBJECTED TO THE SUBMISSION OF THE BIDS WITHIN THE PRESCRIBED TIME OF SUBMISSION.

b. **Envelop No 2: Price Bid** - Tender documents along with B.O.Q Completed in all respect and duly signed and submitted to **THE REGIONAL MANAGER, BANK OF BARODA, SURAT CITY REGIONAL OFFICE, 8th Floor, BARODA SUN COMPLEX, GHOD DOD ROAD, SURAT-395007, GUJARAT, INDIA. on or before 21.02.2025 up to 3:00 P.M**

c. Envelope 1 will be opened on the **21.02.2025 at 03.30 P.M.** in the presence of the Contractors or their repsentatives. No separate information will be given in this regard. Envelop No 2 may be opened at later date, which will be communicated to those tenderers in advance, whose Technical Bid qualify. In case of holidays/strikes/bands or any reason causing a holiday exactly on the last date of submission of offers; the last date of submission will be shifted to immediate next working day.

EMD will strictly not to be kept in Envelope 2 or else otherwise tender will be considered as rejected.

3. 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.

4. Each 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. Once the duly signed document submitted then it will be deemed as signing authority empowered or authorised to do so and binding over the bidder, and as and when said authority letter demanded by the bank then the bidder is bound to produce the same. Any tender with any of the documents not signed will be rejected.

5. The tender documents must be filled in English and all the entries must be made properly & clearly. If any of the documents are missing or un- signed or not legible or have overwriting without valid attestation through initial, the tender shall be considered invalid.

6. All erasures and alterations made while filling the tender must be attested by initial of the tenderer. Over writing of figures is not permitted. Failure to comply with either of these conditions will render the tender void. No advice or any change in rate or conditions after submission of the tender will be entertained. All the rates should be quoted both in figures and words. If on check there are differences between the rates given by the contractor, in words and figure or in amount workout by the contractor, the following procedure shall be followed.

i) When there is a difference between the rate in figures and in words, the rate, which corresponds to the amount worked out by the Contractor, shall be taken as correct.

ii) When the amount of an item is not worked out by the contractor or it does not correspond with the rate written either in figures or in words, then the rate quoted by the contractor in words shall be taken as correct.

iii) When the rate quoted by the contractor in figures and words tallies but the amount is not worked out correctly, the rate quoted by the contractor shall be taken as correct and not the amount.

7. In case of the rates/ amount quoted by the bidder exceeds the estimated cost/ estimated item rates, bank shall have the right for obtaining detailed rate analysis for such item/ items (i.e. material cost with quantity + labour cost with quantity + profit) which necessarily needs to be compatible with market rates for acceptance of the tender/ bid or else Bank shall be at liberty to reject such tender/ bid and no claim shall be entertained by Bank.

8. The intending tenderer shall deposit EMD by DD / BC drawn in favour of Bank of Baroda, Surat City Regional Office, Payable at Surat of Rs. 49,900/- as the Earnest Money as guarantee of good faith, which amount

shall be forfeited as liquidated damages in the event of any evasive/ refusal or delay in signing the contract. The deposit of the unsuccessful tender will be returned without interest immediately after a decision is taken regarding the award of the Contract. The Earnest Money of the successful tender will be adjusted towards Security Deposit. A tender not accompanied by Earnest Money Deposit will not be considered. No concession will be made to public Sector companies from Payment of Earnest Money Deposit.

9. The successful tender will have to pay as the amount of initial security deposit which shall be 2% of the accepted value of the tender including the EMD, by means of D.D in favor of the Bank of Baroda, Surat City Regional Office, payable at Surat. The initial security deposit is to be paid by the Contractor to Bank within 07 days of intimation to him of the acceptance of the tender. The initial security deposit will be invested with the bank for the duration of the contract period i.e. 3 months and will be refunded to the contractor without any interest, after issue of the virtual completion certificate. No interest is allowed on the retention money.

10. Retention of 10% of the value of the work done from every running bill will be deducted till total retention including EMD and SD paid earlier, is becomes 5% of the contract value, and shall be held by the Bank as Total Retention amount. On the Architect's certifying to the completion of the work, 50% of total security deposit shall be released to the contractor with the final certificate of payment and the balance payment will be retained for a further period of TWELVE months after the completion certificate is issued by the Architects and agreed by the Bank.

11. Within one week of the receipt of intimation from Architects of the acceptance of his / their tender, the successful tenderer shall be bound to implement the contract by signing an agreement in accordance with the Agreement and Conditions of Contract attached herewith, but the work order or the written acceptance by the Employer of a tender will constitute a binding agreement between the Employer and the person tendering whether such formal Contract is or not subsequently entered into.

12. All compensation or other sums of money payable by the Contractor to our 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 make good in cash or by cheque any sum which have been deducted from his security deposit.

13. The contractor shall arrange for the procurement of all the materials at site as required and directed, and store them in his go down at the site of construction and also bear all the expenses incurred in therewith payment of taxes, octroi, loading/unloading of material to the site, any local tax, cess etc.

14. The rates quoted by the Contractor shall include all eventualities such as heavy rain, sudden floods etc. which cause damage to the executed work or which may may totally wash out the work. Until the completion certificate is issued to the Contracts, our Clients will not be responsible for such damage or wash out of the construction work.

15. Time is the essence of the contract. The work should be completed in **30 DAYS** from the date of the work order issued to the contractor to commence the work. The successful Contractor will have to give CPM/PERT chart of various activities of work to be done so that the work gets completed within the stipulated time. The chart showing the item wise/location wise/floor wise progress which he (the contractor) intends to make to enable him to conveniently and practicably complete the work in all respects within the agreed time as per contract. The chart will be scrutinized and approved by the Architects with suitable modifications, as and if necessary and the approved chart will then form part of the agreement, being the basis for assessment of progress under the relevant conditions of contract shall be submitted within 7 days from the date of acceptance of the tender. The chart may from time to time during the progress of the work be reviewed and modified with the approval of the Architects keeping in view the agreed date of completion.

16. 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 1% of estimated amount for each week beyond the date that the work remains incomplete subject to maximum of 10% of the contract value (without extra items) as per Clause 17 of the General Conditions of Contract.

17. The quantities contained in the Schedule are only approximate. The work as carried out and done will be measured up from time to time, for which payment will made subject to the terms and conditions of contract.

18. The unit price shall be deemed to be fixed price. In case of extra items, a record of labor charges paid shall be maintained and shall be presented regularly to the Architects for checking. The settlement will be made based on figures arrived at jointly and taking unit price given in the contract assigned to the successful Tenderer. In case, of extra items where similar or comparable items are quoted in the tender, extra rates shall be based on tender rates.

19. Bank of Baroda, Surat 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 for doing so.

20. No employee of the Bank is allowed to work as a Contractor for a period of 2 years of his / her retirement from Bank Services without previous permission of the Bank. This contract is liable to be cancelled, if either the contractor or any of his employee is found any time to be such a person who had not obtained the permission of Bank as aforesaid before submission of the tender or engagement in the contractor's service.

21. The work Architect or any reference with architect may be read null and void in the present contract / agreement if architect is not employed in the project. Premises Department, Bank of Baroda, Surat City Regional Office will act as architect if so specified.

PRE-QUALIFICATION CRITERIA:

CONTRACTOR/AGENCY/FIRM WHO ARE DESIROUS OF TENDERING FOR ABOVE WORK AND FULFILLS FOLLOWING MINIMUM REQUIREMENTS ONLY NEED TO APPLY

i. a) The contractors/Firms should have carried out a minimum of 1 work of similar nature successfully completed, each work valued at not less than Rs.39.97 lakhs during the last 7 years ending as on 31st January, 2025.

OR

ii. (b) 2 works of similar nature successfully completed valued at an amount not less than Rs.24.98 lakhs during the past seven years ending as on 31st January, 2025.

OR

iii.(c) 3 works of similar nature successfully completed of value not less than Rs. 19.98 lakhs during the last seven years ending as on 31st January, 2025.

(Basic Amount Excluding GST will be considered for submitted work order)

The average annual turnover of the contractor during the last three year ending 31st March 2024 should not be less than Rs.20 lakhs

***Similar Job: Civil, Interior, electrical, air conditioning & allied works of commercial / administrative / Institutional buildings.**

THE BANK WILL NOT ENTERTAIN ANY SUBSEQUENT SUBMISSION MADE REGARDING ELIGIBILITY CRITERIA, PAST/EXISTING WORK ORDER, WORK COMPLETION CERTIFICATE, TDS TRACES FOR PRIVATE JOBS, PERFORMANCE OF SIMILAR JOB ETC, EXCEPT MENTIONED BY THE BIDDER IN TENDER DOCUMENTS. THE BIDDER IS BOUND TO PROVIDE SUPPORTING DOCUMENTS AND PHOTOGRAPHS AS AND WHEN DEMANDED BY THE BANK. THE BANK HAVE RIGHT TO CHECK THE CREDENTIAL OF INFORMATION SUPPLIED BY THE BIDDER AT THEIR END.

The agency bidding for this job should have full-fledged office preferably in Gujarat and expertise in construction field,

The firm should have sufficient number of experienced personnel, technical know- how, and other resources for the completion of subject work.

1. APPLICATIONS BY THOSE FIRMS WHO DO NOT SUBMIT PERFORMANCE CERTIFICATES/COMPLETION CERTIFICATE & WORK ORDERS FROM THEIR PREVIOUS EMPLOYERS / CLIENTS ARE LIABLE FOR REJECTION .For certificates, the issuing authority shall not be less than an Executive In charge. Bank may obtain confidential reports of the bidders for the similar jobs which has to be satisfactory for technical pre– qualification of the bidder. Any relevant information/document/credential, found false at later stage not limited to, shall lead to the cancellation of contract irrespective of any stage of contract/work , without entertaining any claim but may also subject to suitable legal action. In case any loss posed to the Bank then the said contractor will indemnify suitably the bank against the said financial and reputational loss

2. BIDDERS ON WHOM BANK HAS IMPOSED PENALTY FOR THEIR PREVIOUS WORKS IN LAST ONE YEAR ARE NOT ELIGIBLE TO APPLY. THOSE TENDERS WILL BE REJECTED WITHOUT ANY INTIMATION.

BASIC INFORMATION

1	Name of the applicant / Organization Address of the Registered Office Address of office in preferably in Gujarat. (With Phone Nos Fax Nos & Email ID & Contact Person)	
2	Year of establishment	
3	Type of the organization (Whether sole proprietorship, Partnership, Private Ltd. or Ltd. Co. etc.) (Enclose certified copies of documents as evidence)	
4	Name & qualification of the Proprietor / Partners / Directors of the Organization / Firm	

	a) b) c) enclose certified copies of document as evidence	
5	Whether registered with Government / Semi – Government / Municipal Authorities of any other Public Organization and if so, in which class and since when? (Enclose certified copies of document as evidence)	
6	No. of years of experience in the field and details of work in any other field. Whether ISO certified, furnish the details.	
7	Area of business activities other than construction, if any, and place of business.	
8	Address of business activities other than construction if any, and place of business	
9	Address of the registered/office through which the proposed work of the Bank will be handled and the Name & Designation of officer in charge.	

	(ENCLOSE ADDRESS PROOF)	
	Work Completion Details	
	a. Three similar completed works each costing not less than Rs. 19.98 lakhs OR b. Two similar completed works each costing not less than Rs.24.98 lakhs OR c. One similar completed work costing not less than Rs. 39.97 lakhs. (Enclose work completion certificate from client)	
11	[a] Yearly turnover of the organization during last 3 years (year wise) and furnish audited balance sheet and Profit & Loss A/c (Audited) for the last – 3- years.	

	[b] Committed turnover in 2020 - 2021 2021 – 2022 2022 – 2023 2023– 2024	
13	Enclose copy of latest income tax clearance certificate (last 3 years) (ENCLOSE COPY)	Yes/No
14	PAN No. (ENCLOSE COPY PAN CARD)	
15	GST No. (ENCLOSE COPY OF REGISTRATION)	
16	Other infrastructural information to be used/ referred for this project (Proforma-4) List of available plants, machineries equipments etc.	
17	Furnish the names of –3- responsible persons along with their designation, address, Tel.No., etc., for whose organization, you have completed the above mentioned jobs and who will be in a position to certify about the performance of your organization.	1. 2. 3.

18	Whether any Civil Suit / litigation arisen in contracts executed / being executed during the last 10 years. If yes, please furnish the name of the project, employer, Nature of work, Contract value, work order and brief details of litigation. (Proforma-5) Give name of court, place, and status of pending litigation.	Attach a separate sheet if required.
19	Information relating to whether any litigation is pending before any Arbitrator for adjudication of any litigation or else any litigation was disposed off during the last ten years by an arbitrator. If so, the details of such litigation are required to be submitted.	
20	No. of supplementary sheets attached for Part – II	

I hereby undertake that all the information provided above are true, and all the terms and conditions related to work order, eligibility and other are fully read over and after understand the same, submitting this tender. Further I also undertake that signing authority is authorised to submit this tender and possess all the required resolution, mandate etc in this regard.

In case of firm is other than individual/proprietorship, preferably submit the manadate/resolution copy, however at the time of acceptance of work order or execution of agreement, the same are necessarily required.

NOTE: Attach extra sheets with Sr. No if the space found less.

LIST OF SIMILAR PROJECTS EXECUTED BY THE CONTRACTOR/FIRM DURING THE LAST 7 YEARS ENDING AS ON DATE OF PUBLICATION.

(Each works costing not less than Rs.19.98 lakhs)

SL.NO.	Name of work/ project with addres s.	Name & full postal address of the owner. Specify	Contract Amount (Rs.)	Stipulate d time of completion (Years)	Actual time of completio n (years)	Any other relevant information Actual amount of the Project, if increased, give reasons.	Enclose clients certificate for satisfactory completion.
1	2	3	4	5	6	7	8

Notes:

Information has to be filled up specifically in this format.

For certificates, the issuing authority shall not be less than an Executive In charge.

Performance/Completion certificates will necessarily be submitted along with Work Orders.

LIST OF IMPORTANT WORKS OF SIMILAR NATURE ON HAND.

(EACH WORKS COSTING NOT LESS THAN RS.19.98 LAKHS)

Sl no	Name of work/ project with address	Name & full postal address of the owner. Specify whether Govt. under taking along with name, address and contact nos. of –2- persons (Engineers or top officials of the organization)	Contract Amount (Rs.) (for construction work only) with copy of Work Order & completion certificate from project in-charge.	Stipulat ed time of completi on (Years)	Present status of the project	Any other relevant informati on
1	2	3	4	5	6	7

Note:-

Information has to be filled up specifically in this format

GENERAL INSTUCTIONS / CONDITIONS TO THE TENDERERS

1. TENDERS ARE HEREBY INVITED ON BEHALF OF CIVIL INTERIOR FURNISHING, ELECTRICAL, AIR CONDITIONING AND ALLIED WORKS OF EXISTING PREMISES OF BOB UDHNA BRANCH, SURAT,GUJARAT. HOWEVER SCOPE OF THE TENDER MENTIONED BOQ WORK CAN BE REVISED/CHANGED DURING EXECUTION & AS PER INSTRUCTIONS OF THE BANK/ARCHITECTS.

2. THE TENDERS COMPRISING TECHNICAL BID AND PRICE BID BOTH SHOULD BE KEPT IN TWO SEPARATE SEALED ENVELOPES SUPER SCRIBED ON BOTH ENVELOPES (TECHNICAL BID-ENVELOPE-1 & FINANCIAL BID ENVELPOE-2 RESPECTIVELY ALONG WITH PROJECT TITLE) AND BOTH SEALED ENVELOPE SHOULD BE PLACED IN ONE BIG SIZE ENVELOPE SUPER SCRIBED WITH "TENDER FOR CIVIL, INTERIOR FURNISHING, ELECTRICAL, AIR CONDITIONING AND ALLIED WORKS OF EXISTING PREMISES OF BOB UDHNA BRANCH, SURAT, GUJARAT".
   All the Pages of the Tender Documents must be signed & stamped. Conditional Tenders will not be accepted.

3. THE TENDER ADDRESSED TO

   THE REGIONAL MANAGER, BANK OF BARODA SURAT CITY REGIONAL OFFICE, 8TH FLOOR, BARODA SUN COMPLEX, GHOD DOD ROAD, SURAT-395007, GUJARAT, INDIA.

   AND WILL BE SUBMITTED TO THE

   THE REGIONAL MANAGER, BANK OF BARODA SURAT CITY REGIONAL OFFICE, 8TH FLOOR, BARODA SUN COMPLEX, GHOD DOD ROAD, SURAT-395007, GUJARAT, INDIA.

   The TENDER Documents must be reached/ received at the above address ON OR BEFORE 21.02.2025 up to 3:00 P.M, any tender received later will not be entertained.

   (I) **ENVELOPE–I** CONTAINING CONTRACTOR'S TERMS AND CONDITIONS, WORK ORDERS, PERFORMANCE/COMPLETION CERTIFICATES, ALL REQUIRED PAPERS AS REQUIRED IN BASIC INFORMATION TECHNICAL ASSUMPTIONS ALONG WITH **DEMAND DRAFT/BC (EMD) FOR RS. 49, 900/- IN FAVOR OF BANK OF BARODA, SURAT CITY REGIONAL OFFICE, PAYABLE AT SURAT AS EMD** .EMD KEPT IN ENVELOPE –II SHALL LEAD TO CANCELLATION OF TECHNICAL BID.TENDER WILL BE OPENED AT THE SURAT CITY REGIONAL OFFICE ON 21.02.2025 AT 03.30 P.M.

   (II) **ENVELOPE–II** containing Price bid – To contain Architects tender documents along with bill of quantities will be opened after evaluation of technical bid. Price Bid of only those bidders will be opened whose technical bid qualified successfully or found suitable.

4. The contractor should quote in figures as well as in words the rate, and amount tendered by them. The amount for each item should be worked out and requisite total given in English Language only.

   The EMD of the contractor whose tender is accepted, shall be forfeited in full in case he does not remit the initial security deposit within the stipulated period or start the work by the stipulated date mentioned in the work order

5. The acceptance of the suitable tender will be based on sole discretion of the Bank of Baroda, lowest tenderer will not claim as successful bidder till the bank declared him as successful bidder. It is not binding to the bank to accept the said tender just for the reason of lowest tender, the authority may reject any or all of the tenders in which any one of the prescribed conditions are not fulfilled or the information provided by the bidder untrue, or incomplete or credential of bidder found doubtful subsequently or negative feedback received about past work etc in any respect, liable to be rejected.

6. The bank reserves the right to accept the tender in full or in part and the tenderer shall have no claim for revision of rates or other conditions if his tender is accepted in parts.

7. Canvassing in connection with tenders is strictly prohibited and the tender submitted by the contractors who resort to canvassing will be liable to rejection

8. All rates shall be quoted on the proper format of the tender and before quoting the rates, the tender shall have to be read and understand the various clauses mentioned in general conditions and special conditions of this contract along with drawings and specifications.

9. Bills of quantities in respect of each work and a specification accompany this tender notice. The tenderers must use only the form issued by the Architects to fill in the rate. The Bills of quantities may be varied at the discretion of the Bank/Architects. Each tender should contain not only the rates but also the value of each item of work entered in a separate column and all the items should be totalled up in order to show the aggregate value of the entire tender.

10. In the event of the tender submitted by a Partnership firm, it must be signed separately by each member thereof, or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power of attorney authorizing him to do so; such power of attorney shall be produced along with the tender and it must disclose that the firm is registered under the Indian Partnership Act and a copy of the Partnership deed should be attached. In the case of Proprietary concern, the Sole Proprietor should sign.In the case of Limited Co., the Managing Director or any other Director authorized to sign, with name, ~~and~~ address and designations of all Directors and seal of the Company supported by a resolution of the Company.

11. The tenderer shall also inspect and examine the site and its surroundings and shall satisfy himself before submitting his tender as to the nature of the ground and subsoil (so far as practicable), nature of the site, the quantities and nature of work and materials necessary for the completion of the works and the means of access to the site, the accommodation how may require and accordingly it is responsibility of tenderer that they shall himself obtain all necessary information, as to rights contingencies and other circumstances which may influence or affect his tender and the Employer/ Bank makes no assurance or representation to the tenderer in this behalf.

12. Errors in the bills of quantities shall be dealt with in the following manner:

a) When there is a difference between the rates in figures and in words, the rates, which correspond to the amounts worked out by the contractor, shall be taken as correct.

b) When the amount of an item is not worked out by the contractor or it does not correspond with the rate written either in figures or in words, then the rate quoted by the contractors in words shall be taken as correct.

c) When the rate quoted by the contractor in figures and in words tallies but the amount is not worked out correctly, the rate quoted by the contractor shall be taken as correct and not the amount.

d) In case the contractor has not quoted both rate and amount for any items, then the maximum of the quotes for that item by other bidders shall be taken for assessing the value of his tender. Further, in case he is awarded the work, the rate for the said item shall be payable as per the lowest rate quoted by other bidders.

e) The tenderer whose tender is accepted shall not be entitled to make any claim for increase in the rates quoted and accepted excepting in pursuance of any specific provision in the contract for such and then only in terms of that specific provision or to make any representation on the ground that he was supplied with any information or given any promise or guarantee of any sort, by the employer his agents and servants, the Architects or their representatives or any other persons, unless such information, promise or guarantee is furnished to the tenderer in advance of the date of receipt of tenders and in writing under proper authority.

f) The work is to be carried out generally in accordance with I.E. Rules and Regulation the Local P.W.D. or C.P.W.D. specifications as the case may be and the I.S.S. in addition to the Tender/Architects' specifications, if any, forming part of the tender documents.

13. Electrical Installation shall comply in all respect with the requirements of the Indian Electricity Act 1916 as amended from time to time and the an Electricity Rules currently in force. Electrical works to be carried out through/ in supervision of electrical license holder issued by the appropriate statutory authority as per the existing laws of the concerned electricity board/Municipal Corporation/Panchayat, as the case may be. License copy to be produced, if required.

14. The materials to be used in electrical installations shall be of approved make and shall conform generally to the relevant Indian Standard Specifications.

15. On completion of the work the contractor shall furnish three sets of wiring diagrams and of conduit layout as executed in the installation. He shall also furnish a test certificate and guarantee in the standard form as prescribed by the Employer.

16. In the case of any class of work for which there is no specification in the said I.E. Rules and Regulations or Local P.W.D. specifications, the said Highways Manuals/specifications, the said regulations and rules, CPWD specifications and the I.S.S. or in the said Architects' specifications forming part of the tender documents or in case there is a variation, such work shall be carried out in all respects in accordance with the instructions and requirements of the Architects.

17. The work shall be carried out under the directions and supervision of the officials of the Employer and Architects and subject to the approval in all respects by the Employer and Architects.

18. On acceptance of the tender the Contractor shall in writing and at once inform the Employer and the Architects the names of his accredited representative (specifications) who will be responsible to take instructions from the Architects/Employer. The Contractor will be required to insure by obtaining CAR policy of the work and keep it insured up to one month after the date of taking over the works/installations by the Employer or otherwise in terms of the contract against loss or damage by fire and other usual risks other than the risks excepted in terms of the contract with the General Insurance Corporation of India or its subsidiaries. This CAR policy will be required to submit to bank within -7days from the date of acceptance of work order.

19. In carrying out the work the contractor shall comply with the provisions of the safety code, annexed to these papers. The tenderer shall comply with all provisions of laws including workmen's compensation Act, contract labour (Regulation & Arbitration) Act etc. If the Employer is made liable to pay any sum of money or incur any liability as a consequence of no performance or omission or commission on the part of the Contractor or otherwise, the Employer is entitled to recover the same from the contractor or adjust against any money due to the Contractor.

On acceptance of the tender, the name of the accredited representative (s) of the Contractor who would be responsible for taking instructions from the Employer/ Architects, shall be communicated to the Employer

GENERAL CONDITIONS OF CONTRACT

Except where as provided specifically for in the description of the individual items in the schedule of quantities and in the specifications and conditions laid down herein after and the drawings, the work shall be carried out as per standard specifications and under the direction of the Employer / Architect

1. INTERPRETATIONS

In constructing these conditions and the specifications schedule of quantities and contract agreement, the following words shall have the meaning herein assigned to them except where the subject or contract otherwise required.

a. 'Employer' shall mean **THE REGIONAL MANAGER, BANK OF BARODA, SURAT CITY REGIONAL OFFICE, 8TH FLOOR, BARODA SUN COMPLEX, GHOD DOD ROAD, SURAT, GUJARAT, INDIA**. And any of its Employer/ Representatives authorized on their behalf.

b. **'Contractor' shall mean**
And shall include his / their heirs, legal representatives, assignees and successors.

c. **'Site'** shall mean the lands and other places as shown bounded red on the site plan, on which the works are to be provided by the Employer or Architect for the purpose of the contract.

d. **'Site Engineer/Supervisor'** shall mean any other engineer/skilled experienced person appointed from time to time by the Employer and certified in writing to the Architects and the Contractor, to act as Engineer for the purpose of the Contract in The place of the said.

e. **'Employer's Representatives'** shall mean any site Engineer or any clerk of works appointed from time to time by the Employer to perform the duties set forth in Clause 27 hereof whose authority shall be notified in writing to the Architects and Contractor by the EMPLOYER.

f. **'Drawings'** shall mean the drawings referred to in the specifications and any modifications of such drawings approved in writing by the Architect and such other drawings as any from time to time during the execution of work be furnished or approved in writing of the Architect and Employer

The Contractor shall ask in writing for all clarifications on matters occurring any where 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 Employer / Architect may be able to give decisions hereon.

h. **'Works'** shall mean the works to be executed in accordance with the contract specifications and schedule of quantities.

i. **'Act of insolvency'** shall mean any Act of Insolvency as defined by the Presidency Towns Insolvency Act or the Provincial Insolvency Act or any act amending such original.

j. **'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.

k. **'The Schedule of Quantities'** shall mean the schedule of quantities as specified and forming part of this contract.

l. **'Priced schedule of Quantities'** shall mean the schedule of quantities duly priced with the accepted quoted rates of the contractor.

m. **'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.

n. **'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.

o. **'Net Prices'** any arriving at the Contract amount the Contractor shall have added to or deducted from the total of the items if the Tender any sum, either as a percentage or otherwise, then the next price of any item in the tender shall be the sum arrived at by adding to or deducting from the actual figure appearing in the tender as the price of that item a similar percentage or proportionate sum. Providing always that in determining the percentage or proportion of the sum so added or deducted by the contractor, the total amount of any Prime Cost items and provisional sums of money shall be deducted from the total amount of the Tender. The expression 'net rates' or 'net prices' when used with reference to the contract or account shall be hold to mean rates or prices so arrived it.

p. **'Actual Completion'** shall mean the building is in the opinion of the Architect and Employer fit for occupation.

q. Words importing persons include firms and corporations. Words importing the singular only, also include the plural and vice verse where the Context requires.

2. SCOPE OF CONTRACT:

The scope of work covers Civil, Interior furnishing work, Electrical work , Air-conditioning work & Allied works at Bank of Baroda, BOB Udhna Branch, Surat, Gujarat in accordance with the drawings, tender specifications ,as per approved make etc. prepared by Banks Architects and under their direction and to the satisfaction of Architects and Banks Engineer. In regard to:

a. The contractor has to make his own arrangement for movement of his men and materials to the required site/floor of the premises (working areas) at his own cost. All types of safety measures will be taken by the contractor.

b. The variations or modifications of the designs, quality of works or the additions or omission or substitution of any work.

c Any discrepancy in the drawings or between the schedule of quantities and / or drawings and / or specifications.

d. The removal from the site of any defective material brought thereon by the Contractor and the substitution of any other material thereof.

e. The demolition removal and / or re-execution of any work executed by the contractor/s.

f. The dismissal from the works any person employed thereupon.

g. The opening-up for inspection of any work covered –up.

h. The rectification and making good of any defect under clauses hereinafter mentioned and those arising during the maintenance period (retention period).

The Contractor shall forthwith comply and fully execute any work comprised in such Architect's Inspections provided always that instructions directions and explanations given to the Contractor or his representative upon the works by the Architect shall, if involving a variation, be confirmed in writing by the Contractor within 7 days and if not dissented from in writing within 7 days by the Architect, shall be deemed to be the Architect's instructions within the scope of contract.

If compliance with the Architect's instructions as aforesaid involved work and /or expense and /or loss beyond that contemplated by the contract, then unless the same were issued owing to some branch of his Contract by the contractor's, the Employer shall pay to the Contractor on the Architect's Certificate, the price if the said work (as on extra to be valued as herein after provided) and/or expenses and /or loss.

Regarding all factory made products for which ISI marked products are available, only products bearing ISI marking or otherwise specified shall be used in the work.

3. CONTRACTOR TO VISIT THE SITE:

Each tenderer must before submitting his tender, visit the site of works so as to examine the physical site conditions and prices, availability and quality of materials according to specifications, drawing and Schedule of Conditions of contract, as all clauses therein contained are intended to be strictly enforced and the tenderer must include in his tender for all the provisions therein contained and for all contingencies which may arise. Employer makes no assurance or representation to the tenderer in this behalf. No extra claim regarding non-availability of materials or charges in the price will be entertained or extra allowed on that account at any stage.

TENDERS:

The entire set of tender paper issued to the tenderer should be submitted fully priced and also signed on the last page together with initials on every page. Initial / signature will indicate the acceptance of the tender papers by the tenderer.

The schedule of quantities shall be filled in as follows:

i. The 'Rate' column to be legibly filled in ink in English, figures and English words.
ii. Amount column to be filled in for such item and the amount for each sub bead and detailed in the Schedule of Quantities.
iii. All corrections are to be initialed.
iv. The 'Rate column' for alternative items shall be filled up.
v. The 'Amount' column for alternative items of which the quantities are not mentioned shall not be filled up.

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

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

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

All items of work described in the schedule of quantities are to be designed and paid as complete works and details including preparatory furnishing 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 lumpsum charges in the tender in respect of any item of works, the payment of such items of work will be made for the actual work done on the basis of lumpsum charges as will be assessed to be payable by the Employer/Architect.

The employer has power to add, omit from work as shown in drawings or described in specifications or included in schedule of quantities and intimate the same in writing but no addition, omission or variation shall be made by the Contractor without authorization from the Employer.

The tender shall note that the tender shall remain open for consideration for a period of 90 days from the date of opening of the financial bids.

5. AGREEMENT:

The successful Contractor shall be required to enter into an agreement in accordance with the Draft Agreement and Schedule of Conditions within 14 days from the date of work order whichever is earlier. The Contractor shall pay for all stamps and legal expenses incidental thereto. However, the written acceptance by the Employer, of the tender will constitute as a binding contract between the Employer and Contractor, whose tender has been accepted, whether such final agreement is or is not subsequently executed. These tender document will be part and parcel of the said agreement provided no specifically denied in the agreement.

6. OPENING UP WORKS:

The Contractor shall notify the Architect in writing immediately, the trenches or excavation as shown on the drawings are get ready or as soon as any ground is cut into which, from unexpected causes appears to need immediate attention, after notifying the Architect, he shall await instructions which shall within seven days of receipt of such notices, if the Contractor put in any parts of the foundations before he has so notified the Architect and received instructions, shall be liable to reinstate all work that may subsequently be, at any time, damaged on account of any defect or insufficiency of the foundations. The Contractor shall at the request of the Architect, within such time as the Architect so desires, open for inspection any other work, and should the Contractor refuse or neglect, to comply with such request, the Employer, through the Architect may comply other workmen to open up the same. If the said work has been covered up in contravention of the Architect's instructions, or if, on being opened up, it be found in accordance with the drawings and specifications, or the instructions of the Architect, the expenses of such other workmen shall be borne by and recoverable or which may become due to the contractor. If the works has not been covered up in contravention of such instructions, then the expenses aforesaid shall be done by the Employer and be added to or the Contract sum, provided always that in the case of foundations or of any other urgent work so opened up and requiring immediate attention, the Architect shall within seven days after receipt of the written notice from the Contractor that the work has been opened, make or cause the inspection thereof to be made, and at the expiration of such time if such inspection shall not have been made, the Contractor may cover the same and shall not be required to open it up again, except expenses of Employer.

7. AUTHORITIES, NOTICES, PATENT RIGHTS AND ROYALTIES:

The Contractor shall confirm to the provisions of the statutes relating to the works, and so to the regulation and bylaws of any local authority, and of any water, lighting and other companies or authorities with whose systems the structures are proposed to be connected and shall before making any variation from the drawings or specifications, that may be necessitated by so conforming given to the Architect's written notice, specifying the variations proposed to be made and the reason for making it apply for instruction thereon. In case, the Contractor shall not within the 10 days receive such instruction, he shall proceed with the work conforming with the provisions, regulations or bylaws in questions.

The Contractor shall bring to the attention of the Architect all notices required by the said acts, regulations or bylaws to be given to any Authority, and pay to such authority or to any Public Officer all fees that may be properly chargeable in respect of the works, and lodge the receipts with the Architect / Employer.

The Contractor shall identify the Employer against all claims in respect of patent rights, designs, trade marks or name or the protected rights in respect of any constructional plant, machine, work or material used for or in connection with the works or temporary works and from and against all claims, demands, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto. The Contractor shall defend all actions arising from such claims, unless he has informed the Architects, before any such infringement and received their permission to proceed and shall himself pay all royalties, license fees, damages, coat and charges of all and every sort that may be legally incurred in respect thereof.

8. TAXES AND DUTIES:

All works shall be measured net as finished and the rates quoted by the Contractors shall include for all cuttings, waste, breakages, etc. Tenderer must include in their rates, , any local tax, Excise loading/unloading of material at site, Octroi and other tax and duty levied by the Central Government or any State Government or Local Authority, if applicable but **excluding GST**. The rates quoted shall be firm till the completion of the entire work and no variation of rates will be entertained. The various statutory tax deductions implemented by the state and central government from time to time shall also be affected in the respective running bills. Electricity consumption charges as per the MGVCL. tariff should be borne by the contractor based on the actual consumption. No extra claim on this account will in any case be entertained.

9. NOTICES AND STATUTORY REGULATIONS:

The Contractor shall give all notices and pay all fees and shall comply all Acts and Regulations for the successful completion of the contract works. The whole of the work including sanitation and electrical is to be complied with as per the requirements and bylaws of the relevant statutory authorities including contract labor (Regulation and Abolition) Act 1970.

10. PRIME COST AND PROVISIONAL SUMS:

a. Where 'Prime Cost' (P.C) prices or provisional sums of money are provided for any goods or works in the specifications or Schedule of Quantities, the same are exclusive of any trade discount, or allowances, discount for cash, or profit which the Contractor may require and or carriage and fixing.

b. All goods or work for which prime cost prices or provisional sums of money are provided may be selected or ordered from any manufactures or firms, at the discretion of the Architect or the Employer. The Employer reserves to himself the right of paying directly for any such goods or work and the Architect may deduct the said prices or sums from the amount of the contract. Should any goods or works for which prime costs or provisional sums are provided or portions of some be not required, such prices are sums together with the profits allow for such additional amount as the Contractor may have allowed for carriage and fixing will be deducted in full from the amount of the Contract. Whether the goods be ordered by the Contractor or otherwise the Contractor shall, at his own cost fix the same, if called upon to do so, and the Contractor shall also receive and sign for such goods and be responsible for their safe custody as and from the date of their delivery upon the works.

c. In cases in which provisional quantities of materials are contained in the contract, the Contractor shall provide such materials to such amounts or to greater or lesser amounts, as the Architect shall direct in writing at the net rates at which he shall have priced such items in his Schedule of Quantities. Should however, any such items be omitted, which omissions shall be at the Architect's decretion, no profit on such items shall be allowed to the contractor.

d. No prime cost sum or sums (or any portion thereof) shall be included in any certificate for payment to the Contractor until the receipted accounts relating to them have been produced by the Contractor to the Architect. Such accounts shall show all discounts and any sum or sums in respect of such discounts shall be treated as a trade discount. Provided always, that should the Contractor in lieu of

producing such receipted accounts, request the Architect in writing to issue a certificate on the Employer for such sum or sums due either on account or in settlement to a sub-Contractor direct, the Architect shall, upon satisfying himself that the sub-contractor, at the settlement of accounts and any profit or sum to which the Contractors properly entitles, in respect of such sub-contract, and which is in conformity with the terms of Contract as through of such certificates, to the sub-Contractor had been included in a certificate drawn in favour of the Contractor.

e. If the Contractor neither produces the receipt nor gives to the Architect to issue a Certificate in favour of such sub-Contractor direct, the Architect may upon giving the contactor 'SEVEN DAYS NOTICE' in writing of his intentions to do so, issue to the sub-Contractor such certificate direct to the Employer and obtain a receipt from the sub-Contractor which receipt shall be deemed a discharge for the amount of such certificates as through given by the contract. In such event, the Contractor shall not be allowed any profit he may have added in the Schedule of Quantities upon such sub-contract.

f. The exercise of the option before referred to by the Contractor and the issue of Certificates, as before described to sub-Contractor direct of certificates by the Architect, shall not however relieve the Contractor from any of the liabilities in respect of insufficient, faulty or incomplete work of the sub-Contractor for which he may liable under the terms of the Contract.

11. SCHEDULE OF QUANTITIES & SUFFICIENCY OF SCHDULE OF QUANTITIES:

The Schedule of Quantities unless otherwise stated shall be deemed to have been prepared In accordance with the Standard Procedure of the Architects shall be considered to be approximate and no liability shall attach to the Architect for any error may be discovered therein. The Employer reserves the right to execute only a part or the whole or any excess thereof without assigning any reason therefore.

The Contractor shall be deemed to have satisfied himself before tendering to the correctness and sufficiency of his tender for the works and of the prices stated in the Schedule of Quantities and /or the Schedule of Rates and Prices, which rates and prices shall cover all things necessary for the completion of the works.

12. OTHER PERSONS ENGAGED BY THE EMPLOYER:

The Employer reserves the right to use the premises and may portions of the site for the execution of any work not included in the contract which he may desires to have carried out by other persons, and the contractors is to allow all reasonable facilities for the execution such work, but is not required to provided any plant or materials for the execution of such work, except by special arrangement with the Employer. (Such work shall be carried out in such a manner as not to impede the progress of the works included in the contract, and the Contractor shall not be responsible for any damage or delay which may happen to or be occasioned by such work)

13. EARNEST MONEY DEPOSIT & SECURITY DEPOSIT:

The tenderer will have to deposit an amount of **Rs.49,900/-**In the form of Bank Demand draft/Banker's Cheque only drawn in favour of **Bank of Baroda, SURAT CITY REGIONAL OFFICE.** At the time of submission of tender as an Earnest Money. The Employer is not liable to pay interest on the Earnest Money. The earnest money of unsuccessful tenderer will be returned without any interest soon after the decision to award the work is taken or after the expiry of the validity period of the tender.

The successful tenderer to whom the contract is awarded will have to deposit as initial security deposit a further sum to make up 2% of the value of the accepted tender including the earnest money. The initial security deposit will have to make within 7days from the date of acceptance of the tender, failing which the Employer at his discretion may revoke the letter of acceptance and forfeit the earnest money deposit furnished along with the tender. The initial security deposit will be held by the Employer for the duration of the contract period it shall be refunded to the Contractor without any interest within 14 days after the issue of certificate of work completion.

Apart from the initial security deposit made as above retention money shall be deducted from progressive running bills @ 10% of the gross value of each running bill as per the following: till total retention amount will be 5% of contract value. 50% of the retention money shall be released with final certificate of payment after removing all his material, equipment, labour force, temporary sheds/ store from the site.

Balance retention money shall be released 14 days after completion of the defects liability period of one year from the date of work completion.

14. CONTRACTOR TO PROVIDE EVERYTHING NECESSARY:

The Contractor shall provide everything at own cost necessary for the proper execution of works according to the true intent and meaning of the drawings, specifications and Schedule of Quantities taken together whether the same may or may not be particularly shown or described there in provided that the same can be referred there from and if the Contractor finds any discrepancy in the drawings or between the drawings, specifications and Schedule of Quantities, he shall immediately refer the same in writing to the architect, who shall decide which shall be followed and his decisions shall be final and binding on all parties.

The Contractor shall provide for himself fresh water, electricity, halting labours facility for the carrying out of the work at his own cost. The Employer shall charge the Contractor for his own unrented ground and shall on no account be responsible for the expense incurred by the Contractor for hired ground. If water from any source other than Municipal main is to be used for construction the same shall be tested at the contractors cost and a report submitted to the Architect for his approval, before such water is used for the works.

The Contractor shall supply, fix and maintain at his cost, during the execution of any works, all the necessary centering, scaffolding, staging, timbering, strutting, shoring, pumping, fencing, hoarding, watching and lighting by night as well as day required not only for the proper execution and protection for the said works, but also for the streets, collars, vaults, pavements, walls hoses, buildings and all their erections matters or things. The Contractor shall take down and remove any or all such centering, scaffolding, staging, planking, strutting, shoring etc as fully reinstate at his own cost and make good all the matters and thins disturbed during the execution of the works to the satisfaction of the Architects.

15. SITE INSTRUCTION BOOK:

The contractor shall at his own expense keep a site instruction book at the site in which shall be entered all instructions given by the Architects or public authorities. A copy of the orders shall be sent to Architects for their confirmation within 3 days after the orders are given. The book shall not be removed from the site without the Architects' permission. Contractor will

submit the photograph of work completion at different stages.

16. TIME OF COMPLETION, EXTENSION OF TIME AND PROGRESS CHART:

The Contractor shall be allowed admittance to the site on the 'Date of Commencement' stated in the Appendix, and he shall thereupon and forthwith begin the works and shall regularly proceed with and complete the same (except such painting or other decorative work as the Architect may desire to delay). On or before the 'Day of Completion' stated in the Appendix subject nevertheless the provision for extension of time hereinafter contained.

If in the opinion of the Architect the works be delayed:

a. by force major or

b. by reason of any exceptionally inclement weather or

d. By reason of proceedings taken or threatened by or dispute with adjoining or neighboring owners of public authorities arising, than through the Contractor's won default or

e. By the works or delays of the contractors tradesmen engaged or nominated by the Employer / Architect and not referred in the Schedule of Quantities and / or specifications or

f. By reason of the Architect's instructions as per clause 2, or

g. In consequence of the Contractor not having in due time, necessary instructions from the architect for which he shall have specifically applied in writing ahead of time, giving the Architect reasonable time to prepare such instructions, the Architects shall make a fair and reasonable extension of time for completion of the Contract works

In case of such strike or lock-out, the Contractor shall as soon as possible, give written notice thereof the Architect, but the Contractor shall nevertheless constantly use his endeavors to prevent delay and shall do all they may reasonably be required, to the satisfaction of the Architect to proceed with the work.

The Contractor on starting the works shall furnish to the Employer / Architect a PERT / CPM Programme for carrying out the work stage in the stipulated time fore the approval of Architect /Employer and follow strictly the approved time schedule incorporating charges if any, to ensure the completion of construction work in stipulated time. A graph or chart on individual work shall be maintained showing the proportionate progress of work week by week by Architect a weekly progress report stating the number of skilled and un skilled laborers employed on the work, working hours done, quality of cement used, place, type, and quantity of work done during the period.

The Contractor must inform the Architect within 10 days in advance of all drawings and details required by him from time to time. The Contractor shall adhere to the approved program and arrange for the materials and labour etc accordingly.

Despite repeated instructions, of the Contractor fails to show proportionate progress of the work, the Architect / Employer may take suitable action and deemed fit without prejudice to any terms and conditions of the contract.

17. CERTIFICATE OF WORK COMPLETION:

The contractors shall intimate in writing to the Architect as and when the works are completed in all respects in order to enable the architect to intimate the Employer to take possession of the same. The works shall not be considered as completed, until the Architect has certified and accepted by the Employer in writing that the same have been 'Completed'. The defects liability period shall commence from the date of such work completion certificate.

18. LIQUIDATED DAMAGES:

Should the work be not completed to the satisfaction of the Architect / Employer within the stipulated period of 12 month the Contractor shall be bound to pay to the Employer, a sum calculated as given below by way of liquidated damages and not as penalty during which the works remain un-commenced or unfinished after the expiry of the completion date.1% of the estimated amount shown in the tender per week subject to a ceiling 10 % the accepted contracted sum.

19. 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. In case of sudden bans, political strikes special care to be taken regrading safety of work executed on site, labours and materials. Contractor shall indemnify the Employer against any possible damage to site i.e. the tile floor, walls, glass, sanitary/plumbing fittings etc along with member of the public in course of execution of the work.

20. STORAGE OF MATERIALS:

The Contractor shall provide proper arrangements and maintain proper storage and adequate protection of materials and other work that may be executed on the site including the tools and materials of sub-contractors and remove same on completion.

21. NOTICE AND PATENTS OF APPROPRIATE AUTHORITIES AND OWNERS:

The Contractor shall indemnify the Employer against all claims in respect of patent rights, royalties, and damages to building, roads or member of public in 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.

22. CLEARING SITE AND SETTING OUT WORK:

The site shown on the plan shall be cleared of all waste loose articles, and materials rubbish of all kinds. All hold or hollows whether originally existing or produced by removal or loose stone or materials shall be carefully filled-up with earth well rammed and leveled off as directed at the contractor's own cost.

The Contractor shall at his own expense, set out the works accurately in accordance with the plans and to the complete satisfaction of the Architect. The Contractor shall be solely responsible for the true and perfect setting out of the same and for the correctness of the positions, levels dimensions and alignment of all parts thereof. If at any time error shall appear during the progress or on completion of any part of the work, the Contractor shall at his cost rectify such error if called upon to the satisfaction of the Architects and Employer. The work shall from time to time inspected by the Architect and / or his representatives, but

such inspection shall not exonerate the Contractor in any way from his obligations to remedy defects at his own cost which may be found to exist at any stage of the work or after the same is completed. The site shall be delivered in a clean neat condition as required by Architect within a period of one week after job is completed. In case of failure by the contractor, Employer, under advice of the Architect have the right to get the site cleared to his satisfaction at the risk and cost of the Contractor.

23. CONTRACTOR IMMEDIATELY TO REMOVE ALL OFFENSIVE MATTERS:

All waste loose articles, and materials rubbish of all kinds shall be disposed off as per the rules and regulations of the Local Authorities concerned at contractor's cost. The Contractor shall keep the site clean and works free from water and shall provide and maintain at his own expenses electrically to the satisfaction of Architect / Employer for the purpose, until the site/premises is handover to the Employer completed in all respects. The accumulated to the satisfaction of the Employer and the local authority and no claims will be entertained afterwards if he does to include in his rates for the purpose. The contractor will hand over the site/premises in cleaned condition and completed in all respects.

24. ACCESS TO WORKS:

The Architect, the Employer and any person authorized by them shall at all reasonable times have free access to the works and to the workshops factories or other places where materials are being prepared or constructed for the Contract and also to any place where the materials are lying or from which they are being obtained. The Contractor shall give every facility to the Architect and the Employer and their representatives if inspection and examination and test of the materials and workmanship. No person unless authorized by the Architect or the Employer, except the representatives of Public Authorities shall be allowed on the works at any time. If any work is to be done at a place other than the site of works, the Contractor shall obtain the written permission of the Architect / Employer for doing so.

25. MATERIALS, WORKMANSHIP, SAMPLES TESTING OF MATERIALS:

All materials and workmanship shall, so far as procurable be of the respective kinds specified in the schedule of quantities and / or specifications and in accordance with the Architect's instructions and the Contractor shall be on the request if the Architect's furnish to them all invoices, accounts receipts and other vouchers to prove that the materials comply therewith. The Contractor shall at his own cost arrange for and / or carry any test of any materials which the Architect and employer may require. Any materials brought on site or incorporated in the works are found to be defective or unsound or not as per approved material with required dimensions, the Contractor shall remove the same and re-erect at his own cost. **The Contractor shall as and when directed by the Architect / Employer arrange to test materials and / or proportions of the work at site or in any approved laboratory** at his own cost in order to prove their soundness and efficiency. The Contractor shall transport all the materials from site to the approved laboratory at own cost. The Contractor shall carryout all the mandatory tests, as required.

26. REMOVAL OF IMPROPER WORK AND MATERIALS:

The Architect / Employer shall, during the progress of the works, have power to order in writing from time to time the removal from the works, within such reasonable time as may be specified in order to, of any materials which in the opinion of the Architect / Employer are not in accordance with the specification or the instructions of Architect / Employer, and the substitution of proper materials and the removal and proper re-execution of any work, which has been executed with materials or workmanship, not in accordance with the drawings and specifications or instructions, and the Contractor shall forthwith carry out such orders at his

own cost. In case, of default on the part on the Contractor to carry our such orders, the Employer shall have to employ and pay other persons to carry out the same and all expenses consequent thereon or incidental thereto shall be borne by the Contractor, and shall recoverable from on behalf of the Employer or may deducted by the Architect from any money due or may become due to the Contractor

In view of correcting work not done in accordance with the contract, the Architect / Employer may allow such work to remain and in that case may make allowance for the difference in value together with such further allowance for damage to the Employer, as in his opinion may be reasonable.

No certificate, which may be given by Architects, shall relieve the Contractor from his liability in respect of unsound work or bad material.

27. EMPLOYER'S REPRESENTATIVE:

The Employer may appoint a supervisor or clerk of works who shall be representative of the Employer and also of the Architect. The duties of the Employer representative are to watch and supervise the works and to test any materials to be used of workmanship employed in connection with the works. He shall have no authority either to relieve the Contractor of any of his duties or obligations under the Contract, or except those expressly provided hereunder, to order any work involving delay or any extra payment by the Employer or any variation of or in the works.

The contractor shall afford the Employer's representative every facility and assistance for examining the works and materials and checking the measuring time and materials. Neither the Employer's representative nor any assistant to the Architect shall have power to revoke, alter enlarge or relax the requirements of this Contract, or to Sanction any day-work, additions, alterations, deviations or omissions unless such an authority may be specially conferred by a written order of the Architect / Employer.

The Employer's Representative shall have to give notice to the Contractor or his foreman about the non-approval of any work or materials and such works shall be suspended or the use of such material should be discontinued until the decision of the Architect is obtained., the work will from time to time be examined by the Architect or the Employer's representative but such examinations shall not in any way exonerate the Contractor from the obligation to remedy defects which may be found to exist at any stage of the work of after the same is completed. Subject to the limitations of this cause, the Contractor shall take instruction from the Architect / Employer.

28. CONTRACTOR'S SUPERINTENDENCE & REPRESENTATIVE ON THE WORKS:

The Contractor shall give all necessary personal superintendence during the execution of the work and so long thereafter as the Architect any consider it necessary until the expiration of the 'Defects Liability Period' stated in clause 42. The Contractor shall meet the Architect or his representative whenever required and so informed by the Architect.

The Contractor shall maintain and be represented on site, at all times while the work is in progress, by a responsible and efficient Foreman, approved by the Architect / Employer and who must thoroughly understand all the trades entitled and be constantly in attendance while the men are at work. Any directions, explanations, instructions or notices given by the Architect / Employer to such foreman shall be deemed to the given to the Contractor and shall be binding as such on the Contractor. The Foreman shall be thoroughly conversant with the English language and should be able to read, write and speak English.

29. CONTRACTOR EMPLOYEES:

The Contractor shall employ technically qualified and competent supervisors for the work who shall be available (by turn) throughout the working hours and receive and comply with instructions of the Architect / Employer .The Contractor shall employ in connection with the works persons having the appropriate skill or ability perform their job efficiently. The Contractor shall employ local laborers on the work as Indian National shall be employed on the work.

Any laborer 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

a. The payment of Wages Act
b. Employer's liability Act
c. Workmen's compensation Act
d. Contractor labor (Regulation & Abolition) Act, 1970 and central rules 1971
e. Apprentice Act 1961
f. 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 cost and expenses may be incurred by the Employer in connection with any claim that may be made by any workman.

The Contractor shall comply at his own cost with their order of requirement of any Health Office of the State or any local authority or of the Employer regarding the maintenance of proper environmental sanitation of the area when the Contractor's laborers 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 sanitary condition adequate sanitary accommodation and provide facilities for pure drinking water at all times for the use of men engaged on the works and shall remove and clear away the same on completion of the works. Adequate precautions shall be taken by the 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 laborers engaged on the work. He shall within 24 hours of to the occurrence of any accident at or about the site or in the connection with execution of the works, report such accident to the Employer and also to the competent authority where such report is required by law.

30. DISMISSAL OF WORKMEN:

The Contractor shall on the request by the Architect / Employer immediately dismiss from the works any person employed there who may, in the opinion of the Architect / Employer, be unsuitable or incompetent or who may misconduct himself and such person shall not again be employed or allowed on the works without the permission of the Architect / Employer.

31. DAMAGE TO PERSONS AND PROPERTY INSURANCE ETC.,

The Contractor shall be responsible for all injury to persons, animals or things and for all structural and decorative damage to property which may arise from operation or neglect of himself or any sub-contractor or of any of his or a sub- contractor's employees, whether such injury or damage any arise from carelessness, accident or any other cause whatever in any way

connected with the carrying out of this Contract. This clause shall be held to include, interalia, any damage to buildings, whether immediately adjacent or otherwise, any damage to roads, streets, footpaths, bridges, or ways otherwise any damage caused to the buildings and works forming the subject of this Contract, by frost or other inrlement weather. The Contractor shall indemnify the Employer and hold him harmless in respect of all and any expenses arising from any such injury or damage to persons or property as aforesaid and also in respect of any claim made in respect of injury or damage under the acts of Governments or otherwise, and also in respect of any award of compensation or damages consequent upon such claim.

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

The Contractor shall indemnify the Employer against all claims which may be made against the Employer, by any member of the public or other party, in respect of anything which may arise in respect of the works or in consequence thereof and shall at his own cost, effect and maintain until the end of defects liability period of the Contract with an approved office, a policy of Insurance in the joint names of the Employer and the Contractor against such risks and deposit such policy or polices with the Employer on the signing of the Contract. The Contractor shall also indemnify the Employer against all claims which may be made upon the Employer whether under the Workmen's compensation Act or any other statute if force during the currency of this contract or at Common Law in respect of any employee of the Contractor or of any sub-contract and shall at his own expense effect and maintain until the end of defects liability period of the Contract, with an approved office a policy of Insurance in the joint names of the Employer and the Contractor against such risks and deposit such policy or polices with the Employer from time to time, during the currency of the Contract. In default of the Contractor insuring as provided above, the Architect on behalf of the Employer may so insure and may deduct the premium paid from money due or which may become due to the Contractor.

The Contractor shall be responsible for anything which may be excluded from the Insurance Polices above referred to and also for all other damages to any property arising out of and incidental to the negligent or defective carrying out of this contract however, such damage shall be caused.

The Contractor shall also indemnify the Employer in respect of any costs, charges or expenses arising out of any claim or proceedings and also in respect of any Award of or compensation of damages arising there from.

32. CONTRACTOR'S ALL RISK POLICY (INSURANCE):

The Contractor shall within -7- days from the date of acceptance of the work insure the works at his cost and keep them insured until one month after the works are taken over by the Employer or three months after the date of completion whichever is earlier, against loss or damage by fire and usual risks other than fire against which insures generally provide cover in a CONTRACTOR'S ALL RISK POLICY, with an insurer to be approved by the Architects, in the joint names of the Employer and Contractor (the name of the former being placed first in the policy), progressively for the full amount of the Contract , in three stages, beginning with 1/3 of the Contract value, and for any further sum as called upon to do so by the Architect, with the prior written consent of the Employer, the premium of such further sum being allowed to the Contractor as an authorized extra such policy shall cover the property of the Employer only and Architects and Supervisors fees for assessing the claim and in connection with his services generally in re-instatement and shall not cover any property of the Contractor or of any sub-contractor or employee. The

Contractor shall deposit the policy and receipts for the premiums paid with the Architects within twenty-one days of the date of commencement of the work unless otherwise instructed by the Architects. In default of the Contractor insuring as provided above, the Employer or the Architect on his behalf may insure and may deduct the premium paid from any money that may be due or that 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 insurers should they elect to do so, proceed owth all diligence with the completion of the works in the same manner as though the fire or other such risk had not occurred and in all respects under the same conditions of Contract.
The Contractor in case of rebuilding or reinstatement after fire or other such usual risk shall be entitled to such extensions of time for completion as recommended by the Architect.

33. ACCOUNTS RECEIPTS AND VOUCHERS:

The Contractor shall upon from the request of the Architect / 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 that he is required under this Contract, the value of the difference in the quantity of the materials he was required to use and that he actually used shall be deducted from his dues. The decision of the Architect / 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.

34. MEASUREMENTS:

The Architect may from time to time intimate the Contractor that he requires the works measured and the Contractor shall forthwith attend or send a qualified agent to assist Architect or the Architect's representative in taking such measurements and calculations and to furnish all particulars or give all assistance required by either of them.

Should the Contractor not attend or neglect or omit to send such an agent, then the measurements taken by the Architect is approved by him shall be taken to be correct measurements. The measurements shall whenever not mentioned in the under, be taken in accordance with the Indian Standard Method of Measurements of Building works (I.S.1200-1958) and its revisions, if any.

The Contractor or his agent may at the time of measurement take such notes and measurements as he may require.

All authorized extra costs, omissions and all variations made without the Architect's knowledge, if subsequently sanctioned by him in writing shall be included in such measurements.

The Contractor shall take joint measurements with the Architect / Employer's representative before covering up or otherwise placing beyond the reach of measurement any item of work. Should the Contractor neglect to do so, the same shall be uncovered at the Contractor's expense or in default thereof. No payment or allowance shall be made for such work or the materials with which the same was executed.

35. PAYMENT:

All bills shall be prepared by the Contractor in the form prescribed by Architect / Employers. Normally one interim bill shall be prepared subject to minimum value for **work executed of as stated in these documents**. The bills in proper formats 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 / Employer 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 thereon within the period of honouring certificates named in these documents.

36. FINAL PAYMENT

The final bill shall be accompanied by a certificate of completion from the Architect / Employer. Payments of final bill shall be made after deduction of retention money as specified in the clause 13 of these conditions, which sum shall be refunded after the completion of defects liability period after receiving the Architect / Employer certificate that the Contractor has rectified defects to the satisfaction of the Architect / Employers. The acceptance payment of the final bill by the contractor would indicate that he will have no further claim in respect of the work executed.

37. VARIATIONS / DEVIATIONS:

The Contractor shall when directed in writing by the Architect, omit from or vary works shown upon the drawings or described in the specifications or included in the priced Schedule of Quantities, but the Contractor shall not make any alterations or additions to or omissions from the works or any deviations from the provisions of the Contract without such authorizations or directions in writing from the Architect / Employer.

No claim for extra shall be allowed unless it shall have been executed by the Authority of the Architect / employer as herein mentioned. Any such extra is hereinafter referred to as on authorised extra. No variations i.e. additions, omissions or substitutions shall vitiate the Contract.

The pries of all such additional items will be worked out on the basis of rates quoted for similar items in the contract wherever existing or on engineering rate analysis based on prevalent fair price of labour, material and other components as required.

38. SUBSTITUTIONS:

Should the Contractor desired to workmanship, he / they must obtain the approval of the Architect / employer in writing for any such substitutions well in advance. Materials designated in this specification indefinitely by such term as 'Equal' or 'Other Approved' etc.specific approval of the architect / Employers has been obtained in writing.

39. HANDOVER POSSESSION FOR OCCUPATION AND USE ON COMPLETION

The contractor shall handover possession to the Employer of the completed works in stages as and when required and directed by the Architect / Employer. The work

site till the hand over to the Employer with all required furnishing will be contractor's responsibility. The Employer will take over the possession of completed works in stages as directed by the Architect and defect liability period will commence only from the date of final handling over of all the works accordingly.

40. CLEARING THE 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 any kind and leave the whole of the site and the works clean and in a workman like condition to the satisfaction of the Architect / Employers.

41. DEFECTS AFTER COMPLETION:

Any defect, shrinkage, settlement or other faults which may appear with the 'Defects Liability Period' stated in the Appendix hereto or if none is stated then within 45 days after the virtual completion of the works arising in the opinion of the Architect, from materials or workmanship not in accordance with the contract, shall upon the directions and writing of the Architect / Employer and within such reasonable time as shall be specified therein, be extended and made good by the Contractor at his own cost and the Architect / Employer shall decide that the ought to be paid for such amending and making good and in case of defaults, the Employer may employ and pay any other person to amend make good such defects, shrinkage, settlements or other fault and all damages, loss and expenses consequent therein or incidental thereto shall be made good and borne by the Contractor and such damage, loss and expenses shall be recoverable from by the Employer or may deducted by the Employer upon the Architect's certificate in writing from any money due or that may become due to the Contractor, a sum to be determined by the Architect equivalent to the cost of amending such works and in the event of the amount retained under clause 37 (certificate and payment) being insufficient, recover the balance from the Contractor.

42. CONCEALED WORK:

The Contractor shall give notice to the Architect / Employer whenever any work is to be buried in the earth, concrete or in the bodies of walls 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 option of the Architect / Employer be either opened up for measurements at the Contractor's expenses or no payment may be made for such materials. Should any dispute or difference 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 Architect / employer shall be accepted as correct and binding on the contractor.

43. IDLE LABOUR:

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

44. SUSPENSION OF WORKS:

If the Contractor, except on account of any legal restraint upon the Employer preventing the continuance of the works, or on account of any of the causes mentioned in the clause 'Extension of Time' or in the case or certificate being withheld of not paid when due, shall suspend works or in the opinion of the Architects, shall neglect of fail to proceed with due diligence in the performance of his part of the contract or if he shall more than once make default in the respects mentioned in clause (removal of improper work and materials), the employer through the architect shall have the power to give notice in writing to the Contractor requiring that the works be provided within a reasonable manner, and with reasonable dispatch, such notice shall not be unreasonably given and must signify that it purports to be a notice under the provisions of this clause and must specify the acts or defaults on the part of the Contractor upon which it is based. After such notice shall have given, the Contractor shall not be liberty to remove from the site of works, or from any ground contiguous thereto, any plant or materials belonging to the him which shall have been placed thereon for the purpose of work, and the Employer shall have lien upon such plants and materials to subsists from date of such notice being given until the notice shall not under complied with. Provided always that such lie shall not under any circumstance subsist after the expiration of 30 (thirty) days from the date of such notice given, unless the Employer shall have entered upon and taken possession of the works and site as hereinafter provided.

If the Contractor shall fail for seven days after such notice has given, to proceed with the works as therein prescribed, the Employer may enter upon and take possession of the works and site, and of all such plants and materials thereon intended to be used for the works, and the Employer shall retain and held a lien upon all such plants and materials until the work shall have been completed under powers hereinafter conferred upon him.

If the Employer shall exercise the above power, he may engage another person to complete the works and exclude the Contractor, his agents and servants from entry upon or access to the same, except that the Contractor or any person appointed in writing may have access at all times during the progress of the works to inspect, survey and measure the works. Such written appointments or a copy thereof shall be delivered to the Architects before the person appointed comes on to the works and the Employer shall take such steps as in the opinion of the architect may reasonably necessary for completing the works, without undue delay or expenses using for that purpose the plant and materials above mention in so far as they are suitable and adopted to such use.

Upon the completion of the works, the architects shall certify the amount of the expenses properly incurred consequent on and incidental to the default of the Contractor as aforesaid and in completing the works by other persons.

Should the amount to certified as the expenses properly incurred be less than amount which should have been due to the Contractor upon the completion of the works by him, the difference shall be paid to the Contractor by the employer, should the amount of the former exceed the latter, the difference shall be paid by the Contractor to the Employer. The Employer shall not be liable to make any further payments or compensations to the contractor for or on account of the proper use of the plant for the completion of the works under the provision herein before mentioned other than such payments as is included in the contract.

After the works shall have been completed by persons other than the Contractor under provisions hereinbefore contained, the Architect shall give notice to the Contractor to remove his plant and all surplus materials as may not have been used in the completion of the works from the site, if such plant and materials are not removed within a period of 14 days after the notice shall have been given the Employer may remove and sell the same, holding the proceeds less the cost of the removal and sale, to the credit of the Contractor. The Employer shall not be responsible for any loss sustained by the Contractor from the sale of the plant in the event of the contractor not removing it after notice.

45. TERMINATION OF CONTRACT BY THE EMPLOYER:

If the Contractor being an individual or a firm, commit any act of insolvency, or shall be adjudged an insolvent or being on incorporated company shall have an order for compulsory winding up made against it or pass on effective resolution for winding up voluntary or subject to the supervision of the court and if the Official. Assignee of the Liquidator in such acts of insolvency or winding up shall be unable within seven days after notice to him requiring him to do so, to show to the reasonable satisfaction of the architect that he is able to carry out and fulfill the contract, and to give security thereof, if so required by the Architect.

Or if the Contractor (whether an individual, firm or incorporated Co.) shall suffer execution to be issued.

Or shall suffer any payment under this Contract~~or~~ to be attached by or on behalf of any of the creditors of the Contractor.

Or shall assign or subject this contract without the consent in writing of the Architects / Employer first obtained.

Or shall charge or encumber this Contract or any payments due or which may be due to the Contract there under.

Or the Architect shall certify in writing to the Employer that the Contractor

a. has abandoned the Contract, or
b. has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for 14 days after receiving from the Architect written notice to protect, or
c. has failed to proceed with the works with such due diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or
d. has failed to remove materials from the site or to pull down and replace work for 7 days after written notice shall have been given to the contractor requiring the Contractor to observe or perform the same, or
e. has neglected persistently to observed and perform all or any of the acts, matters or things by this contract to be observed and performed by the Contractor for 7 days after written notice shall have been requiring him to observe and perform the same, or
f. has to the determinant of good workmanship or in defiance of the Architect's instructions to the contrary sublet any part of the Contract.

Then and in any of the said cases the Employer with the written consent of the Architect may not withstanding any previous waiver, after giving 7 days notice in written to the Contractor, determine the Contract, but without hereby affecting the powers of the Architect to continue in force as full as if the contract had been so determined and as if the works subsequently executed have been executed by or on behalf of the Contractor

And further, the Employer under instructions of the Architect, by his Agents, or servants may enter upon take possession of the works and all plants, tools, scaffoldings, sheds, machinery, steam and other power utensils and materials laying up on the premises or the adjoining lands or roads, and use 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 person to complete the works and the Contractors or the persons to complete the works and the contractor shall not in any way interrupt or do not act, matter or thin to prevent or hinder such other contractor or other persons or person employed for completing and finishing or using the materials and plant for the works. When the works shall be completed of as soon thereafter as convenient, the Architect shall give a notice in writing to the Contractor to remove his surplus materials and plant, and should the Contractor fail to do so, within a period of 14 days after receipt there of by him, the Employer shall sell the same by publication and shall give credit to the Contractor for the amount realized. The Architect shall thereafter ascertain and certify in writing under his hand when (if thing) when shall be due of payable to or by the Employer for the value of the said plant and materials so taken a possession of by the expense or loss which the Employer shall been owing to the Contractor and the amount which shall be so certified shall thereupon the paid by the Employer to the Contractor or by the Employer as the case may be.

46. ARBITRATION

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

a. For the purpose of appointing the sole arbitrator referred to above, the Appointing Authority will send within thirty days of receipt by him of the written notice aforesaid to the contractor a panel of three names of persons who shall be presently unconnected with the organization for which the work is executed.

b. The Contractor shall on receipt by him of the names as aforesaid, select any one of the persons named to the appointed as a sole arbitrator and communicate his name to be appointed as a sole arbitrator and communicate his name to the Appointing Authority with in thirty days of

receipt of the names by him. The Appointing Authority shall there upon without any delay appoint the said persons as the sole arbitrator. If the contractor fails to communicate such selection as provided above within the period specified, the Appointing Authority should make the selection and appoint the selected person as the sole arbitrator.

c. If the Appointing Authority fails to send to the Contractor the panel of three names as aforesaid with in the period specified, the Contractor shall send to the Appointing Authority a panel of three months of persons who shall be unconnected with either party. The Appointing Authority shall on receipt by him of the names as the sole arbitrator. If the Appointing Authority fails to select the person and appoint him as the sole arbitrator within thirty days of receipt by him of the panel and inform the Contractor accordingly, the contractor shall be entitled to appoint one of the persons from the panel as the sole arbitrator and communicate his name to the Appointing Authority.

d. If the Arbitrator so appointed is unable or unwilling to act or resign from his appointment or vacates his office due to any reasons whatsoever another sole arbitrator shall be appointed as aforesaid.

e. The work under the Contract, shall how ever, continue during the arbitration proceedings and no payment due or payable to the Contractor shall be with held on account of such proceeding.

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

g. The arbitrator shall give from time to time, with the consent of the parties, enlarge the time for making and publishing the award.

h. The arbitrator shall give a separate award in respect of each dispute or difference referred to him The Arbitrator shall decide each dispute in accordance with the terms of the contract and give a reasoned award. The venue of arbitration shall be such place as may be fixed by the Arbitrator in his sole direction.

i. 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 costs referred and of the award including the fees, if any, of the Arbitrator who may direct any by whom and in what manner, such costs or any part there of shall be paid and may fix or settle the amount of costs to be so paid.

j. The award of the Arbitrator shall be final and binding on both the parties. Subject aforesaid the provisions of the Arbitration Act 1999 or any statutory modifications of reenactment thereof and the rules made there under, and for the time being in force, shall apply to the arbitration processing under this clause.
The place for arbitration shall be in Surat, Gujarat

47. WORK EXECUTION, DIMENSION & SUPERVISION

The execution of work (timings) has to carried out the work in the site, partly day time and / or partly night time and / or partly day and partly night time to the best convenience of the occupant and the building society. More labour need to deployed during holidays and Sundays with suitable pre planning to carryout more work to the best convenience of the occupants. The bank will not pay any idle wages or over time wages or extra charges on any reason what so ever. Hence contractor may factor these aspects while quoting the rates in the tender. Figures, dimensions, are in all case to be accepted preferences to scaled sizes. Large-scale details take precedence over small scale drawings. In case of discrepancy, the contractor is to ask for a clarification before proceeding with the work. Accordingly if any work is executed without prior clarification it is liable to be rejected and shall not be paid for.The contractor shall appoint at his own cost competent and adequate number of qualified & experienced at site, for (1) joint measurements and preparations of bills, (2) for testing materials at site and outside laboratory, (3) for other general supervision. Their appointment shall be approved by the Employer / Architect.

48. PROCUREMENT OF MATERIALS

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

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

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

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

49. UNFIXED MATERIALS

When any materials intended for the works shall have been placed at site by the Contract, such material shall not be removed there from (except for the purposes of being used on the works) without the written authority of the Employer / Architect and when the contractor shall have received payment in respect of any certificate in which the architect shall have stated that he has taken in to account to value of such unfixed materials on the works such material shall become the property of the Employer and the contractor shall be liable for any loss or damage to any such materials.

50. CUSTODY AND SECURITY OF MATERIALS: The contractors shall be responsible for the Custody and security of all materials and equipment at site and

he will provide full time watchman / watchmen to lock after his materials, stores equipments etc.

51. ARCHITECT'S DRAWINGS AND INSTRUCTIONS

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

52. FAILURE BY CONTRACTOR COMPLY WITH ARCHITECT EMPLOYER'S INSTRUCTIONS

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

53. INFORMATION TO BE SUPPLIED BY THE CONTRACTOR

The contractor shall furnish the Employer / Architect the following:

a. Detailed industrial statistics regarding the labor employed by him etc.

b. The Power of Attorney, name and signature of his authorized representative who will be in charges for the execution of work, if applicable or consented by the employer.

c. The list of technically qualified persons employed by him for the execution of this work.

d. The total quantity and quality of materials used for the works.

e. The list of plant and machinery employed for this work.

54. ARCHITECT'S DELAY IN PROGRESS

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

55. DELAYED PAYMENTS

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

56. FORCE MAJEURE

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

57. INCOME-TAX, TDS AND WORKS CONTRACT TAX

Income Tax, TDS and Works Contract Tax (if applicable), GST TDS shall be deducted at source by the client from the contractor' interim and final bill payments as per Statutory Regulations.

58. SITE MEETINGS

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

59. WORKING HOURS

Since the site is with all Working Departments, the Contractor has to execute the work judiciously without disturbance to the functioning of the Bank during the day and after working hours, nights & on holidays. No extra payments will be made for the work being done during odd hours.

60. ACTION WHERE THERE IS NO SPECIFICATION

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

61. REPORTING OF ACCIDENT TO

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

62. TYPOGRAPHICAL CLERICAL ERRORS

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

63. WORK PERFORMED AT CONTRACTOR'S RISK

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

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

64. CARRYING OUT PART OF WORK AT THE RISK AND COST OF THE CONTRACTOR

64.1. IF THE CONTRACTOR

(I) AT ANY TIME MAKES DEFAULT DURING THE CURRENCY OF WORK OR DOES NOT EXECUTE ANY PART OF THE WORK WITH DUE DILIGENCE AND CONTINUES TO DO SO EVEN AFTER A NOTICE IN WRITING OF 7 DAYS IN THIS RESPECT FROM THE EMPLOYER/ARCHITECT'; OR

(II) COMMITS DEFAULT IN COMPLYING WITH ANY OF THE TERMS AND CONDITIONS OF THE CONTRACT AND DOES NOT REMEDY IT OR TAKES EFFECTIVE STEPS TO REMEDY IT WITHIN 7 DAYS EVEN AFTER A NOTICE IN WRITING IS GIVEN IN THAT BEHALF BY THE EMPLOYER/ARCHITECT'; OR

(III) FAILS TO COMPLETE THE WORK (S) OR ITEMS OF WORK WITH INDIVIDUAL DATES OF COMPLETION, ON OR BEFORE THE DATE (S) SO DETERMINED, AND DOES NOT COMPLETE THEM WITHIN THE PERIOD SPECIFIED IN THE NOTICE GIVEN IN WRITING IN THAT BEHALF BY THE EMPLOYER/ARCHITECT'.

64.2. THE EMPLOYER/ARCHITECT' WITHOUT INVOKING ACTION MAY, WITHOUT PREJUDICE TO ANY OTHER RIGHT OR REMEDY AGAINST THE CONTRACTOR WHICH HAVE EITHER ACCRUED OR ACCRUE THEREAFTER TO EMPLOYER/BANK, BY A NOTICE IN WRITING TO TAKE THE PART WORK/ PART INCOMPLETE WORK OF ANY ITEM (S) OUT OF HIS HANDS AND SHALL HAVE POWERS TO:

(A) TAKE POSSESSION OF THE SITE AND ANY MATERIALS, CONSTRUCTIONAL PLANT, IMPLEMENTS, STORES, ETC., THEREON; AND/ OR

(B) CARRY OUT THE PART WORK/ PART INCOMPLETE WORK OF ANY ITEMS (S) BY ANY MEANS AT THE RISK AND COST OF THE CONTRACTOR.

64.3. THE EMPLOYER/ARCHITECT' SHALL DETERMINE THE AMOUNT, IF ANY, IS RECOVERABLE FROM THE CONTRACTOR FOR COMPLETION OF THE PART WORK/ PART INCOMPLETE WORK OF ANY ITEM (S) TAKEN OUT OF HIS HANDS AND EXECUTE AT THE RISK AND COST OF THE CONTRACTOR, THE LIABILITY OF CONTRACTOR ON ACCOUNT OF LOSS OR DAMAGE SUFFERED BY BANK BECAUSE OF ACTION UNDER THIS CLAUSE SHALL NOT EXCEED 10% OF THE TENDERED VALUE OF THE WORK.

64.4. IN DETERMINING THE AMOUNT, CREDIT SHALL BE GIVEN TO THE CONTRACTOR WITH THE VALUE OF WORK DONE IN ALL RESPECT IN THE SAME NUMBER AND AT THE SAME RATE AS IF IT HAD BEEN CARRIED OUT BY THE ORIGINAL CONTRACTOR UNDER THE TERMS OF HIS CONTRACT, THE VALUE OF CONTRACTOR'S MATERIALS TAKEN OVER AND INCORPORATED IN THE WORK AND USE OF PLANT AND

MACHINERY BELONGING TO THE CONTRACTOR. THE CERTIFICATE OF THE EMPLOYER/ARCHITECT' AS TO THE VALUE OF WORK DONE SHALL BE FINAL AND CONCLUSIVE AGAINST THE CONTRACTOR PROVIDED ALWAYS THAT ACTION UNDER THIS CLAUSE SHALL ONLY BE TAKEN AFTER GIVING NOTICE IN WRITING TO THE CONTRACTOR. PROVIDED ALSO THAT IF THE EXPENSES INCURRED BY THE EMPLOYER/BANK ARE LESS THAN THE AMOUNT PAYABLE TO THE CONTRACTOR AT HIS AGREEMENT RATES, THE DIFFERENCE

SHALL NOT BE PAYABLE TO THE CONTRACTOR.

64.5. ANY EXCESS EXPENDITURE INCURRED OR TO BE INCURRED BY EMPLOYER/BANK IN COMPLETING THE PART WORK/ PART INCOMPLETE WORK OF ANY ITEM (S) OR THE EXCESS LOSS OF DAMAGES SUFFERED OR MAY BE SUFFERED BY EMPLOYER/BANK AS AFORESAID AFTER ALLOWING SUCH CREDIT SHALL WITHOUT PREJUDICE TO ANY OTHER RIGHT OR REMEDY AVAILABLE TO EMPLOYER/BANK IN LAW OR PER AS AGREEMENT BE RECOVERED FROM ANY MONEY DUE TO THE CONTRACTOR ON ANY ACCOUNT, AND IF SUCH MONEY IS

INSUFFICIENT, THE CONTACTOR SHALL BE CALLED UPON IN WRITING AND SHALL BE LIABLE TO

PAY THE SAME WITHIN 30 DAYS.

64.6. IF THE CONTRACTOR FAILS TO PAY THE REQUIRED SUM WITHIN THE AFORESAID PERIOD OF 30 DAYS, THE ENGINEER-IN-CHARGE SHALL HAVE THE RIGHT TO SELL ANY OR ALL OF THE CONTRACTORS' UNUSED MATERIALS, CONSTRUCTIONAL PLANT, IMPLEMENTS, TEMPORARY

BUILDING AT SITE ETC. AND ADJUST THE PROCEEDS OF SALE THEREOF TOWARDS THE DUES RECOVERABLE FROM THE CONTACTOR UNDER THE CONTRACT AND IF THEREAFTER THERE REMAINS ANY BALANCE OUTSTANDING, IT SHALL BE RECOVERED IN ACCORDANCE WITH THE PROVISIONS OF THE CONTRACT.

64.7. IN THE EVENT OF THE ABOVE COURSE BEING ADOPTED BY THE EMPLOYER/ARCHITECT', THE CONTRACTOR SHALL HAVE NO CLAIM TO COMPENSATION FOR ANY LOSS SUSTAINED BY HIM BY REASON OF HIS HAVING PURCHASED OR PROCURED ANY MATERIALS OR ENTERED INTO ANY ENGAGEMENTS OR MADE ANY ADVANCE ON ANY ACCOUNT

OR WITH A VIEW TO THE EXECUTION OF THE WORK OR THE PERFORMANCE OF THE CONTRACT

64.8. WHEN THE CONTRACT CAN BE DETERMINED

64.8.1 SUBJECT TO OTHER PROVISIONS CONTAINED IN THIS CLAUSE, THE EMPLOYER/ARCHITECT'MAY, WITHOUT PREJUDICE TO HIS ANY OTHER RIGHTS OR REMEDY AGAINST THE CONTRACTOR IN RESPECT OF ANY DELAY, INFERIOR WORKMANSHIP, ANY CLAIMS FOR DAMAGES AND/OR ANY OTHER PROVISIONS OF THIS CONTRACT OR OTHERWISE, AND WHETHER THE DATE OF COMPLETION HAS OR HAS NOT ELAPSED, BY NOTICE IN WRITING ABSOLUTELY DETERMINE THE CONTRACT IN ANY OF THE FOLLOWING CASES:

(I) IF THE CONTRACTOR HAVING BEEN GIVEN BY THE EMPLOYER/ARCHITECT'A NOTICE IN WRITING TO RECTIFY, RECONSTRUCT OR REPLACE ANY DEFECTIVE WORK OR THAT THE WORK IS BEING PERFORMED IN AN INEFFICIENT OR OTHERWISE IMPROPER OR UN-WORKMAN LIKE

MANNER SHALL OMIT TO COMPLY WITH THE REQUIREMENT OF SUCH NOTICE FOR A PERIOD OF SEVEN DAYS THEREAFTER.

(II) IF THE CONTRACTOR HAS, WITHOUT REASONABLE CAUSE, SUSPENDED THE PROGRESS OF THE WORK OR HAS FAILED TO PROCEED WITH THE WORK WITH DUE DILIGENCE SO THAT IN THE OPINION OF THE EMPLOYER/ARCHITECT'HE WILL BE UNABLE TO SECURE COMPLETION OF THE WORK BY THE DATE FOR COMPLETION AND CONTINUES TO DO SO AFTER A NOTICE IN WRITING OF SEVEN DAYS FROM THE EMPLOYER/ARCHITECT'.

(III) IF THE CONTRACTOR FAILS TO COMPLETE THE WORK WITHIN THE STIPULATED DATE OR ITEMS OF WORK WITH INDIVIDUAL DATE OF COMPLETION, IF ANY STIPULATED, ON OR BEFORE SUCH DATE(S) OF COMPLETION AND DOES NOT COMPLETE THEM WITHIN THE PERIOD SPECIFIED IN A NOTICE GIVEN IN WRITING IN THAT BEHALF BY THE EMPLOYER/ARCHITECT'.

(IV) IF THE CONTRACTOR PERSISTENTLY NEGLECTS TO CARRY OUT HIS OBLIGATIONS UNDER THE CONTRACT AND/ OR COMMITS DEFAULT IN COMPLYING WITH ANY OF THE TERMS AND CONDITIONS OF THE CONTRACT AND DOES NOT REMEDY IT OR TAKE EFFECTIVE STEPS TO REMEDY IT WITHIN 7 DAYS AFTER A NOTICE IN WRITING IS GIVEN TO HIM IN THAT BEHALF BY THE EMPLOYER/ARCHITECT'.

(V) IF THE CONTRACTOR SHALL OFFER OR GIVE OR AGREE TO GIVE TO ANY PERSON IN EMPLOYER/BANK SERVICE OR TO ANY OTHER PERSON ON HIS BEHALF ANY GIFT OR CONSIDERATION OF ANY KIND AS AN INDUCEMENT OR REWARD FOR DOING OR FORBEARING TO DO OR FOR HAVING DONE OR FORBORNE TO DO ANY ACT IN RELATION TO THE OBTAINING OR EXECUTION OF CONTRACT.

(VI) IF THE CONTRACTOR SHALL ENTER INTO A CONTRACT WITH EMPLOYER/BANK IN CONNECTION WITH WHICH COMMISSION HAS BEEN PAID OR AGREED TO BE PAID BY HIM OR TO HIS KNOWLEDGE, UNLESS THE PARTICULARS OF ANY SUCH COMMISSION AND THE TERMS OF PAYMENT THEREOF HAVE BEEN PREVIOUSLY DISCLOSED IN WRITING TO THE EMPLOYER/ARCHITECT'.

(VII) IF THE CONTRACTOR SHALL OBTAIN A CONTRACT WITH EMPLOYER/BANK AS A RESULT OF WRONG TENDERING OR OTHER NON-BONA-FIDE METHODS OF COMPETITIVE TENDERING OR COMMITS BREACH OF INTEGRITY PACT.

(VIII) IF THE CONTRACTOR BEING AN INDIVIDUAL, OR IF A FIRM, ANY PARTNER THEREOF SHALL AT ANY TIME BE ADJUDGED INSOLVENT OR HAVE A RECEIVING ORDER OR ORDER FOR ADMINISTRATION OF HIS ESTATE MADE AGAINST HIM OR SHALL TAKE ANY PROCEEDINGS FOR LIQUIDATION OR COMPOSITION (OTHER THAN A VOLUNTARY LIQUIDATION FOR THE PURPOSE OF AMALGAMATION OR RECONSTRUCTION) UNDER ANY INSOLVENCY ACT FOR THE TIME BEING IN FORCE OR MAKE ANY CONVEYANCE OR ASSIGNMENT OF HIS EFFECTS OR COMPOSITION OR ARRANGEMENT FOR THE BENEFIT OF HIS CREDITORS OR PURPORT SO TO DO, OR IF ANY APPLICATION BE MADE UNDER ANY INSOLVENCY ACT FOR THE TIME BEING IN FORCE FOR THE SEQUESTRATION OF HIS ESTATE OR IF A TRUST DEED BE EXECUTED BY HIM FOR BENEFIT OF HIS CREDITORS.

(IX) IF THE CONTRACTOR BEING A COMPANY SHALL PASS A RESOLUTION OR THE COURT SHALL MAKE AN ORDER THAT THE COMPANY SHALL BE WOUND UP OR IF A RECEIVER OR A MANAGER ON BEHALF OF ACCREDIT OR SHALL BE APPOINTED OR IF CIRCUMSTANCES SHALL ARISE WHICH ENTITLE THE COURT OR THE CREDITOR TO APPOINT A RECEIVER OR A MANAGER OR WHICH ENTITLE THE COURT TO MAKE A WINDING UP ORDER.

(X) IF THE CONTRACTOR SHALL SUFFER AN EXECUTION BEING LEVIED ON HIS GOODS AND ALLOW IT TO BE CONTINUED FOR A PERIOD OF 21 DAYS.

(XI) IF THE CONTRACTOR ASSIGNS, TRANSFERS, SUBLETS (ENGAGEMENT OF LABOUR ON A PIECE-WORK BASIS OR OF LABOUR WITH MATERIALS NOT TO BE INCORPORATED IN THE WORK, SHALL NOT BE DEEMED TO BE SUBLETTING) OR OTHERWISE PARTS WITH OR ATTEMPTS TO ASSIGN, TRANSFER, SUBLET OR OTHERWISE PARTS WITH THE ENTIRE WORKS OR ANY PORTION THEREOF WITHOUT THE PRIOR WRITTEN APPROVAL OF THE EMPLOYER/ARCHITECT'.

WHEN THE CONTRACTOR HAS MADE HIMSELF LIABLE FOR ACTION UNDER ANY OF THE CASES AFORESAID, THE EMPLOYER/ARCHITECT' ON BEHALF OF THE EMPLOYER/BANK WITH THE APPROVAL OF THE COMPETENT AUTHORITY MENTIONED IN SCHEDULE 'B' SHALL HAVE POWERS:

(A) TO DETERMINE THE CONTRACT AS AFORESAID (OF WHICH TERMINATION NOTICE IN WRITING TO THE CONTRACTOR UNDER THE HAND OF THE ENGINEER-IN-CHARGE SHALL BE CONCLUSIVE EVIDENCE). UPON SUCH DETERMINATION, THE EARNEST MONEY DEPOSIT, SECURITY DEPOSIT ALREADY RECOVERED AND PERFORMANCE GUARANTEE UNDER THE CONTRACT SHALL BE LIABLE TO BE FORFEITED AND SHALL BE ABSOLUTELY AT THE DISPOSAL OF THE EMPLOYER/BANK.

(B) AFTER GIVING NOTICE TO THE CONTRACTOR TO MEASURE UP THE WORK OF THE CONTRACTOR AND TO TAKE SUCH WHOLE, OR THE BALANCE OR PART THEREOF, AS SHALL BE UN-EXECUTED OUT OF HIS HANDS AND TO GIVE IT TO ANOTHER CONTRACTOR TO COMPLETE THE WORK. THE CONTRACTOR, WHOSE CONTRACT IS DETERMINED AS ABOVE, SHALL NOT BE ALLOWED TO PARTICIPATE IN THE TENDERING PROCESS FOR THE BALANCE WORK.

IN THE EVENT OF ABOVE COURSES BEING ADOPTED BY THE EMPLOYER/ARCHITECT', THE CONTRACTOR SHALL HAVE NO CLAIM TO COMPENSATION FOR ANY LOSS SUSTAINED BY HIM BY REASONS OF HIS HAVING PURCHASED OR PROCURED ANY MATERIALS OR ENTERED INTO ANY ENGAGEMENTS OR MADE ANY ADVANCES ON ACCOUNT OR WITH A VIEW TO THE EXECUTION OF THE WORK OR THE PERFORMANCE OF THE CONTRACT. AND IN CASE ACTION IS TAKEN UNDER ANY OF THE PROVISION AFORESAID, THE CONTRACTOR SHALL NOT BE ENTITLED TO RECOVER OR BE PAID ANY SUM FOR ANY WORK THEREOF OR ACTUALLY PERFORMED UNDER THIS CONTRACT UNLESS AND UNTIL

THE EMPLOYER/ARCHITECT'HAS CERTIFIED IN WRITING THE PERFORMANCE OF SUCH WORK AND THE VALUE PAYABLE IN RESPECT THEREOF AND HE SHALL ONLY BE ENTITLED TO BE PAID THE VALUE SO CERTIFIED.

65. WORK NOT TO BE STOPPED

THE CONTRACTOR EXPRESSLY AGREES THAT THE EVENT THERE ARISE ANY KIND OF DISPUTE / DISPUTES OR THE MATTER OF DISPUTE / DISPUTES IS REFERRED TO ARBITRATION, THE CONTRACTOR SHALL AT NO STAGE STOP OR SLOW DOWN THE WORK ON THIS EXCUSE AND SHALL PROCEED DILIGENTLY TO COMPLETE AND HAND OVER ALL WORKS AS PER CONTRACT WITHIN THE SCHEDULED COMPLETION PERIOD.

66. DAMAGE TO WORKS BY EXCEPTED RISKS

IF THE WORKS OR TEMPORARY WORKS OR ANY MATERIALS (WHETHER FOR THE FORMER OR THE LATTER) BROUGHT TO SITE SHALL SUSTAIN DESTRUCTION OR DAMAGE BY REASONS OF ANY OF THE SAID EXCEPTED RISKS, THE CONTRACTOR SHALL BE ENTITLED TO PAYMENT FOR ANY PERMANENT OR TEMPORARY WORKS AND FOR ANY MATERIALS SO DESTROYED OR DAMAGED AND / OR SHALL BE PAID BY THE EMPLOYER THE COST OF MAKING GOOD SUCH MATERIALS SO FAR AS MAY BE NECESSARY FOR THE COMPLETION OF THE WORKS ON A PRIME COSTS BASIS AS THE EMPLOYER/ARCHITECT MAY CERTIFY TO BE REASONABLE.

FORM OF AGREEMENT

ARTICLES OF AGREEMENT MADE THIS _____ DAY OF _____ YEAR 2025 BETWEEN , The Regional Manager, Bank Of Baroda Surat City Regional Office, 8th Floor, Baroda Sun Complex, Ghod Dod Road, Surat-395007, Gujarat, India. (HEREINAFTER REFERRED TO AS THE "EMPLOYER /OWNER" WHICH EXPRESSION SHALL, UNLESS EXCLUDED BY OR REPUGNANT TO THE CONTEXT, INCLUDES ITS SUCCESSORS AND ASSIGNS) OF THE ONE PART AND _____ OF _____(HEREINAFTER REFERRED TO AS "CONTRACTOR" UNLESS EXCLUDED BY OR REPUGNANT TO THE CONTEXT, INCLUDES ITS SUCCESSORS AND ASSIGNS) OF THE OTHER PART.

WHEREAS the Employer intends to carry out of furnishing to Bank of Baroda Udhna Branch, Surat, Gujarat (Herein referred to as "Project").

AND WHEREAS the Employer in order to effectively carry out the said works has engaged M/s Shaw Architects, Vadodara (Hereinafter referred to as "Architects") to prepare plans, drawings and specifications describing the works to be executed by the contractors, namely, interior etc. for the project, to open tenders received at the office of the Employer, to scrutinize and recommend to the Employer the name(s) of the Contractor(s) from whom tenders were received and recommended to the Employer for the issue of work order to the contractor.

AND WHEREAS for the purpose of the said project, the Employer invited sealed tenders from experienced, resourceful and bonafide contractors vide his Notice Inviting Tender (NO._dated. _

WHEREAS the contractor submitted his Tender Documents containing General Notes, General Conditions of the Contract, Technical Specifications and Schedule of Quantities etc. for the works, prepared with the assistance of Consultants (Hereinafter collectively referred to as the "said conditions"), duly signed on each page as a token of his acceptance of the same, along with requisite Earnest Money Deposit of __(Copy enclosed Vide Annexure-1).

AND WHEREAS out of the Tenders received, the Tender of the contractor was found to be most suitable for the project.

AND WHEREAS the Employer/Architect has accordingly issued the work order (NO.____dt._) to the contractor subject to his furnishing the requisite Security Deposit (Copy enclosed Vide Annexure-II).

AND WHEREAS the Contractor has accepted the aforesaid Work Order vide his letterof acceptance NO._____dt._____(Copy enclosed Vide Annexure III) and has also deposited with the Employer a sum of Rs._____ which with the Earnest Money of RS._____forms the requisite Security Deposit @ 2 % of the accepted Tender Value of Rs._____.

AND WHEREAS the Employer has caused the plans, drawings, specifications, schedule of quantities etc. relating to the project at the work site at to be issued to the Contractor.

NOW, therefore, it is hereby agreed to and between the parties as follows: Contract docuents

The following documents shall constitute the Contract Documents.

a) This Article of Agreement.
b) Tender submitted by the Contractor included the N.I.T and Tender Documents
c) All correspondence between the Bank/Architects and the Contractor from the date of

issue of N.I.T and the date of issue of work order.

d) Work order No._____dt._____with amount of.....

1) In consideration of the payments to be made to the Contractor as hereinafter provided the Contractor shall upon and subject to the said conditions, execute and complete the contracted works shown upon the said drawings etc. and such further detailed drawings as may be furnished to the contractor by the said Owner/Employer through the Architects and described in the said Specifications and the said Schedule of Quantities.

2) Notwithstanding what are stated in the N.I.T conditions of Tendering, Conditions of Contract of herein before stated by the Employer through the Architects, reserves itself the right of altering the drawings and the nature of the work and addition to or omitting any items of work or of having portions of same carried out departmentally or otherwise and such alterations or variations shall be carried out without prejudice to this contract.

3) Any dispute arising under this agreement shall be referred to the Arbitration in a manner specified in the General Conditions of the Contract and all legal disputes shall be limited within the territorial jurisdiction of the Surat thereto. The decision of the arbitration shall be final and binding on both the parties.

IN WITNESS WHEREOF THE PARTIES to there present have hereunder set and subscribed their hands, the day, month and year first above written.

Signed and delivered for and on behalf of Bank of Baroda
Shri._____

_____
Its duly authorized official

In the presence of –

1. (Name and Address)

2. (Name and Address)

Signed and delivered for and on behalf of The Contractor _by
Shri_____his Duly authorised official

In the presence of –

1. (Name and Address)

2. (Name and Address)

ADDITIONAL INSTRUCTION FOR CEMENT AND STEEL :

Bank of Baroda shall not Issue/Supply cement and reinforcement steel to be used for this work.
The cement and reinforcement steel required for the above said work shall be procured by contractor at its own cost. The brands for cement shall be **Ultratech, Ambuja** Company confirming to IS-12269/87 latest amendment ISO-9000 of 53 grade only.
Approved make of TMT reinforcement steel :- **TATA, ESSAR, Electrothurm(ET), National** as per confirming to IS 1786/85 latest amendment TMT Fe-415/Fe-500. TMT Steel shall be purchased by only manufacturing company/Authorized dealer/ Distributor/ Stockist only shall be allowed to use 6 mm plain steel shall be as per IS 2062/99 with latest amendments of any brand/make.
Any of the above mentioned brands of Cement and Reinforcement steel shall only be used by the contractor at the time of execution.

WASTAGE OF CEMENT AND REINFORCEMENT STEEL:
As the contractor is to bring the cement and steel, the question of considering the wastage on the basic of issue rate does not arise i.e. no separate payment shall be made for any kind of wastage in the materials.
The payment for reinforcement bar will be made on theoretical weight basis. The weight shall be computed on the basis of the length of the steel used in the work multiplied by the standard unit weight of MS/HYSD/TMT bar as mentioned in IS code No.1786.
The steel consumption either less than 7.5% of the standard consumption shall be penalized either at the double existing Bank's approved tender rate or the prevailing market rate, whichever is more.
Similarly, for cement also, the less consumption beyond 5% shall be penalized at the double existing Bank's approved tender rate or the prevailing market rate, whichever is more.
TESTING OF CEMENT AND STEEL:
It should be specifically noted that the cement and steel brought by the contractor at site of work shall be used onlyafter the same is tested at the approved laboratory as per the direction of the Engineer- in-charge. Such approved laboratory may be located at Baroda, Ahmedabad or Mumbai.
NOTE:
For steel used only approved above said brand and testing of steel as per IS-CODE -1786 -2008 with latest amendments and edition only.
Contractor also submit test certificate for steel for particular dispatch lot from manufacturer/company/supplier conforming as per IS -1786-2008.
All the charge for the transport and testing of the samples shall have to be borne by the contractor. The frequency of testing such material shall be in accordance to the relevant Indian Standards as directed by Engineer-in-charge.

SIGNATURE OF TENDERER

SPECIFICATIONS OF MATERIALS

M-1 WATER:

1.1 Water shall not be salty or brackish and shall be clean, reasonably clear and free from objectionable quantities of silt and traces of oil and injurious alkalies, salts, organic matter and other deleterious material which will either weaken the mortar or concrete or cause efflorescence or attack the steel in R.C.C. Container for transport, storage and handling of water shall be clean. Water shall conform to the standards specified in I.S. 456-2000.

1.2 If required by the Engineer-in-charge it shall be tested by comparison with distilled water. Comparison shall be made by means of standard cement tests for soundness, time of setting and mortar strength as specified in I.S. 269-1989. Any indication of unsoundness, change in time of setting by 30 minutes or more or decrease of more than 10 percent in strength of mortar prepared with water sample when compared with the results obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.

1.3 Water for curing mortar, concrete or masonry should not be too acidic or too alkaline. It shall be free of elements which significantly affect the hydration reaction or otherwise interfere with the hardening of mortar or concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces.

1.4 Hard and bitter water shall not be used for curing.

1.5 Portable water shall generally be found suitable for curing mortar or concrete.

M-2 LIME:

2.1 Lime shall be hydraulic lime as per I.S. 712-1984. Necessary tests shall be carried out as per I.S. 6932 (Parts I to X) 1995.

2.2 The following field tests for limes are to carried out ---

a] A very rough idea can be formed about the type of lime by its visual examination i.e. fat lime bears pure white color, lime in form of porous lumps of dirty white color, indicates quick lime, and solid lumps the unburnt lime stone.

b] Acid tests for determining the carbonate content in lime. Excessive amount of impurities and rough determination of class of lime.

2.3 Storage shall comply with I.S. 712-1984. The slaked lime, if stored, shall be kept in a weather proof and damp proof shed with impervious floor and sides to protect it against rain, moisture, weather and extraneous materials mixing with it. All lime that has been damaged in any way shall be rejected and all rejected materials shall be removed from site of work.

2.4 Field testing shall be done according to I.S. 162-1989 to show the acceptability of materials.

M-3 CEMENT:

3.1 Cement shall be ordinary Portland slag cement as per I.S. 269-1989 or Portland slag cement as per I.S. 455- 1976 and revised latest I.S.

M-4 WHITE CEMENT:

4.1 The white cement shall conform to I.S. 8042-1989.

M-5 COLOURED CEMENT:

5.1 Colored cement shall be with white or grey Portland cement as specified in the item of the work.

5.2 The pigments used for colored cement shall be of approved quality and shall not exceed 10% of cement used in the mix. The mixture of pigment and cement shall be properly ground to have a uniform color and shade. The pigments shall have such properties as to provide for durability under exposure to sun-light and weather.

5.3 The pigment shall have the properly such that it is neither affected by the cement not detrimental to it.

M-6 SAND:

6.1 Sand shall be natural sand, clean, well graded, strong, durable and gritty particles free from injurious amounts of dust, clay, kankar nodules, soft or flaky particles, shale, alkali, salts, organic matter, loam, mica or other deleterious substances and shall be got approved from the Engineer-in-charge. The sand shall not contain more than 8% of silt as determined by field tests. If necessary the sand shall be washed to make it clean.

6.2 Coarse Sand : The fineness modulus of coarse sand shall not be less than 2.5 and shall not exceed 3.0. The sieve analysis of coarse shall be as under ---

I.S. Sieve Designation	% by weight passing sieve	I.S. Sieve Designation	% by weight passing sieve
4.55 mm	100	600 Micron	30-100
2.36 mm	900-100	300 Micron	5-70
1.18 mm	70-100	150 Micron	0-60

6.3 Fine Sand: The fineness modulus shall not exceed 1.0. The sieve analysis of fine sand shall be as under ---

I.S. Sieve Designation	% by weight passing sieve	I.S. Sieve Designation	% by weight passing sieve
4.55 mm	100	600 Micron	40-85
2.36 mm	100	300 Micron	5-50
1.18 mm	75-100	150 Micron	0-10

M-7 STONE DUST:

7.1 This shall be obtained from crushing hard black tray , it shall not contain more than 8% of silt as determined by field test with measuring cylinder. The method of determining silt contents by field test is given as under.

7.2 A sample of stone dust to be tested shall be placed without drying in 200 mm measuring cylinder. The quantity of the sample shall be such that it files the cylinder up to 100 mm mark. The clean water shall be added up to 150 mm mark. The mixture shall be stirred vigorously and the content allowed to settle for 3 hours.

7.4 The height of silt visible as settled layer above the stone dust shall be expressed as percentage of the heightof the stone dust below. The stone dust containing more than 8% silt shall be washed so as to bring the silt content within the allowable limit.

7.5 The fineness modulus of stone dust shall not be less than 1.80.

M-8 STONE GRIT:

8.1 Grit shall consist of crushed or broken stone and be hard, strong, dense, durable, clean, of proper gradation and free from skin or coating likely to prevent proper adhesion of mortar. Grit shall generally be cubical in shape and as far as possible flaky elongated pieces shall be avoided. It shall generally comply with the provisions of I.S. 383-1990. Unless a special stone of a particularly quarry is mentioned, grit shall be obtained from the best black trap hard stone as approved by the Engineer-in-charge. The grit shall have no deleterious reaction with cement.

8.2 The grit shall conform to the following gradation as per sieve analysis :

I.S. Sieve Designation	% by weight passing sieve	I.S. Sieve Designation	% by weight passing sieve
12.50 mm	100%	4.75 mm	2.20%
10.00 mm	80-100%	2.36 mm	0.25%

8.3 The crushing strength of grit will be such as to allow the concrete in which it is used to build-up the specified strength of concrete.

8.4 The necessary tests for grit shall be carried out as per the requirements of I.S. 2338 (Parts I to VIII) 1988, as per instruction of the Engineer-in-charge. The necessity of test will be decided by the Engineering-in- charge.

M-9 CINDER:

9.1 Cinder is well brunt furnace residue which has been fused or sintered into lumps of varying sizes.

9.2 Cinder aggregates shall be well burnt furnace residue obtained from furnace using coal fuel only. Itshall be sound clear and free from clay, dirt, ash or other deleterious matter.

9.3 The average grading for cinder aggregates shall be as mentioned below :20 mm 100

10 mm 86
5.75 mm 70
2.36 mm 52

M-10 LIME MORTAR:

10.1 LIME: Shall conform to specification M-2. WATER: Water shall conform to specification M-1. SAND: Sand shall conform to specification M-6.

10.2 PROPORTION OF MIX Mortar shall consist of such proportions of slaked lime and sand as may be specified in the item. The slaked lime and shall be measured by volume.

10.3 PREPARATION OF MORTAR Lime mortar shall be prepared by wet process as per I.S. 1625-1971. Power driven mill shall be used for preparation of lime mortar. The slaked lime shall be placed in the mill in an even layer and ground for 180 revolutions with sufficient water. Water shall be added as required during grinding (care being taken not to add more water) that will bring the mixed material to a consistency of stiff paste. Thoroughly wetted sand shall then be added evenly and the mixture ground for another 180 revolutions.

10.4 STORAGE: Mortar shall always be kept damp, protected from sun and rain till used up, covering it by tarpaulin or open sheds.

10.5 USE: All mortar shall be used as soon as possible after grinding. It should be used on the day on which it is prepared. But in no case mortar made earlier than 36 hours shall be permitted for use.

M-11 CEMENT MORTAR:

11.1 Water shall conform to specification M-1. Cement shall conform to specification M-3. Sand shall conformto M-5.

11.2 PROPORTION OF MIX: 11.2.1 Cement and sand shall be mixed to specified proportions, sand being measured by measuring boxes. The proportion of cement shall be by volume on the basis of 50 Kg./Bag of cement being equal to 0.0342 cu.m. The mortar may be hand mixed or machine mixed as directed.

11.3 PREPARATION OF MORTAR : 11.3.1 In hand mixed mortar, cement and sand in the specified proportions shall be thoroughly mixed dry on a clean impervious platform by turning over at least 3 times or more tilla homogeneous mixture of uniform color is obtained. Mixing platform shall be so arranged that no deleterious extraneous material shall get mixed with mortar or mortar shall flow out. While mixing, the water shall be gradually added and thoroughly mixed to form a stiff plastic mass of uniform color so that each particle of sand shall be completely covered with a film of wet cement. The water cement ratio shall be adopted as directed.

11.4 The mortar so prepared shall be used within 30 minutes of adding water. Only such quantity of mortar shall be prepared as can be used within 30 minutes.

M-12 STONE COURSE AGGREGATE FOR NOMINAL MIX CONCRETE:

12.1 Coarse aggregate shall be of machine crushed stone of black trap and be hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar.

12.2 The aggregate shall generally be cubical in shape. Unless special stones of particular quarries are mentioned aggregates shall be machine crushed from the best black trap hard stone as approved. Aggregate shall have no deleterious reaction with cement. The size of the coarse aggregate for plain cement concrete and ordinary reinforced cement concrete shall generally be as per the table given below. However, in case of reinforced cement concrete the maximum limit may be restricted to 6 mm. less than the minimum lateral clear distance between bars or 6mm. less than the cover whichever is smaller.

TABLE

I.S. Sieve Designation	Percentage Passing for single sized aggregates of nominal size			I.S. Sieve Designation	Percentage Passing for single sized aggregates of nominal size		
	40 mm	20 mm	16 mm		40 mm	20 mm	16 mm
80 mm	-	-	-	12.5 mm	-	-	-
63 mm	100	-	-	10 mm	0.5	0.20	0.30
40 mm	80-100	100	-	4.75 mm	-	0.50	0.50
20 mm	0-20	85-100	100	2.75 mm	-	-	-
10 mm	-	-	85-100				

NOTE:- This percentage may be varied somewhat by the Engineer-in-charge when considered necessary for obtaining better density and strength of concrete.

12.3 The grading test shall be taken in the beginning and at the change of source of materials. The necessary tests indicated in I.S. 383-1990 and I.S. 456-2000 shall have to be carried out to ensure the acceptability. The aggregates shall be stored separately and handled in such a manner as to prevent the intermixing of different aggregates. If the aggregates are covered with dust, they shall be washed with water to make, them clean.

M-13 BLACK TRAP HARD STONE COURSE:

13.1 Aggregate for Design Mix Concrete: Course aggregate shall be of machine crushed stone of black trap hard stone and be hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar.

13.2 The aggregates shall generally be cubical in shape, unless special stones of particular quarries are mentioned, aggregates shall be machine crushed from the best, black trap hard stones as approved. Aggregate shall have no deleterious reaction with cement.

13.3 The necessary tests indicated in I.S. 383-1990 and I.S. 456-2000 shall have to be carried out to ensure the acceptability of the material.

13.4 If aggregate is covered with dust it shall be washed with water to make it clean.

M-14 BRICK BATS AGGREGATE:

14.1 Brick bat aggregate shall be broken from well burnt or slightly over burnt and dense bricks. It shall be homogeneous in texture, roughly cubical in shape, clean and free from dirt of any other foreign material. The brick bats shall be of 40 mm to 50 mm size unless otherwise specified in the item. The under burnt or over burnt brick bats shall not be allowed.

14.2 The brick bats shall be measured by volume by suitable boxes as directed.

M-15 BRICKS:

15.1 The bricks shall be hand or machine moulded and made from suitable soils and kiln burnt. They shall be free from cracks and flaws not nodules of free lime. They shall have smooth rectangular faces with sharp corners and shall be of uniform color. The bricks shall be moulded with a frog of 100mm x 40 mm and 10mm to 20mm deep on one of its flat sides. The bricks shall not break when dropped on the ground from a height of 600 mm.

15.2 The size of modular bricks shall be 190mm x 90mm x 90mm.

15.3 The size of conventional bricks shall be as under ---225 x 110 x 75mm.

15.4 Only bricks of one standard size shall be used on one work. The following tolerances shall be permittedin the conventional size adopted in a particular work.

Length : 3.0 mm Width : 1.50 mm Height : 1.50 mm

15.5 The crushing strength of the bricks shall not be less than 35 Kg./Sq.Cm. The average water absorption shallnot be more than 20% by weight. Necessary tests for crushing strength and water absorption etc. shall be carried out as per I.S. 3495 (Part I to IV)-1992.

M-15A FLYASH BUILDING BRICKS :

The Flyash building bricks shall conform to Grade-5 of IS-13757. The frog of the 80 to 100 mm x 40 mm x10 to 20 mm size.

The size of modular bricks shall be 190 mm x 90 mm x 90 mm.

The size of conventional brick shall be 230 mm x 110 mm x 70 mm.

Only bricks of one standard size shall used on one work. The following tolerances shall permitted in theconventional size adopted in a particular work:

Length: ñ 4 mm

Width: ñ 2 mm

Height : ñ 2 mm

The physical characteristic of bricks shall be as follows.

The minimum compressive strength of Fly ash building bricks shall not be less than 70 Kg/Sq.Cm. and the testshall be conform to IS-3495 (Part-I).

The averages water absorption not more than 20 percentage by weight and the test shall conform to IS-3495(Part-3). Sampling of Flyash building bricks and criteria for conformity shall be as per I.S.:5454.

M-16 STONE:

16.1 The stone shall be of the specified variety such as Granite/Trap stone/Quartzite or any other type of good hard stones. The stones shall be obtained only from the approved quarry and shall be hard, sound, durable and free from defects like cavities, cracks, sand holes, flaws, injurious veins, patches of loose or soft materials etc. and weathered portions and other structural defects or imperfections tending to affect their soundness and strength. The stone with round surface shall not be more than 5% of dry weight. When tested in accordance with I.S. 1134-1985. The minimum crushing of the strength of the stone shall be 200 Kg./Sq.Cm. unless otherwise specified.

16.2 The samples of the stone to be used shall be got approved before the work is started.

16.3 The khanki facing stone shall be dressed by chisel as specified in the item for khanki facing in required shape and size. The face of the stone shall be so dressed that the bushing on the exposed face shall not project by more than 40 mm. from the general wall surface and on face to be plastered it shall not project by more than 19 mm nor shall it have depressions more than 10 mm from the average wall surface.

M-17 LATERITE STONE:

17.1 Laterite stone shall be obtained from the approved quarry. It shall compacted in texture, sound, durable and free from soft patches. It shall have a minimum crushing strength of 100 Kg/Sq.Cm. in its dry condition. Itshall not absorb water more 20% of its own weight, when immersed for 25 hours in water. After quarrying, the stone shall be allowed to weather for some time before using in work.

17.2 The stone shall be dressed into rectangular blocks so that all faces are from waviness and unevenness and the edges true and square.

17.3 Those type of stone in which white clay occurs should not be used.

17.4 Special corner stones shall be provided where so directed.

M-18 MILD STEEL BARS/TMT/CRS BARS:

18.1 Mild steel bars reinforcement TMT/CRS Bars for R.C.C. work shall conform to I.S. 432 (Part-II)-1982 and shall be of tested quality. It shall also comply with the relevant part of I.S. 456-1978 and revised latest I.S. Code.

18.2 All the reinforcement shall be clean and free form dirt, paint, grease, mill scale or loose or thick rust at the time of placing.

18.3 For the purpose of payment the bar shall be measured correct up to 10 mm length and weight payable workedout as per the rate specified below :

(i)	6 mm	0.22 Kg/Rmt.
(ii)	8 mm	0.39 Kg/Rmt.
(iii)	10 mm	0.62 Kg/Rmt.
(iv)	12 mm	0.89 Kg/Rmt.
(v)	14 mm	1.21 Kg/Rmt.
(vi)	16 mm	1.58 Kg/Rmt.
(vii)	18 mm	2.00 Kg/Rmt.
(viii)	20 mm	2.47 Kg/Rmt.
(ix)	22 mm	2.98 Kg/Rmt.
(x)	25 mm	3.85 Kg/Rmt.
(xi)	28 mm	4.38 Kg/Rmt.
(xii)	32 mm	6.32 Kg/Rmt.
(xiii)	36 mm	8.00 Kg/Rmt.
(xiv)	40 mm	9.86 Kg/Rmt

M-19 HIGH YIELD STRENGTH STEEL DEFORMED BARS:

19.1 High yield strength steel deformed bars shall be either cold twisted or hot rolled and shall conform to I.S. 1739-1978 and I.S. 1139-1966 respectively.

19.2 Other provision and requirements shall conform to specification No. M-18 for Mild Steel Bars.

M-20 HIGH TENSILE STEEL WIRES:

20.1 The high tensile wires for use in pre-stressed concrete shall conform to I.S. 2090-1983.

20.2 The tensile strength of the high tensile steel bars shall be as specified in the item. In absence of the given strength and minimum strength shall be taken as per para 6-1 of the I.S. 1785-1962. Testing shall be done as per I.S. requirements.

20.3 The high tensile steel shall be free from loose mill scale, rust, oil, grease or any other harmful matter. Cleaning of steel bars may be carried out by immersion in solvent solution, wire brushing or passing through a pressure box containing carborundum.

20.4 The high tensile wire shall be obtained from manufactures in coils having diameter not less than 350 times thediameter of wire itself so that wire springs back straight on being uncoiled.

M-21 MILD STEEL BINDING WIRE:

21.1 The mild steel wire shall be of 1.63mm or 1.22mm (16 or 18 gauge) diameter and shall conform to I.S. 280- 1978.

21.2 The use of black wire will be permitted for binding reinforcement bars. It shall be free from rust, oil, paint, grease, loose mill scale or any other undesirable coating which may prevent adhesion of cement mortar.

M-22 STRUCTURAL STEEL:

22.1 All structural steel shall conform to I.S. 226-1975. The steel shall be free from the defects mentioned in I.S. 226- 1975 and shall have a smooth finish. The material shall be free from loose mill scale, rust pits or other defects affecting the strength and durability. Rivet bars shall conform to I.S. 1148-1992.

22.2 When the steel is supplied by the contractor test certificates of the manufacturers shall be obtained according to I.S. 226-1975 and other relevant Indian Standards.

M-23 GALVANISED IRON SHEETS:

23.1 The galvanized iron sheets shall be plain or corrugated sheets of gauge as specified in item. The G.I. Sheets shall conform to I.S. 277-1992. The sheets shall be undamaged in carriage and handling either by rubbing off of zinc coating or otherwise. They shall have clean and bright surface and shall be free from dents, bends, holes, rust or white powdery deposit.

23.2 The length and width of G.I. sheets shall be as directed as per site condition.

M-23-A G.I.VALLEYS GUTTER, RIDGES :

23-A.1 The G.I. ridges and hips shall be of plain galvanized sheets class-3 of the thickness as specified in item. These shall be 600 mm width and properly bent up to shape without damage to the sheets in process of bending.

23-A.2 Valleys gutters and flashings shall be also of galvanized sheet of thickness as specified in item. Valleys shall be 900 mm. wide overall and flashing shall be 380 mm wide over all. They shall be bent to the required shape without damage to the sheet in the process of bending.

M-24 ASBESTOS CEMENT SHEETS :

24.1 Asbestos cement sheets plain, corrugated or semi-corrugated shall conform to I.S. 459-

1970. The thickness of the sheets shall be as specified in the item. The sheet shall be free from all defects such as cracks, holes, deformities, chipped edges or otherwise damaged.

24.2 Ridges and Hips :

24.2.1 Ridges and hips shall be of same thickness as that of A. C. sheets. The types of ridges shall be suitable for the type of sheets and locations.

24.2.2 Other accessories to be used in roof such as flashing pieces, eaves filler pieces, valley gutters, north light and ventilator curves, barge boards etc. shall be of standard manufacture and shall be suitable for the type of sheets and location.

M-25 MANGALORE PATTERN ROOF TILES:

25.1 The Mangalore pattern tiles shall conform to I.S. 654-1992 for Class `AA' or `A' type as specified in item. Samples of the tiles to be provided shall got approved from the Engineer-in0charge. Necessary tests shallbe carried out as directed.

M-26 SHUTTERING:

26.1 The shuttering shall be either of wooden planking of 30mm minimum thickness with or without steel lining or of steel plates stiffened by steel angles. The shuttering shall be supported on battens and beams and props of vertical ballies properly cross braced together so as to make the centering rigid. In places of ballie props, bricks pillar of adequate section built in mud mortar may be used.

26.2 The form work shall be sufficiently strong and shall have camber, so that it assumes correct shape after deposition of the concrete and shall be able to resist forces caused by vibration of concrete, live load of men working with it and other incidental loads associated with it. The shuttering shall have smooth and even surface and its joints shall not permit leakage of cement grout.

26.3 If at any stage of work during or after placing concrete in the structure, the form work sags or bulges out beyond the required shape of the structure, the concrete shall be removed and work redone with fresh concrete and adequately rigid form work. The complete form work shall be got inspected by and approved from the Engineer-in-charge, before the reinforcement bars are placed in position.

26.4 The props shall consists of bullies having 100mm minimum diameter measured at mid length and 80mm at thin end and shall be placed as per design requirement. These shall rest squarely on wooden sole plates 40 mm. thick and minimum bearing area of 0-10 sq.m. Laid on sufficiently hard base.

26.5 Double wedges shall further be provided between the sole plate and wooden props so as to facilitate tightening and easing of shuttering without jerking the concrete.

26.6 The timber used in shuttering shall not be so dry so as to absorb water from concrete and swell or bulge nor do so green or wet so as to shrink after erection. The timber shall be properly sawn and planed on the sides and the surface coming in contact with concrete. Wooden form work with metal sheet lining or steel plates stiffened by steel angles shall be permitted.

26.7 As far as practicable, clamps shall be used to hold the forms together and use of nails and spikes avoided.

26.8 The surface of timber shuttering that would come in contact with concrete shall be well wetted and coated with soap solution before the concreting is done. Alternatively coat of raw linseed oil or oil of approved manufacture may be applied in place of soap solution. In case of steel shuttering either soap solution or raw linseed oil shall be applied after thoroughly cleaning the surface. Under no circumstances black or burnt oil shall be permitted.

26.9 The shuttering for beams and slabs shall have camber of 4mm per metre (1 in 250) or as directed by the Engineer-in-charge so as to offset the subsequent deflection. For cantilevers, the camber at free end shall be 1/50 of the projected length or as directed by the Engineer-in-charge.

M-27 EXPANSION JOINTS - PREMOULDED FILLER:

27.1 The item provides for expansion joints in R.C.C. frame structures for internal joints, as well as exposed joints, with the use of premoulded bituminous joint filler.

27.2 Premoulded bituminous joint filler, i.e. performed strip of expansion joint filler shall not get deformed or broken by twisting, bending or other handing when exposed to atmospheric condition. Pieces of joint filler that have been damaged shall be rejected.

27.3 Thickness of the pre moulded joint filler shall be 25 mm unless otherwise specified.

27.4 Premoulded bituminous joint filler shall conform to 1.5 1838-1961.

M-28 EXPANSION JOINTS - COPPER STRIPS AND HOLD FASTS:

28.1 The item provides for expansion joints in R.C.C. frame structure for internal joints as well as for exposed joints with the use of necessary copper strip and holdfasts.

28.2 Copper sheet shall be 1.25 mm thick and of 1.25 mm with `U' shape in the middle, copper strip shall have holdfast of 3 mm diameter copper rod fixed to the plate soldered on strip at intervals o f about 30 cm. or as shown in the drawing or as directed. The width of each flange (horizontal side) of the copper plate

to be embedded in the concrete work shall be 25 mm Depth of `U' to be provided in the expansion joint, in the copper plate shall be of 25 mm.

M-29 TEAK WOOD:

29.1 The teak wood shall be of good quality as required for the item to be executed. When the kind of wood is not specifically mentioned, good Indian teak wood as approved shall be used.

29.2 Teak wood shall generally be free from large, loose, dead or cluster knots, flaws, warps, twists, shakes, bends or any other defects. It shall generally be uniform in substance and of straight fibers as far as possible. It shall be free from rot, decay, harmful fungi and other defects of harmful nature, which will affect the strength, durability or its usefulness for the purpose for which it is required. The colour shall be uniform as far as possible. Any effort like painting, using any adhesive or resinous materials made to hide the defects shall render the pieces liable to rejection by the Engineer-in-charge.

29.3 All scantlings, planks etc. shall be sawn in straight lines and planes in the direction of grains and ofuniform thickness.

29.4 The tolerances in the dimensions shall be allowed at the rate of 1.5 mm per face to be planed.

29.5 First Class Teak Wood :

First class teak wood shall have no individual hard and sound knots, more than 6 sq.cm. in size and theaggregate area of such knots shall not be more than 1% of area of piece. The timber shall be closed grained.

29.6 Second Class Teak Wood :

No individual hard and sound knots shall be more than 15 sq.cm. in size and aggregate area of such knotsshall not exceed 2% of the area of piece.

M-29-A NON-TEAK WOOD :

The non-teak wood shall be chemically treated, seasoned as per I.S. Specifications and of good quality. The type of wood shall be got approved before collecting the same on site. Fabrication of wooden members shall be started only after approval. For this purpose wood of Bio, Kalai, Sires, Saded, Behda, Jamun, Sisoo will be used for door frames whereas only Kalai, Siras, ,Halda, Kalam etc. will be permitted for shutters after proper seasoning and chemical treatment.

The non teak wood shall be free from large, loose dead of cluster knots, flows, shakes, warps, bends, or any other defect. It shall be uniform in substance and of straight fibers as far as possible. It shall be free from rots, decay, harmful fungi and other defects of similar nature which will affect the strength, durability or its usefulness for the purpose for which it is required. The colour of the wood shall be uniform as far as possible. The scantlings, planks etc. shall be sawn in straight lines and planes in the directionof grain and of uniform thickness.

The department will use the Agency to produce a certificate from the Forest Department in the event of a dispute and the decision of the Department shall be final and binding to the contractor.

The tolerance in the dimension shall be allowed at 1.5 mm. per face **to be planed.**

M-30 WOODEN FLUSH DOOR SHUTTERS (SOLID CORE) :

30.1 The solid core type flush door shutters shall be of decorative or non-decorative type as specified in the drawing. The size and thickness of the shutter shall be as specified in drawings or as directed. The timber species for core shall be used as per I.S. 2202-(Part-I)-1991. The timber shall be free from decay and insect attack. Knots and knot holes less than half the width of cross-section of the members, pitch streaks and harmless pin holes shall be permissible except in the exposed edges of the core members. The commercial plywood, cross bands shall conform to I.S. 303-1298.

30.2 The face panel of the shutters shall be formed by gluing by the hot press process on both faces of the core with either plywood or cross bands, or face veneers. The lapping, rebating, opening of glazing, venation etc. shall be provided if specified in the drawing.

30.3 All edges of the door shutters shall be square. The shutters shall be free from twist or warp in its plane. Both faces of the shutters shall be sand papered to smooth even texture.

30.4 The shutters shall be tested for ---

i] End Immersion Test: The test shall be carried out as per I.S. 2202 (Part-I) 1991. There shall be no delaminating at the end of the test.

ii] Knife Test: The face panel when tested in accordance with I.S. 1659-1990 shall pass the test.

iii] Glue Adhesion Test: The flush door shall be tested for glue adhesive test in accordance with I.S. 2202(Part- I)- 1991. The shutters shall be considered to have passed the test if no delaminating occurs in the glue linesin the plywood and if no single delaminating more than 80 mm. in length and more than 3 mm. in depth has occurred in the assembly glue lines between the plywood face and the style and rail. Delaminating at the corner shall be measured continuously around the corner. Delaminating at the knots knot, whole and other

permissible wood defects shall not be considered in assessing the sample.

30.5 The tolerance in size of solid core type flush door as under:-

In nominal thickness # 1.2 mm. In nominal height # 3 mm. The thickness of the shutters shall be uniform throughout with a permissible variation of not more than 0.8 mm. when measured at any two points.

M-31 ALUMINIUM DOORS, WINDOWS, VENTILATORS:

31.1 Aluminum alloy used in the manufacture of extruded window sections shall conform to I.S. designation HEA-WP of I.S.:733- 1991 and also to I.S. Designation WVG - WP OF I.S.:1285-1991. The sections shall be as specified the drawing and design. The fabrication shall be done as directed.

31.2 The hinges shall be cast or excluded aluminum hinges of same type as in window but or large size.

31.3 The hinges shall normally be of 50 mm projecting type non projecting type of hinges may also be used if directed. The handles of door shall be of specified design. A suitable lock for the door operable either from outside shall be provided. In double shutter door, the first closing shall have a concealed aluminum alloy bolt at top and bottom.

M-32 ROLLING SHUTTERS:

32.1 The rolling shutters shall conform to I.S. 6248-1991. Rolling shutters shall be supplied of specified type with accessories. The size of the rolling shutters shall be specified in the drawings. The shutters shall

be constructed with interlocking lath sections formed from cold rolled steel strips not less than 0.9 mm. thick and 80 mm. wide for shutters up to 3.5 m. Width not less than 1.25 mm. thick and 80 mm. wide for shutters 3.5 m. in width and above unless otherwise specified.

32.2 Guide channels shall be of mild steel deep channel section and of rolled pressed or built up (fabricated) joint less construction. The thickness of sheet used shall not be less than 3.15 mm.

32.3 Hood covers shall be made of M.S. sheets not less than 0.92 mm. thick. For shutters having width 3.5 mts. and above, the thickness of M.S. sheet for the hood covers shall be not less than 1.25 mm.

32.4 The spring shall be of best quality and shall be manufactured from tested high tensile spring steel wire or strip of adequate strength to balance the shutters in position. The spring pipe shaft etc. shall be supported on strong M.S. or malleable C.I. brackets. The brackets shall be fixed on the or under the lintel as specified with raw plugs and screws bolts etc.

32.5 The rolling shutters shall be of self rolling type up to 8 sq.m. clear area without ball bearing and up to 12 sq.m. clear area with ball bearing. If the rolling shutters are of larger then gear operated type shutters shall be used.

32.6 The locking arrangement shall be provided at the bottom of shutter at both ends. The shutters shall be opened from outside.

32.7 The shutters shall be completed with door suspension, shafts, locking arrangements, pulling hooks, handles and other accessories.

M-33 COLLAPSIBLE STEEL GATE :

33.1 The collapsible steel gate shall be in one or two leaves and size as per approved drawings or as specified. The gate shall be fabricated from best quality mild steel channels, flats etc. Either steel pulleys or ball bearings shall be provided in every double channel. Unless otherwise specified the particulars of collapsible gate shall be as under ---

i] Pickets : These shall be of 20 mm. M.S. channels of heavy sections unless otherwise shown on drawings.

The distance centre to centre of pickets shall be 12 cms. with an opening of

10 cms. ii] Pivoted M.S. flats shall be 20 mm. x 6 mm.

iii] Top and bottom guides shall be from tee or flat iron of approved size.

iv] The fittings like stoppers, fixing hold fasts, locking cleats, brass handles and cast iron rollers shall be of approved design and size.

M-34 WELDED STEEL WIRE FABRIC:

34.1 Welded steel wire fabric for general purpose shall be manufactured from cold drawn steel `as drawn' or galvanized steel conforming to I.S. 226-1975 With longitudinal and transverse wire securely connected at every intersection by a process of electrical resistance welding and conforming to I.S. 4948-1974. It shall befabricated and finished in a workman like manner and shall be free from injurious defects and shall be rust proof. The type of mesh shall be oblong or square as directed. The mesh sizes and sizes of wire for square as well as oblong welded steel wire fabric shall be as directed. The steel wire fabric in panels shall be in one whole piece in each panel as far as stock sizes permit.

M-35 EXPANDED METAL SHEETS :

35.1 The expanded metal sheets shall be free from flaws, joints, welds, broken, stands, laminations and other harmful surface defects Expanded metal steel sheet shall conform to I.S. 412 - 1992 except that blank sheets need not be with guaranteed mechanical properties. The size of the diamond mesh of expanded metal and dimensions of strands (width and thickness) shall be as specified. The tolerance on nominal weight of expanded metal sheets shall be of + 10 per cent.

35.2 Expanded metal in panels shall be in one whole piece in each panel as far as stock sizes permit. The expanded metal sheets shall be coated with suitable protective coating to prevent corrosion.

M-36 MILD STEEL WIRE (Wire Gauze Jali) :

36.1 Mild steel wire may be galvanized, as indicated. All finished steel wire shall be well cleanly drawn to the dimensions and size of wire as specified in item. The wire shall be sound, free from slits, surface flaws, rough jagged and imperfect edges and other harmful surface defects and shall conform to I.S. 280-1992.

M-37 PLYWOOD :

37.1 The Plywood for general purpose shall conform I.S. 303-1998. Plywood is made by cementing together thin boards or sheets of wood into panels. There are always an old number of layers 3, 5, 7, 9 ply etc. The pliesare placed so that the grain of each layer is at right angles to the grain in the adjacent layers.

37.2 The chief advantage of plywood over a single board of the same thickness is the more uniform strength of the plywood along the length and width of the plywood and greater resistance to cracking and slittingwith change in moisture content.

37.3 Usually synthetic resins are used for gluier. Phenol resins are usually cured in a hot press which compresses and simultaneously heats the plies between hot plates which maintain a temperature of 90 degree C. to 140 degree C. and a pressure of 11 to 14 Kg./Sq.cm. on the wood. The time of heating may be anything from 2 to 60 minutes depending upon thickness.

37.4 When water glue are used the wood absorbs so much Water that the finished plywood must be dried carefully, When synthetic resins are used as adhesive the finished plywood must be exposed to atmosphere of controlled humidity until the proper amount of moisture has been absorbed.

37.5 According to I.S. : 303-1998 the plywood for general purpose shall be of three grades namely BWR.WWR and CWR depending upon the adhesives used for bonding the veneers and it will be further classified into sixtypes namely AA, AB, AC, BB, BC and CC based on the quality of the two faces, each face being of three kinds namely A, B and C. After pressing, the finished plywood should be reconditioned to a moisture content not less than 8 percent and not more than 16 percent.

TABLE

37.6 THICKNESS OF PLYWOOD BOARDS

Board	Thick
3 ply	3 mm
	4 mm
	5 mm
	6 mm
6 ply	5 mm
	6 mm
	8 mm
	9 mm
7 Ply	9 mm
	13 mm
	16 mm
9 Ply	13 mm
	16 mm
	19 mm
11 ply	19 mm
	22 mm
	25 mm

M-38 GLASS :

38.1 All glass shall be of the best quality, free from specks, bubbles, smokes, veins, air holes blisters and other defects. The kind of glass to be used shall be as mentioned in the item or specification or in the special provisions or as shown in detailed drawings. Thickness of glass panes shall be uniform. The specifications for different kinds of glass shall be as under ----

38.2 Sheet Glass :

38.2.1 In the absence of any specified thickness or weight in the item or detailed specifications of the item of work, sheet glass shall be weighing 7.5 Kg./Sq.m. for panes up to 600 mm. x 600 mm.

38.2.2 For panes larger than 600 mm. x 600 mm. and up to 800 mm. x 800 mm. glass weighing not less than 8.75Kg./Sq.m. shall be used. For bigger panes up to 900 mm. x 900 mm. glass weighing not less than 11.25 Kg./Sq.m. shall be used.

38.2.3 Sheet glass shall be patent flattened glass of best quality and for glazing and framing purposes shall conform to

I.S. 761-1963. Sheet glass of the specified colors shall be used, if so shown on detailed drawings or so specified. For important buildings and for panes with any dimensions over 900 mm. plate glass of specified thickness shall be used.

38.3.0 Plate Glass :

38.3.1 When plate glass is specified it shall be "Polished Patent Plate Glass" of best quality. It shall have both thesurface ground flat and parallel and polished to obtain clear undisturbed vision and reflection. The plate glass shall be of the thickness mentioned in the item or as shown in the detailed drawing or as specified. In the absence of any specified thickness, the thickness of plate glass to be supplied shall be 6 mm. and a tolerance of 0.20 mm. shall be admissible.

38.4.0 Obscured Glass :

38.4.1 This type of glass transmits light so that vision is partially or almost completely obscured. Glass shall be plain rolled, figured, ribbed or fluted, or frosted glass as may be specified as required. The thickness and type of glass shall be as per details on drawings or as specified or as directed.

38.5.0 Wired Glass : Glass shall be with wire netting embedded in a sheet of plane glass. Electrically welded 13 mm. Georgian square mesh shall be used. Thickness of glass shall not be less than 6 mm. wired glass shall beof type and thickness as specified.

M-39 ACRYLIC SHEETS :

39.1 Acrylic sheets shall be of thickness as specified in the item and of a specified shape and size as the case may be. Panels may be flat or curved. It should be light in weight. It shall be colorless or colored or opaque as specified in the item. Colorless sheet shall be as transparent as the finest optical glass. Its light transmission rate shall be about 95%. Transparency shall not be affected for the sheets of larger thickness. It shall be extremely resistant to sunlight, weather and low temperatures. It shall not show any significant yellowing or change in physical properties or loss of light transmission over a longer period of use.

The sheet shall be impact resistant also. Sheets should be available in complete range of standard transparent, translucent and opaque colors. Sheets should be available in complete range of standard transparent, translucent and opaque colors. Sheets shall be of such quality that they can be cut, bent and jointed as desired. Solution for the joints shall be used as per the requirement of manufacture.

M-40 PARTICLE BOARD :

40.1 The particle boards used for face panels shall of best quality free from any defects. The particle boards shall be made with phenolmaldehyde adhesive. The particle boards shall conform to I.S. 3087-1990. "Specification for wood particle board for general purpose." The size and the thickness of the particle board shall be as specified.

M-41 EXPANDED POLYSTYRENE OR FRAMES STYROPER SLEBS:

41.1 The expanded polystyrene ceiling boards and tiles shall be of approved make and shall be of size thickness, finish and color and indicated. It shall be of high density and suitable for use as insulting material. The insulting material shall be like slab of thermocole etc.

M-42 RESIN BONDED FIBRE GLASS :

42.1 The resin bonded fiber glass tiles or roils shall be of approved make and shall be sizes, thickness andfinish as indicated.

42.2 For test of Mineral wood thermal insulation Blanket I.S. 3144-1965 followed.

42.3 Insulation wool blanket shall be with the following coverings on one or both sides as indicated.

(1) Bituminizedhessian craft paper suitable for use in position where moisture has to be excluded.

(2) Hessian cloth or Kraft paper for keeping out dust.

(3) G. I. wire netting, suitable or surfaces to be plastered over.

M-43 FIXTURES & FASTENINGS :

General ---

i] The fixtures and fastenings, that is, butt, hinges, tee and strap hinges, sliding door bolts,

tower bolts, door latch, bath-room latch, handles, door stoppers, casement window fasteners, casement stays and ventilator catch shall be made of the metal as specified in the item or its specifications.

ii] They shall be of iron, brass, aluminum, chromium plated iron, chromium plated brass, copper oxidized iron, copper oxidized brass or anodized aluminum as specified.

iii] The fixtures shall be heavy, medium or light type. The fixtures and fastenings shall be smooth finished and shall be such as will ensure ease of operation.

iv] The samples of fixtures and fastenings shall be got approved as regards quality and shape before providing them in position.

v] Brass and anodized aluminum fixtures and fastenings shall be bright finished. Holdfasts :

I] Holdfasts shall be made from mild steel flat 30 cm. length and one of the holdfasts shall be bent at right angle and two nos. of 6 mm. dia. holes shall be made in it for fixing it to the frame with screws. At the other end, the holdfast shall be forked and bent at right angles in opposite directions.

Butt Hinges :

i] Railway standard heavy type butt hinges shall be used when so specified.

ii] Tee and strap hinges shall be manufactured from M.S. sheet. Sliding Door Bolts (Aldrops) :

i] The Aldrops as specified in the item shall be used and shall be got approved.Tower Bolts (Barrel Type) :

i] Tower bolts as specified in the item shall be used and shall be got approved.Door Latch :

i] The size of door latch shall be taken as the length o f latch.Bathroom Latch :

i] Bathroom latch shall be similar to tower bolt.Handle :

i] The size of the handles shall be determined by the inside grip length of the handles. Handles shall have abase plate of length 50 mm. more than the size of the handle.

Door Stoppers :

i] Door stoppers shall be either floor door stopper type or door catch type. Floor stopper shall be of overallsize as specified and shall have a rubber cushion.

Door Catch :

i] Door catch shall be fixed at a height of about 900 mm. from the floor level such that one part of the catch isfitted on the inside of the shutter and other part is fixed in the wall with necessary wooden plug arrangements for appropriate fixity. The catch shall be fixed 20 mm. inside the face of the door for easy operation of catch.

Wooden Door Stop With Hinge :

Wooden door stop of size 100 mm. x 60 mm. x 40 mm. shall be fixed on the door frame with a hinge of 75 mm. size and at a height of 900 mm. from the floor level. The wooden door stop shall be provided with 3 coats of approved oil paint.

Casement Window Fastener :

i] Casement window fastener for single lead window shutter shall be left or right handed as directed.Casement Stays (StraightPeg. Stay) :

i] The stays shall be made from a channel section having three holes at appropriate position so that the windowcan be opened either fully or partially as directed.

Size of the stay shall be 250 mm. to 300 mm. as directed.

Ventilator Catch :

i] The pattern and shape of the catch shall be as approved.Pivot :

i] The base and socket plate shall be made from minimum 3 mm. thick plate, and projected pivot shall not be less than 12 mm. dia. and 12 mm. length and shall be firmly riveted to the base plate case of iron pivot andin single piece base in the case of brass pivot.

M-44 PAINTS :

44.1 Oil Paints :

Oil paints shall be of the specified color and shade, and as approved. The ready mixed paints shall only be used. However, if ready mixed paint or specified shade or tint is not available white ready mixed paint with approved strainer will be allowed. In such a case, the contractor shall ensure that the shade of the paint so allowed shall be uniform.

All the paints shall meet with the following general requirements -

i] Paint shall not show excessive setting in a freshly opened full cane and shall easily be redispressed with paddle to a smooth homogeneous state. The paint shall show no curdling, levering, caking or color separation and shall be free from lumps and skins.

ii] The paint as received shall brush easily, possess good leveling properties and show no running or sagging tendencies.

iii] The paint shall not skin within 48 hours in a three quarters filled closed container.

iv] The paint shall dry to a smooth uniform finish free from roughness, grit unevenness and other imperfections.

Ready mixed paid shall be used exactly as received from the manufacturers and generally according to their instructions and without any admixtures whatsoever.

44.2 Enamel Paints :

The enamel paint shall satisfy in general requirements as mentioned in specification of oil paints. Enamel paints shall conform to I.S. 2933-1991.

M-45 FRENCH POLISH :

The French polish of required tint and shade shall be prepared with the below mentioned ingredientsand other necessary materials :

i] Denatured spirit of approved quality.

ii] Shellac.

iii] Chandras.

iv] Pigment.

The French polish so prepared shall conform to I.S. 348-1991.

M-46 MARBLE CHIPS FOR MARBLE MOSAIC TERRAZZO :

46.1 The marble chips shall be of approved quality and shades. It shall be hard, sound, dense and homogeneous in texture with crystalline and coarse grains. It shall be uniform in color and free from stains, cracks, decay and weathering.

46.2 The size of various colors of marble chips ranging from the smallest up to 20 mm. shall be used where the thickness of top wearing layers is 6 mm. in size. The marble chips of approved quality and colors only as per grading as decided by the Engineer-in-charge shall be used for marble mosaic tiles or works.

46.3 The marble chips shall be machine crushed. They shall be free from foreign matter, dust etc. Except as above the chips shall conform to I.S. 2114-1990.

M-47 FLOORING TILES :

A] Plain Cement Tiles -

47.1.1 The plain cement tiles shall be of general purpose type. These are the tiles in the manufacture of which nopigments are used. Cement used in the manufacture of tiles shall be as per Indian Standards.

47.1.2 The tiles shall be manufactured from a mixture of cement and natural aggregates by pressure process. During manufacture, the tiles shall be subjected to a pressure of not less than 140 Kg./Sq.cm. The proportion of cement to aggregate in the backing of the tiles shall be not leaner than 1:3 by weight. The wearing face, though the tiles are of plain cement, shall be provided with stone chips of 1 to 2 mm size. The proportion of cement to the marble chips aggregate in the wearing layer of the tiles shall be three parts of cement to one part of chips by weight. The minimum thickness of wearing layer shall be 3 mm. The color and texture of wearing layer shall be uniform throughout its face and thickness. On removal from mould, the tiles shall be kept in moist condition continuously at least for seven days and subsequently, if necessary, for such long period as would ensure their conformity to requirements of I.S. 1237- 1990 requiring resistance to wear and water absorption.

47.1.3 The wearing face of the tiles shall be plain, free from projections, depressions and cracks and shall be reasonably parallel to the back face of the tile. All angles shall be right angle and all edges shall be sharp and true.

47.1.4 The tile sizes shall generally be square shape 24.85cm. x 24.85cm. or 25cm. x 25cm. The thickness of the tiles shall be 20 mm.

47.1.5 The tolerance of length and breadth shall be plus or minus 1 mm. The tolerance on thickness shall be plus 5 mm.

47.1.6 The tiles shall satisfy the tests as regards transverse strength, resistance to wear and water absorption as per I.S. 1237-1980.

47.2 B] Plain Coloured Tiles :

47.2.1 These tiles shall have the same specifications as for plain cement tiles as per (A) above except that they shall have a plain wearing surface wherein pigments are used. They shall conform to I.S.

1237-1990.

47.2.2 The pigment used for coloring cement shall not exceed 10% by weight of cement used in the mix. The pigments, synthetic or otherwise, used for coloring tiles shall have permanent color and shall not contain materials detrimental to concrete.

47.2.3 The color of the tiles shall be specified in the item or as directed.

47.3 C] Marble Mosaic Tiles :

47.3.1 These tiles have the same specifications as per plain cement tiles except the requirements as stated below ---

47.3.2 The marble mosaic tiles shall conform to I.S. 1237-1990. The wearing face of the tiles shall be mechanically ground and filled. The wearing face of tiles shall be free of projections, depressions and cracks and shall be reasonably parallel to the back face of the tiles. All angles shall be right angles and all edges shall be sharp and true.

47.3.3 Chips used in the tiles be from smallest up to 20 mm. size. The minimum thickness of wearing layer of tiles shall be 6 mm. For pattern of chips to be bad on the wearing face, a few samples with or without their full size photographs as directed shall be presented to the Engineer-in-charge for approval.

47.3.4 Any particular samples, if found suitable shall be approved by the Engineer-in-charge, of he may ask for particular sized chips to be more or less in the sample presented. The samples shall have to be made by the contractor till a suitable sample finally approved for use in the work. The contractor shall ensure that the tiles supplied for the work shall be in conformity with the approved sample only, in terms of its dimensions, thickness of backing layer and wearing surface, materials, ingredients, color shade, chips, distribution etc. required.

47.3.5 The tiles shall be prepared from cement conforming to Indian Standards or coloured Portland cement generally depending upon the color of tiles to be used or as directed.

47.4 D] Chequered Tiles :

47.4.1 Chequered tiles shall be plain cement tiles or marble mosaic tiles. The former shall have the same specification as per (A) above and the latter as per marble mosaic tiles as per (C) except as mentioned below.

47.4.2 The tiles shall be of nominal size of 250mm. x 250mm. or as specified. The centre to centre distance of the chequer shall not less than 25mm. and not more than 50mm. The overall thickness of the tile shall be 22mm.

47.4.3 The grooves in the chequers shall be uniform and straight. The depth of the grooves shall not be less than 3mm. The chequered tiles shall be plain, coloured or mosaic as specified. The thickness of the upper layer measured from the top of the chequers shall not be less than 6mm. The tiles shall be given the first grinding with machine before delivery to site.

47.4.4 Tiles shall conform to relevant I.S. 1237-1990.

47.5 E] Chequered Tiles for Staircases :

47.5.1 The requirements of these tiles shall be the same as chequered tiles as per (D) above except in following respects :

i] The length of a tile including nose shall be 330 mm.ii] The minimum thickness shall be 28 mm.

iii] The nosing shall have also the same wearing layer at the top.

iv] The nosing edge shall be rounded.

v] The front portion of the tile for a minimum length of 75mm. from and including the nosing shall have grooves running parallel to nosing and at centres not exceeding 25mm. Beyond that the tiles shall have normal chequer pattern.

M-48 ROUGH KOTAH STONE :

48.1 The kotah stones shall be hard, even, sound and regular in shape and generally uniform in color. The color of the stone shall generally be green. Brown coloured stones shall not be allowed for use. They shall be without any soft veins, cracks or flaws.

48.2 The size of the stones to be used for flooring shall be size 600mm. x 60mm. and/or size 600mm. x 450mm.as directed. However, smaller sizes will be allowed to be used to the extent of maintaining the required pattern. Thickness shall be as specified.

48.3 Tolerance of minus 30 mm. on account of chisel dressing of edges shall be permitted for length as well as breadth. Tolerance in thickness shall be plus 3mm.

48.4 The edges of stones shall be truly chiseled and table rubbed with coarse sand before paving. All angles and edges of the stone shall be true, square and free from chipping and the surface shall

be true and plain.

48.5 When machine cut edges are specified, the exposed edges and the edges at joints shall be machine cut. The thickness of the exposed machine cut edges shall be uniform.

M-49 POLISHED KOTAH STONES :

49.1 Polish kotah stone shall have the same specifications as per rough kotah stone except as mentioned below.

49.2 The stone shall have machine polished smooth surface. When brought on site, the stones shall be single polished or double polished depending upon its use. The stones for paving shall generally be single polished. the stones to be used for dado, skirting, platforms sink, veneering, sills, steps etc. where machine polishing after the stones are fixed in situ is not possible shall be double polished.

M-50 DHOLPUR STONE SLAB :

50.1 Dholpur stone slab shall be of best quality as approved by the Engineer-in-charge. The stone slab shall be without any veins, cracks, and flaws. The stone slab shall be even, sound and durable, regular in shape and uniform color.

50.2 The size of the stone shall be as specified in the item or detailed drawing or as approved by the Engineer-in-charge. The thickness of the stone shall be as specified in the item of work with the permissible tolerance of plus or minus 2 mm. The provisions in respect of polishing as for polished kotah stone shall apply to polished Dholpur stone also. All angles and edges of the face of stone slab shall be fine chiseled or polished as specified in the item of work and all the four edges shall be machine cut. All angles and edgesof the stone slab shall be true and plane.

50.3 The sample of stone shall be got approved from the Engineer- in-charge for shade and tint for a particular work. It shall be ensured the stones to be used in a particular work shall not differ much in shade or tint from the approved sample.

M-51 MARBLE SLAB:

Marble slabs shall be white or of other color and of best quality as approved by the Engineer-in-charge. Slab shall be bard, close, uniform and in texture. They shall also be free defects and cracks. The surface shallbe machine polished to an even and perfectly plane surface and the edges, machine cut true and square.The rear face shall be rough enough to provide key for the mortar. Marble slabs with natural veins, if selected shall have to be laid as per the pattern given by the Engineer-in- charge. Size of the slabs shall be minimum 450mm. x 450mm. and preferably 600mm. x 600mm. However, smaller sizes will be allowed to be used to the extent of maintaining required pattern.

The slab shall not be thinner than the specified thickness at its thinnest part. A few specimen of finished slab to be used shall be deposited by the contractor in the office for reference.

Except as above, the marble slabs shall conform to I.S. 1130-1993 or as revised from time to time.

M-52 GRANITE STONE SLAB:

52.1 Granite shall be of approved color and quality, The stone shall be hard even, sound and regular in shape and generally uniform in color. It shall be without and soft veins, cracks or flaws.

52.2 The thickness of the stone shall be specified in the item.

52.3 All exposed faces shall be double polished to tender truly smooth and even reelecting surface. The exposed edges and corners shall be rounded off as directed. The exposed edges shall be machine cut and shall have uniform thickness.

M-53 P.V.C. FLOORING:

53.1 P.V.C. sheets for P.V.C. floor covering shall be homogenous flexible type, conforming to I.S. 3462-1991. The P.V.C. covering shall neither develop any toxic effect while put to use not shall give off any disagreeable odors.

53.2 Thickness of flexible type covering or tiles shall be as specified in the description of the item.

53.3 The flexible type shall be backed with hessian or other woven fabric. The following tolerance shall be applicable on the nominal dimensions of the sheet rolls or tiles :

(a)	Thickness	+/- 0.15 mm	Length or width
1.	300 mm Square tiles	+/- 0.20 mm	
2.	600 mm Square tiles.	+/- 0.40 mm	
3.	900 mm Square tiles.	+/- 0.60 mm	
4.	Sheets and rolls.	+/- 0.10 percent.	

53.4 Adhesive :

53.4.1 The adhesive for PVC flooring shall be of the type and make recommended by the manufacturers of PVC sheetstiles.

M-54 FACING TILES:

54.1 The facing tiles (burnt clay facing bricks) shall be free from cracks, flaws, and nodules of free lime. They shall be thoroughly burnt and shall have plane rectangular faces with parallel sides and sharp straight right angled faces. The texture of the finished surface that will be exposed when in place, shall conform to an approved sample consisting not less than four stretcher bricks each representing resistance to penetration by rain and greater durability than common bricks. The tiles shall conform to I.S. 2691-1995.

54.2 The standard size of facing brick tiles shall be 19 x 9 x 4 cms. The facing brick tiles shall be provided with frog which shall conform to I.S. 1077-1992.

54.3 The permissible tolerance in dimensions specified above shall be as follows.

Size	Tolerance for	
	1st Class Brick	2nd Class Brice
19 cm	+/- 6 mm	+/- 10 mm
9 cm	+/- 2 mm	+/- 7 mm
4 cm	+/- 1.5 mm	+/- 3 mm

The tolerance for distortion or war page of face or edges of individual brick from a plane surface and from astraight line respectively shall be as follows :

Facing dimensions. Permissible

tolerance.Max. below 19 cms. Max. 2.5 mm.

Max. above 19 cms. Max. 3.0 mm

54.5 The average compressive strength obtained as a sample of five tiles when tested in accordance with the procedure aid as per I.S. 1077-1992 shall be not less than 175 Kg/Sq.cm. The average compressive strength of any individual brick shall not less than 160 Kg/Sq.cm.

54.6 The average water absorption for five brick tiles shall not be exceed 12 percent of average weight of brick before testing. The absorption for each individual brick shall not exceed 25 percent.

54.7 The brick tiles when tested in accordance with I.S. 1077-1992 the rate of efflorescence shall not be more than "Slightly effloresced".

M-55 WHITE GLAZED TILES:

55.1 The tiles shall be of best quality as approved by the Engineer-in-charge. They shall be flat and true to shape. They shall be free from cracks, crazing, spots, chipped edges and corners. The glazing shall be of uniform shade.

55.2 The tiles shall be of nominal size of 150mm. x 150mm. unless otherwise specified. The maximum variation from the stated sizes, other than the thickness of tile, shall be plus or minus 1.5mm. The thickness of the tile shall be 6mm. except as above the tiles shall conform to I.S. 777-1988.

M-56 GALVANISED IRON PIPES AHND FITTINGS:

Galvanized iron pipe shall be of the medium type and of required diameter and shall comply with I.S. 1239-1990. The specified diameter of the pipes shall refer to the inside diameter of the bore. Clamps, screw and all galvanized iron fittings shall be of the standard `R' make.

M-57 BIB COCK AND STOP COCK:

57.1 A bib cock is a draw off tap with a horizontal inlet and a free outlet. A stop cock is a valve with a suitable means of connection for insertion in a pipe line for controlling or stopping the flow.

57.2 They shall be of screw down type and or brass chromium plated and of diameter as specified in the description of the item. They shall conform to I.S. 781-1990 and they shall be of best Indian make. They shall be polished bright.

57.3 The minimum finished weight of bib cock and stop shall be as given below--Dia. Bib Cock Stop Cock Dia. Bib Cock Stop Cock

8 mm. 0.25 Kg. 0.25 Kg. 15 mm. 0.40 Kg. 0.40 Kg.

10 mm. 0.30 Kg. 0.35 Kg. 20 mm. 0.75 Kg. 0.75 Kg.

M-58 GUN METAL WHEEL VALVE:

58-1 The gun metal wheel valve shall be of approved quality. These shall be of gun metal fitted with wheel andshall be of gate valve opening full way and of the size as specified. These shall conform to I.S. 778-1990.

M-59 WHITE GLAZED PORCELAIN WASH BASIN:

59.1 Wash basin shall be of white porcelain first quality best Indian make and it shall conform to I.S. 2556-(Part- IV)-1994 and I.S. 771-1990. The size of the wash basin shall be as specified in the item. The wash basin shall be of one piece construction with continued over-flow arrangements. All internal angles shall be designed so as to facilitate cleaning. Wash basin shall have single tap hole or two holes as specified. Each basin shall have a circular waste hole which is either rebated or beveled internally with 65 mm. dia. at

top and 10 mm. depth to suit the waste fitting. The necessary stud slot to receive the bracket on the underside of the basin shall be provided. Basin shall have an internal soap holder recess which shall fully drain into the bowl.

59.2 White glazed pedestal of the quality and color as that of the basin shall be provided where specified in the item. It shall be completely recessed at the back for reception of supply and water pipe. It shall be capableof supporting the basin rigidly and adequately and shall be so designed as to make the height form the floor to top of the rim of basin 750 mm. to 800 mm. as directed.

M-60 EUROPEAN TYPE WATER COLSET/WITH LOW LEVEL FLUSHING:

60.1 The European type water closet shall be white glazed conforming to I.S. 2556-1994 and I.S. 771-1692.

60.2 `S' trap shall be provided as required with water seal not less not less than 50 mm.

The solid plastic seat and cover shall be of the best Indian make conforming to I.S. 2548-1996. They shall be made of moulded synthetic materials which shall be tough and hard with high resistance to solvents and shall be free from blisters and other surface defects and shall have chromium plated brass hinges and rubber butter of suitable size.

M-61 ORISSA TYPE WATER CLOSED:

61.1 The specification of Orissa type white glazed water closet of first quality shall conform to I.S. 2556 (Part-III) 1994 and relevant specification of Indian type water closet except that pan will be with the integral squating pan of size 580 mm x 440 mm. with raised footrest.

M-62 INDIAN TYPE WATER CLOSET:

The Indian type white glazed water closet of first class quality, size as specified in the item and conforming to I.S. 771-1979 and I.S. 2556-(Part-II)-1994. Each pan shall have integral flushing ring of suitable type with adequate number of holes all around as directed to have satisfactory flushing. It shall also have an inlet at back of front for connecting flush pipe as directed. The inside of the bottom of the pan shallhave sufficient slope from the front towards the outlet and the surface shall be uniform and smooth. Pan shall be provided with 100 mm. diameter `P' or `S' trap with approximately 50 mm. water seal and 50 mm. diameter vent horn.

FOOT RESTS: A pair of white glazed earthen ware rectangular foot rests of minimum size 250 mm. x 130 mm. x 20 mm. shall be provided with the water closet.

M-63 GLAZED EARTHEN WARE SINK :

The glazed earthenware sink shall be of specified size, color and quality. The sink shall conform to I.S.771- Part-II-1992. The brackets for sinks shall conform to I.S. 775-1990.

The pipes shall conform to I.S. 1239-Part-I-1990 and I.S. 404-1993 for steel and lead pipes respectively.

32 mm. brass waste coupling of standard pattern with brass chain and rubber plug shall be provided withsink.

M-64 GLAZED EARTHEN WARE LIPPED TYPE FLAT BACK URINAL/CORNER TYPE URINAL:

The lipped type urinal shall be flat back or corner type as specified in the item and shall conform to I.S. 771- 1992. It shall be of best Indian make and size as specified and approved by the Engineer-in-harge. The flat back or corner type urinal must be of first class quality, free from any defects, cracks etc.

M-65 LOW LEVEL ENAMEL FLUSHING TANK:

65.1 The low level enamel flushing tank shall be of 15 liters capacity. It shall conform to I.S. 774-1990. The flushing cistern shall be of best quality and free from any defects. The flushing tank shall have outlet 32 mm diameter. The outlet shall be connected with W.C. Pan by lead pipe of P.V.C. pipe as specified. Theflushing tank shall be provided with inlet and outlet for fixing G.I. inlet pipes and over flow pipes. The flushing cistern shall be provided with chromium plated handle for flushing. The flushing tank shall be provided with bracket of cast iron so that it can be fixed on wall at specified height. The brackets shall conform to I.S. 775-1990.

M-66 CAST IRON FLUSHING CISTERN:

66.1 The cast iron flushing cistern shall be of 15 liters capacity. It shall conform to I.S. 774-1990. The flushing cistern shall be of best quality free from any defects.

66.2 The flushing cistern shall have outlet of 32 mm diameter. The outlet shall be connected to lead pipe of 32 mm diameter. The lead pipe shall conform to I.S. 404 (Part-I) 1993. For fixing G.I. inlet pipes and overflow pipe 20 mm dia. inlet and outlet shall be provided. The flushing cistern shall be provided with galvanized iron chain and pull of sufficient length and shall be got approved from the Engineer-in-charge. The

cast iron flushing cistern shall be painted with one coat of anticorrosive paint and two coats of paints. The flushing cistern shall be fixed on to C.I. brackets. The brackets shall conform to I.S. 775-1990.

M-67 FLUSH COCK:

Half turn flush cock (heavy weight) shall be of gun metal chromium plated of diameter as specified in the description of the item. The flush cock shall conform to relevant Indian Standards.

M-68 CAST IRON PIPES AND FITTINGS :

68.1 All soil, waste, vent and anti syphonage pipes and fittings shall conform to I.S. 1729-1991. The pipes shall have spigot and socket ends with head on spigot end. The pipes and fittings shall be true to shape, smooth, cylindrical their inner and outer surfaces being as nearly as practicable concentric. They shall be sound and nicely cast and shall be free from cracks, laps, pin holes or other imperfections and shall be neatly dressed and carefully fettled.

68.2 The end of pipes and fittings shall be reasonably square to their axis.

68.3 The sand cast iron pipes shall be of the diameter as specified in the description and shall be in length of

1.5 M., 1.8 M. & 2.0 M. including socket ends of the pipe unless shorter length are either specified or required at junction etc. The pipes and fittings shall be supplied without ears unless specified or directed otherwise.

68.4 Tolerances : The standard weights and thickness of pipes shall be as shown in the table below. A tolerance up to minus 10% may however be allowed against these standard weights.

Sr. No.	Nominal dia of bore	Overall Thick	Wight of pipe excluding ears		
			1.5 m long	1.m long	2 m long
1.	75 mm	5.00 mm	12.83 Kg.	16.52 Kg.	18.36 Kg.
2.	100 mm	5.0 mm	18.14 Kg.	21.67 Kg.	24.15 Kg.
3.	150 mm				
4.	250 mm				

A tolerance up to minus 15% in thickness and 20 mm. in length will be allowed. For fittings tolerance in lengths shall be plus 25 mm. and minus 10 mm.

The thickness of fittings and their socket and spigot dimensions shall conform to the thickness and dimensions specified for the corresponding sizes of straight pipes. The tolerance in weights and thickness shall be the same as for straight pipes.

M-68-A P.V.C. Pipes & Fittings:-

1. All soil, waste and vent pipes & fittings shall conform to I.S. 4985-1988 & I.S. 13592:1992. The pipes are provided with an integral rubber ring type socket at one end while the other end in kept plain, smooth & free from burrs. The pipes and fittings shall be true to shape, smooth & cylindrical. They shall be free from cracks, laps, pinholes or other imperfection and shall be nearly dressed and carefully fettled.

2. The P.V.C. Pipes shall be of the diameter as specified in the description and shall be in length of 6.0,3.0 & 1.8 m including socket ends of the pipe unless shorter length are either specified or required at junction etc. Tolerances on specified length shall be + 10 mm and- 0 mm.

3. Rubber real rings for joints and Access Doors shall be manufactured in accordance with IS: 5382-1998. There are made out or natural rubber with a shore 'A' hardness of 40+5.

4.1 The mean outside diameter, outside diameter at any point and wall thickness manufactured plain or with socket shall be as shown in the following table:-

* All dimensions in millimeters.

Sr. No.	Nominal/Outside dia	Mean outside Diameter		Outside diameter at		Wall thick.	
		Min.	Max.	Min.	Max.	Min.	Max
1.	75	70.0	75.3	74.1	75.9	3.2	3.8
2.	100.	110.00	100.4	108.6	111.4	3.2	3.8

4.2 Minimum Wall thickness of sockets on pipes & Dimensions of sliding socket of pipes shall be as shown in following table.

* All dimensions in millimeters.

Sr. No.	Nomina loutside diameter	Minimum wall thick of sockets on pipes.		Socket Depth min.	Mean insidediameter of socket at mil point	
		S2, Min	S3, Min		Min	Max
1.	75	2.9	2.4	40.00	75.1	75.3
2.	110	2.9	2.4	48.0	110.1	110.4

* The outside diameter of pipe shall be obtained by the method given in IS: 12235(Part-1)-1998, wall thicknessshall be measured by the method given in IS:12235(Part-2)1998.

4.3 The permissible variation between the mean outside diameter & the nominal outside diameter of a pipe shallbe positive in the form + x, where is less than or equal to greater of the following two values.

a) 0.03 mm, and

b) 0.003 x nominal outside diameter- rounded off to the next higher 0.1 mm.

4.4 The permissible variation between the outside diameter at any point (d1) & the nominal outside diameter(de)of a pipe shall not exceed the greater of the following two values.

a) 0.5mm, and

b) 0.012 de rounded off to the next higher 0.1

4.5 The thickness of fittings and their socket & spigot dimensions shall conform to the thickness and dimensionsspecified for the corresponding sizes of straight pipes.

M-69 NAHNI TRAP :

Nahni trap shall be of cast iron and shall be sound and free from porosity or other defects which affect serviceability. The thickness of the base metal shall not be less than 6.5 mm. The surface shall be smooth and free form crack, chips and other flaws or any other kind of defects which affect serviceability. The size of Nahni trap shall be as specified and shall be of self cleansing design.

The Nahni trap shall be of quality approved by the Engineer- in-charge and shall generally conform to the relevant Indian Standards.

The Nahni trap provided shall be with deep seal, minimum 50 mm. except at places where trap with deep seal cannot be accommodated. The cover shall be cast iron. Perforated cover shall be provided on the trap of appropriate size.

M-70 GULLY TRAP :

Gully trap shall conform to I.S. 651-1992. It shall be sound, free from defects such as fire cracks or hair cracks. The glaze of the traps shall be free from crazing. They shall give a sharp clear note when struck with light hammer. There shall be no broken blisters.

The size of the gully trap shall be as specified in the item.

Each gully trap shall have one C.I. grating of square size corresponding to the dimensions, of inlet of gully trap. It will also have a water tight C.I. cover with frame inside dimensions 300mm. x 300mm. the cover weighing not less than 4,53 Kg. and the frame not less than 2.72 Kg. The grating cover and frame shall be of sound and good casting and shall have truly square machined seating faces.

M-71 GLAZED STONE WARE PIPE AND FITTINGS :

The pipes and fittings shall be of best quality as approved by the Engineer-in-charge. The pipe shall be of best quality manufactured from stone-ware of fire clay, salt glazed thoroughly burnt through the whole thickness, of a close even texture, free from air blows, fire blisters, cracks and other imperfections, which affect the serviceability. The inner and outer surfaces shall be smooth and perfectly glazed. The pipe shall be capable to withstand pressure of 1.5 m. lead without showing signs of leakage. The thickness of the wall shall not be less than (1/12)th of the internal dia. The depth of socket shall not be less than 38 mm. The socket shall be sufficiently large to allow a joint of 6 mm. around the pipe. The pipes shall generally conform to relevant I.S. 651-1992.

M-72 WALL PEG SAIL :

72.1 The aluminum wall peg rail shall have three aluminum pegs of approved quality and size. It shall be fixed on teakwood plank of size 450 mm x 75 mm x 20 mm. The teak wood shall be French polished or oil painted as specified..

G.I. WATER SPOUT:

The G.I. pipes of 40 mm dia shall be of medium quality and specials shall be of `R' brand brand of best quality.

73.1 The pipe shall have length as required for the thickness of well in which it is fixed, and at the outside end tee and bend cut at half the length shall be provided and at either end coupling shall be provided and shall have better fixing. The water spout shall be provided as per detailed drawings or as directed.

M-73 ASBESTOS CEMENT PIPE (A.C. PIPE) :

74.1 The asbestos cement pipe of diameter as specified in the description of the item shall

conform to I.S. 1926-1980. Special like bends, shoes cowls, etc. shall conform to relevant Indian Standards. The interior of pipe shall have a smooth finish, regular, surface and regular internal diameter. The tolerance in all dimensions shall be as per I.S. 1926-Part-I-1980.

M-74 CRYDON BALL VALVE :

Ball valve of screwed type including polythene float and necessary lever etc. shall be of the size as mentioned in the description of item and shall conform to I.S. 1703-1989.

M-75 BITUMEN FELT FOR WATER PROOFING AND DAMP PROOFING :

76.1 Bitumen felt shall be on the fiber bases and shall be of type 2, self finished felt grade-2 and shall conform to I.S. 1322-1998.**SELECTED EARTH :**

77.1 The selected earth shall be that obtained from excavated material or shall have to be brought from outside as indicated in the item. If item does not indicate anything, the selected earth shall have to be broughtfrom outside.

77.2 The selected earth shall be good yellow soil and shall be got approved from the Engineer-in-charge. In no case black cotton soil or similar expansive and shrinkable soil shall be used. It shall be clean and free fromall rubbish and perishable materials, stones or brick bats. The clods shall be broken to a size of 50 mm. or less. Contractor shall make his own arrangements at his own costs for land for borrowing selected earth. The stacking of materials shall be done as directed by the Engineer-in-charge in such a way as not to interfere with any constructional activities and in proper stacks.

77.3 When excavated material is to be used, only selected stuff got approved from the Engineer-in-charge shall be used. It shall be stacked separately and shall comply with all the requirements of selected earth mentioned above.

M-76 CRACKSEAL :

Crack seal manufactured by chemistich/Chemisol Indian Ltd., is an acrylic base ready application compound.

M-77 CAST IRON STEPS :

The cast iron steps shall be clean, well-cast and they shall be free from air and sand holes, cold shuts and warping which are likely to impair the utility of the castings. The portion of the step which projects from wallsof the manhole shall have a raised required designed above the general plane of the top surface of the step along the edges of the tread to provide adequate non-slip grip. The steps shall be of dimensions 375 mm x 150 mm x 25 mm with necessary holding arrangement and carting minimum weight of 4.5 Kg. confirming to I.S. 5455-1992 or its latest version.

The cast iron steps shall be coated with a material having tar base or a place bituminous composition of cashew-nut shall liquid. The coating shall be smooth and tenacious. It shall not flow when exposed to a temperature of 63 degree C and shall not be brittle as to chip off at temperature of 0 degree C.

SIGNATURE OF THE CONTRACTOR.

FURNITURE WORK: GENERAL SPECIFICATIONS

This specification is for the work to be executed items to be supplied and materials to be used in the works as shown and defined on the drawings and described here in all under the supervision and to the satisfaction of the Architect/ Bank.
The workmanship is to be the best available to a high standard. Use must of specialist tradesmen in all aspects of the works, and allowance must be in the rates for doing so.
The materials and items to be provided by the contractor shall be the best of their respective kinds, approved by the Architect in accordance with any samples which may be submitted for approval and generally in accordance with the specification. Where materials or products are specified in this specification and/ or bill of quantities by the name of the manufacture or the brand trade name or catalogue references the contractor will require to obtain the approval of the Architect/ Bank before using a material or product other than the specified. The contractor shall produce all invoices, vouchers or receipted accounts for any materials of called upon to do so by the Architect.

Sample of all material are to be submitted to the Architect for his approval before the contractor orders or delivers in bulk to the site. Also, the contractor will be required to submit finishes to colors, fabrics etc. for the approval of the Architect before proceeding with the works. Should it be necessary to prepare shop drawings, then four copies of such drawings shall be submitted for the approval Architect who will retain to copies, all at the contractor's expenses.

1. MATERIALS

The materials shall be of the best approval quality obtainable and shall comply with the respective Indian Standard Specification.
If directed, materials shall be tested in any approved Testing Laboratory and the test certificates in original shall be submitted to the Architect and the entire charges for repeated testes, if ordered shall be borne by the Constructor.
It shall be obligatory for the contractor to furnish certificate, it demanded by the Architect from manufacturer of the material supplier that the work been carried out by using their material and as per their recommendations.
All materials supplied by the Bank/ any other specialist firm shall be properly stores and the Contractor shall be responsible for its safe custody until they are required on the works and till the completion of work.
Unless otherwise shown on the Drawings or mentioned in the "Schedule of Quantities" or Special specifications, the quality of materials, workmanship, dimensions etc., shall be as specified herein under.
The contractor without any extra cost for carrying out field-test on materials shall provide all equipment's and facilities.

2. GLASS:

All glass shall be float glass of the best quality, free from specks, bubbles, smokes, veins, air holes, blisters and other defects. The kind of glass to be used shall be as mentioned in the item or specification or in the special provisions or as shown in detailed drawings thickness of glass panel shall be uniform. All glass to be approved manufacture complying with IS: 3548-1966 or as per approved quality and sample.
The compound for glazing to metal is to be special non-hardening compound manufacture for the purpose and of 9 brands and quality approved the Interior Designer.

In cutting glass, proper allowance shall be made for expansion. Each square of glazing to be in one whole sheet and after cutting the edges to be properly filled.
On completion, clean all glass inside and out, replace all cracked scratched or broken panes and leave in good condition to the satisfaction of the Architect.
The contractor shall furnish all labor, materials, and equipment's required for the installation of glass and glazing items. The glass shall be of the type, quality and substance specified in the bills of quantities.
In case of the glass being supplied by the owners, the contractor shall take the delivery of the glass at site and shall be responsible for proper handling and stacking. We shall insure glass against theft, fire, etc.
The contractor shall replace at his own expense all broken, damaged or disfigured glass caused in the execution of the work of faulty installation, before the virtual completion of the work. Patterned of translucent glass shall be 12 mm. In thickness and shall be approved by the Architects. The putty used for

glazing metal door, window or ventilator shall conform to I.S. 420:1953.
Before installation of the glass, the contractor shall ensure against the following
1. All glazing rebates shall be square, putty, true in plane, clear, dry and free of dust.
2. The frames shall be adjusted before glazing. The weight of the glass in side hung casement causes it to drop slightly on its hinges. Before glazing the shall be set in slightly high position in its frame.
3. Glass edges shall be clean and cut to the exact size, chipped or damaged edges shall be rejected.
4. Sashes shall be glazing in the closed position and shall not be open till the putty is set.

The glass shall be set in teak wood beading or metal glazing chips and so installed to achieve water lightness.
The platter glass shall be bedded on trips of leather or felt turned over the two sides of the glass to form packing between the glass and the metal coating. The ground glass shall be getting with smooth surface outside.
Glazing large panes of glass, or when heavy wind pressure is experienced, glazing bead may be used instead of front putty. In this case putty shall be applied to the face of the bead, which is in contact with glass. Putty would also be necessary, at the back.
Beads shall be of timber, rustproof steel or aluminum and shall have mitered corners. The position and size of the bead may depend on the thickness of glass used. The beads shall be fixed with screws 0" apart.
On completion of the job, all glass shall be thoroughly cleaned. All paint or other marks to be removed.

3. FASTENINGS AND HARDWARE:

3.1. The fixtures and fastenings, that is, but hinges, tined strap hinges, shading door bolts, door bolts, tower bolts, door latch, bath room latch, handles, door stoppers, casement window fasteners, casement stays and ventilators catch shall be mage of the metal as specified in the item or its specification.
3.2. They shall be of iron, brass, aluminum, chromium plated iron, chromium plated brass, copper oxidized iron copper oxidized brass or anodized aluminum as specified.
3.3. The fixtures shall be heavy type. The fixtures and fastenings shall be smooth finished and shall be such as will ensure ease of operation.
3.4. The samples of fixtures and fastenings shall be got approved as regards quality and shape before providing them in position.
3.5. Brass fittings should be proper polish finished.
3.6. Screws, nails, bolts, will be of brass or non-corrosive metal. In hardware, they will match with the hardware items.
3.7. Nails, in a finished surface shall be nearly punched and the holes filled with wood filler matching the finish. Screws, in a finished surface will be round head. Rose head or sunk beneath the surfaces and the hole plugged with a wood plug with matching colour and grain of the wood surface, unless especially detailed.

4. HARDWARE

Hinges, locks, latches, door tracks etc. shall be as specified and as well as possible, by the manufacturer specified. In any variation of this quality of the substitute shall be equal to or better than the original specified, and the samples shall be submitted to the Architect for prior approval.

HARDWARE AND METALS

The hardware throughout shall be of approved brand and supply well-made equal in every respect to the samples deposited with the Architect. The contractor may be required to produce and provide samples many different sources before the Architect is able to make the decision and he should allow in his rates for doing so.
Fittings generally are to match the finish of the article to be fixed and to be rounded or flat headed or counter sunk as required.
Screws are to match the finish of the article to be fixed and to be rounded or flat headed or counter sunk as required.
Cover up and protect at the brass or powder coated surfaces with a thick grease or other suitable material, renew as necessary and subsequently clean off and clear away on completion.
All steel, brass, bronze, aluminum and stainless-steel articles shall be submitted to a reasonable test for strength, if so, required by the Architect at the contractor expenses.

DOOR CLOSERS

The overhead door closer shall be of EFFICIENT GADGET make of E.G. As approved by the Architect. The overhead door closer shall be of color as approved by the Architect. Fixing of the overhead door closer shall be done by and experienced worker preferable from The Branch Manager supplier of the item.
After successful installation of the overhead door closer the same shall be checked for speed door closing. The contractor shall make necessary adjusted operating mechanism as per manufacturer's guidelines to arrive at most suitable operating speed. The selected operating speed should remain constant on all repeated operations. If an overhead door closer is found to lose its adjusted operating speed often during warranty period then the shall have to be replaced with a new piece without charging any extra.
In case of a steel frame door the overhead door closer shall to be mounted on a special plate supplied by the manufacturer. No extra payment shall be due for such mounting plate.
The rate shall include all materials, labor, required civil work etc. complete and shall be paid per no. of overhead door closer/s installed.

5. TIMBER:

Timber generally is to be the best of its kind, well and properly seasoned, of mature growth, free from worm holes large loose or dead knots or other defects and sawn die square and will not supper warping, splitting or other defects through improper handling.
The hardwood is to be C.P. teak weighting not less than 45 lbs. per cubic foot with moisture content not exceeding 12% to 14%. The moisture content of timber shall be determined according to method described in paragraph 4 of IS:287 for "Maximum permissible moisture content of Timber used for different purpose in different zones".
In measuring cross-sectional dimensions of the frame pieces tolerance up to 1.5 mm shall be allowed for each planned surface.
Superior Quality Indian Teak Wood:
Superior quality Indian teak wood means Dandeli, Balarshah and Malabar Burma teak. It shall be of good quality and well-seasoned. It shall have uniform colour, reasonably straight grains and shall be free from large, loose dead knots, cracks, shakes, warp, twists, bends, borer, holes sal wood or defects of any kind. No individual hard and sound know shall be more than 1 cm. In diameter and aggregate area of all knots shall not exceed ½% of the area of the piece. It shall be close gained and there shall not be less than 6 growth rings per 2.5 cm width.
First Class Indian Teak Wood:
First class Indian teak means C.P. and Bulsar teak of good quality and well-seasoned. It shall have uniform color reasonably straight grains and shall be free from large, loose, dead knots, cracks, shakes, warp, sound knot shall be more than 2.5 cm. In diameter and aggregated area of all knots shall not exceed 1% of the area of the piece. There shall not be less than 4 growth rings per 2.5 cm width.
Second Class Indian teak Wood:
Second class Indian teak wood shall be similar to first class Indian teak wood except knot up to 4 cm diameter and aggregate area of all knots up to 11/2% of area of the piece shall be allowed. There shall not be less than 4 growth rings per 2.5 cm width.

5.1 Timber is to be cut to the required sizes and lengths as soon as practicable after the works are begun and stored under cover so that the air will circulate freely around it. Joinery is to be prepared, immediately after the placing of the contract, framed up (but not bonded) and stored until required for fixing in position, when it is to be bonded and wedged up. Any portions that warp or develop shakes or other defects are to be replaced before wedging up. The whole of the work is to be framed and finished in a proper and workman like manner, in accordance with the detailed drawings, and fitted with all necessary motets straps, belts screws etc. Running bonded joints are to be cross-tongued with teak tongues and where over 1-1/2% thick double cross tongued. Joiner's work generally is to be finished with fine class papered surfaces unless otherwise specified.
Templates boxes and molds shall be accurately set out and rigidly constructed so as to remain accurate during the time they are in use.
Grounds are to be clean shown, free from large knots, splayed as required, plugged and fixed to walls etc. at 1'6" centers.
Wood plugs are to be put cut on twist. Patent wall plugs or plastic filling may be used in lieu of wood plugs with the approval of the Architect.

All unexposed surfaces of timber e.g. false ceilings, backings fillets back of doors frames backs of doors frames, cupboard framing, grounds etc. are to be treated with two coats of approved timber preservative like solignim, kirticite, termiseal or Castrol or vacuum pressure impregnated with and approved water-soluble timber preservative before fixing or bedding.

Carpentry and Joinery:

The carpenter and joiner shall include the finishing of all labor, materials, equipment, and appliances required to complete the work including the installation of hardware as per the drawing.

The timber shall be of the quality as described on the drawings or in the bills of quantities, shall be seasoned and uniform in texture, free from fungal growths, knots, wanes, open shake borer holes, rot decay, discoloration, soft or spongy spots, holes, rot, decay, discoloration, soft or spongy spots, hollow pockets, patch or box heart and all other defects.

Skilled workmen, using proper tools, shall carry out all the carpenter's work. All joints shall be securely nailed without splitting the wood. Wherever it is necessary the members shall be lapped of joining by G.I Stapes or extra wood blocks. All joints and nailing shall be done in neatness, and shall be approved by the Architects. All assembly be exactly at right angles.

Finish woodwork and joinery including doors shall be surfaced with straight without any warp of bow and shall have smooth. Well-planned faces at right angles to each other. The frame members shall be placed on the three sides exposed at right angles to each other.

All joinery work shall be securely mortised and tongued with synthetic resin conforming to I.S.851-1957. Heads, posts, transoms, millions of door and window frames shall be made out of single pieces of timber only. The heads and posts shall be thought – tenoned into the mortises not less than ½". Solid wood panels of not less than 5" and not more than 8" in width shall be used and jointed together with tongue groove joint.

All interior wood finish doors, cabinet work shall be smoothly treated and sanded after erection, until all the defects are entirely removed. Assembled door frame without sills shall be fitted with temporary stretchers. All exposed wood and plywood shall be straight-grained method grain and color and shall be approved by the Architects. Interior wood finished doors cabinets and other fixed wooden equipment's shall be properly installed, level plumb and true. But joints shall be avoided wherever possible, if unavoidable the joint shall be leveled. All exterior angles shall be mitered. Adjoining interior wood shall match and harmonies. All woodwork in contact with masonry shall be painted with bitumen paint or red oxide paint.

5.2JOINTS:

All joints will be standard, mortised and tenon, dovetail, dowel, cross-halved, metered, tongued and grooved and rebated. Nailed or glued but joints, will not be permitted exceptional cases, ailed but joints will not be accepted. All joints shall be smeared with white lead.

Whenever solid wood is specified it shall be as per I.S.I and of good quality. The type of wood shall be got approved before collecting the same on site. Fabrication of wooden members shall be started only after approval. It shall be free from large, loose, dead of cluster knots, flows, shakes, warps, bends or any other defect. It shall be uniform in substance and of straight fibers as far as possible. It shall be free from rats, decay, harmful fungi and other dejects of nature which will affect the strength, durability of it usefulness for the purpose for which it is required. The color of wood shall be uniform as far as possible. The scantlings plank etc. shall be seen in straight lines and planes in the direction of grain and of uniform thickness.

5.3FIRST CLASS TEAK WOOD:

First class teak wood shall no individual hard and sound knots, more the 6 sq. cm. In size and the aggregate area of such knots shall not more than 1% of area of piece. The timber shall be closed grained.

5.4SECOND CLASS TEAK WOOD:

No individual hard and knots shall be more than 15 sq. cm in size and aggregate area of such knot's shall not exceed 2% of the area of piece.

6. PAINTING

General: Wherever scaffolding is necessary, it shall be double scaffolding.

The surface shall be thoroughly brushed free from mortar droppings, and foreign matter. All steel work shall be cleaned of loose rust, mill scales, etc. so as to expose the original surface. All broken edges, cracks, loose-

plaster and wavy surface be brought up either by patch plasterwork or by plaster of Paris.

All materials viz. Dry distemper, oil bound distemper, oil paint, flat oil paint, synthetic enamel paint, plastic emulsion paint, cement primer, red lead and other primers and metallic paints shall conform to respective I.S. specifications and shall be obtained from approved manufacturers.

7. Painting- Flat / Plastic Emulsion etc.:

Ready mixed flat oil paint, plastic emulsion paint, ready mixed synthetic enamel paint, aluminum paint, etc. shall be brought in original containers and in sealed tins, if for any reason thinner is necessary, the brand and quality of thinner recommended by the manufacturer or as instructed by the Architect shall be used. The surface shall be prepared as specified above and a coat of approved primer shall be applied. After 24 hours drying, approved or specified quality paint shall be applied evenly and smoothly. Filler putty coating may be given to give to give a smooth finish. Each coat shall be allowed to dry out thoroughly and then lightly rubbed down with sand paper and cleaned of dust before the next coat is applied. Number of coats shall be as specified in the item and if the finish of the surface is not uniform, additional coats as required shall be applied to get good and uniform finish at no extra cost. After completion no hair marks from the brush or clogging of paint puddles in the corners of panels, angles or moldings etc. shall be cleaned of stains.

Pigmented priming coat (emulsion thinned with water) followed by three or more finishing coats of plastic emulsion paint. Pasted filler to be applied every coat exempting the final finishing coat and sanded.

When the final coat is applied, if directed the surface shall be rolled with a roller or if directed, it shall be stippled with a stippling brush.

8. ENAMEL PAINTS

Oil paints shall be of first quality and of the specified color and shade, and as approved. The ready mixed paints shall be only used. However, if ready mixed paint of specified shade or tint is not available while ready mixed paint with approved strainers will be allowed. In such a case, the contractor shall ensure that the shade of the paint so allowed shall be uniform.

All the paints shall meet with the following general requirements:

i. Paint shall not show excessive setting in a freshly opened and shall not easily redisposed with a paddle with smooth homogeneous stage.

ii. Paint as revived shall brush easily, possess good leveling properties and show no running or sagging tendencies.

iii. The paint shall not skin within 48 hours in three quarters filled closed container.

iv. The paint shall dry to a smooth uniform finish free from roughness, grit, unevenness and other imperfections.

Ready mixed paints shall be used exactly as received from the manufacturers and generally according to their instruction and without any admixtures what so ever.

9. POLISHING VARNISHING

a. French Polishing:

French spirit polish shall be approved make conforming to I.S.:348. If it has to be prepared on site, dissolving 0.7 Kg shall make the polish. Of best shellac in 4.5 liters of methyl spirit without heating. To obtain required shade pigment may be added and mixed.

Surface shall be cleaned. All unevenness shall be rubbed down smooth with sand paper and well dusted. Knots, if visible, shall be covered with a preparation of red lead and glue. Resinous or loose knots and gaps shall be filled with seasoned timber pieces and made level with rest of the surface. Holes on surface shall be filled with putty made of whiting and linseed oil. Surface shall be given a coat of filler made of 2.25Kg. Of whiting in 1.5 liter of methyl spirit. When it dries, surface shall again be rubbed down perfectly smooth with sand paper and wiped clean. Piece of clean fine cotton cloth and cotton wool into shape of pad shall be used to apply polish. The pad shall be moistened with polish and rubbed hard on the surface applying the polish sparingly but uniformly and completely over the entire surface. It shall be allowed to dry and another coat applied in the same way. To give furnishing coat the pad shall be covered with a fresh piece of clean fine cotton cloth, slightly damped with methyl Spirit and rubbed lightly and quickly with a circular motion, till the finished surface attains uniform texture and high glass.

b. Wax Polishing:

Wax polish shall either be prepared on site or obtained ready made from market. Polish made on the state shall be prepared from a mixture of purr bees wax, linseed oil, turpentine oil and varnish in the ration or 2:1 ½:1: ½ by weight.

The bee wax and the boiled linseed oil shall be heated over a slow fire. When the wax is completely dissolved the mixture shall be cooled till it is just warm, and turpentine oil and varnish added to it in the required proportions and the entire mixture is well stirred.

Surface shall be prepared as described under "French Polishing" except that the final rubbing shall be done with sand paper, which has been slightly moistened with linseed oil.

Mixture or polish shall be applied evenly, with a clean cloth pad in such a way that no blank patches are left, and rubbed continuously for half an hour. When the surface is quite dry a second coat shall be applied in the same manner and rubbed continuously for an hour or until the surface is dry. Final coat shall then be applied and rubbed for two hours or more if necessary, until the surface has assumed a uniform and is quite dry showing no sign of stickiness when touched. Glass rubbing must be continuous and with uniform pressure and frequent change is direction.

c. Varnishing:

Surface shall be prepared as described above. After preparation of surface, two coats of clean boiled linseed oil shall be applied at sufficient interval of time. After the linseed oil has dried two coats of varnish obtained from approved manufacture shall be applied at sufficient interval of time. If the surface fails to produce the required glass an additional coat shall be applied without any extra cost.

10. MELAMINE FACED PARTICLE BOARD:

It should be three-layered wood-based particleboard, such as Nova pan melamine paced pre- laminated on both sides. Particleboard should be ISI 3087 FPTH (type II, 1965) marked on edges and should impart good confirm to German Din standard Viz DIN 66761. It should impart good bending strength and screw holding strength. Melamine faced surface should has resistant to crack at 100 c and should pass cigarette burn test.

11. PLYWOOD

Plywood for general purpose shall confirm I.S. 303-1975. It shall be formed with 0.8 mm. Th. Commercial face veneers and 1.5 mm. Th. Intermediate veneers in two opposite grain direction shall be 1:1. The moisture content shall not be more than 12.5% by mass. It shall either be or Green ply, V.I. ply make or other equivalent approved make. Where B.W.P. grade is specified it should be boiling waterproof confirming to I.S. standards.

12. LAMINATES:

All the laminate to be used shall be of 1.5 mm (or where specified) thickness in approved the color and shade as proved and specified by the Architect. It shall be matt finish manufactured by Greenlam, Home mica. Or its equivalent as per sample shown by the consultant unless otherwise specified. It shall satisfy all the I.S. standards for melamine coated laminated fiberboards before the use of such fiberboard laminated. The contractor shall have to take approval of the department of each sheet of the laminates.

LIST OF APPROVED MAKES FOR CIVIL, CARPENTRY & ELECTRICAL WORKS		
MAKE / SPECIFICATION DETAIL		
Sr. No.	**LIST OF NOMINATED MATERIALS& SUPPLIERS**	**SUGGESTED MAKE LIST**
1	**INTERIOR WORK**	
	Commercial Plywood	NUWUD / Century / Asain / Archid / GREENPLY / Samrat
	Laminated sheet	Archidlam National / Formica/ Greenlam / Samrat
	Veneer	Green / Duro / Century / Timex / Anchor
	Particle board (only for modular w/s & storage Unit)	Archidply /Greenlam/Century ISI make
	Acrylic sheet	ICI, GE ISI make
	Marine grade plywood	Century, Kitply, Greenply, Anchor, Orchid, Prince
	Adhesive	Fevicol / Araldite/Anchor
	Solid Surfaces (Curion)	DUPOINT/HI-MAC/ STARON
	Marine grade Block Board	Century, Kitply, Greenply, Anchor, Orchid
	Flush Door	Century, Kitply, Greenply, Anchor, Orchid
	Polish	Asain / Dulex
	Latex	MM Foam ISI make
	High density foam	U Foam ISI make
	Locks	Godrej / Haffle / Hettich / Ebco
	Storage Hardware	Godrej / Haffle / Hettich / Ebco
	Screws / Nails & other accessories	GKW / Nettleford
	False Flooring	Kebao , Armstrong , AMF
	Vinyl Flooring	Armstrong ,gerflor, Eurotex ,
	Carpet	Unitex, Armstrong,
	Wooden laminated flooring	Pergo / Armstrong / Euro / Squarefeet
	Locks	Godrej / Haffle / Hettich / Ebco
	Storage Hardware	Godrej / Haffle / Hettich / Ebco
	Screws / Nails & other accessories	GKW / Nettleford
	Plain/Toughened glass	Saint- Gobain, Indo Asahi , Modi
	Hardware for general staff areas	Dorma / Euro/ Ozone / Enox / Ebco /Hamco
	Hardware for main Glass doors (patch fittings)	Dorma / Euro/ Ozone / Enox / Ebco /Hamco
	Door Closers (general use)	Dorma / Euro/ Ozone / Enox / Ebco /Hamco
	Floor springs (general use)	Dorma / Euro/ Ozone / Enox / Ebco /Hamco
	Floor springs for main glass doors	Dorma / Euro/ Ozone / Enox / Ebco /Hamco
	Aluminium Sections for Paritions	Jindal / Tata steel
	False Ceilings: Gypsum	India Gypsum / Saint Gobin / Asia
	False Ceilings: Grid (As Approved)	Armstrong / AMF
	False Ceilings: Grid (Metal Ceiling)	Unimech / AMF / Armstrong /

	GI Sections	India Gypsum / Saint Gobin / Jindal
	Acoustical False Ceilings: Mineral fiber board	Armstrong, Hunter Douglas / Peritex
.	POP Punning	Gyprock / India Gypsum / Birla
	Paint	Asian / Nerolac / Dulex / Berger
	Exterior Paint	Asian / Nerolac / Dulex / Berger
	ACP (Exterior / Interior)	Alstone / Eurobond /Alucobond
	silicon	G E / Dow corning / Wacer
	Rolling / Vertical Blind	Vista / Peritex / Winfab / MAC
	Frosted Film	Garware
2	**Plumbing**	
	CP Fitting	Jaquar /Hindware
	Sanitary Ware	Hindware / Cera / Parryware
	Sanitary Fittings	Jaquar /Hindware
	Geyser	Bajaj / Sphere Hot / Crompton /Racold / V Guard /Havells
	Stainless Steel sink	Nirali / Diamond
	C.I. Pipe	Bengal Iron Corporation ISI make
	Urinal Partition Glass	Merino / Saint Gobain/ Modi / Asai
	GI Pipe	Tata/ Jindal / Zenith
	CP Fitting	Prince /Astral
	PVC & CPVC Pipe	Prince /Astral
3	**Civil Work**	
	Ceramic Tiles/vitrified homogeneous glazed tiles.	HR Johnson, Kajaria, Nitco,ASL
	Cement	Ultratech , ACC , JK Cement , Ambuja
	Chemical Pasting (Tiles)	Pidilite , Fosroc , Eurokart
	Steel	Sail ,Tisscon , Ispat , Tata

Note:

[a] Where other Material are proposed to be used these should be got approved from the Architect/Bank's Engineer before execution of particular item. In case of Non- Availability of any material of specified make, the Alternative equivalent make should be used only after it is approved in writing by the Employer or the Architect. The Material shall be used in preferential Order only.

[b] Before starting of work, contractor must get all samples/make approved from Architect/Bank's authorities before using at site.

[c] Consultants/Bank's authorities reserve the right to add or delete name of any manufacturers and when required.

[d] Consultants/Bank's authorities reserve rights to select any of the specified brands mentioned above.

LIST OF INDIAN STANDARDS REFEREED TO

1. I.S. NO. 1200 – Latest measurement of building and civil engineer work.
2. I.S. NO. 287 – 1973 recommendation for maximum permissible moisture content of timber used for different purpose in different climatic zones
3. I.S.NO. 1141 – 1973 code of practice for seasoning of timbers.
4. I.S.NO. 6534 – 1971 guiding principles for grading and inspection of timber.
5. I.S.NO. 1200 (part XXI) 1973.
6. I.S.NO. 3845 – 1966 code of practice for joints used in wooden furniture.
7. I.S.NO. 4450 – 1967 wooden flush doors. Type to method of test for.
8. I.S.NO. 4970 – 1973 key for identification of commercial timber.
9. I.S.NO. 3364 (part II) – 1975 methods of measurements and evaluations of defects in timber, part II converted timber.
10. I.S.NO. 1708 – 1969 methods of testing shall clear specimens of timber.
11. I.S.NO 6342 – 1971 Rose wood logs for production of sliced veneers.
12. I.S.NO 5248 – 1969Teakloges for production of sliced veneers.
13. I.S.NO. 2202 (part I) 1973. Specification for wooden flush door shutters (solid core type cat I plywood).
14. I.S.NO. 2338 (part 1) 1967 code pf practice for finishing of wood-based materials part 1 operations and workmanship.
15. I.S. No. 7360 – 1975 Methods of sampling of plywood.
16. I.S.NO. 303 – 1975 Specification for plywood for general purposes.]
17. I.S.NO. 3129 – 1965 Specification for article board for insulation purposes.
18. I.S.NO. 3513 – 1966 (part – III & part iV) High and medium density wood-based laminates part III general purposes. Part IV sampling test.
19. I.S. NO. 1659 – 1979 Block boards.
20. I.S.NO. 7916 – 1974 Decorative plywood using plurality or veneers for decorative faces.
21. I.S NO. 3478 – 1966 Height density wood particle boards.
22. I.S. NO. 1734 (part 1 to XX) Plywood method of test for
    Part I -General
    Part II -Plywood
    Part III -Battens
23. I.S.NO. 1328 – 1970 veneer decorative plywood.
24. I.S. NO 710 Marine ply.
25. I.S.NO 3087 – 1965 Wood particle boards (medium density)
26. I.S. NO. 3087 – 1965 Specification for synthetic rising adhesives for plywood (phonolic & Amino plastic)
27. I.S.NO. 2046 – 1969 Specification for decorative laminate.
28. I.S. NO. 8273 – 1976 Fibrous gypsum plaster boards.
29. I.S. No. 2095 – 1964 Gypsum plaster boards.
30. I.S.NO. 2542 (part 1) – 1978 Gypsum plaster concrete products, methods of test for part 1 – plaster and concrete.
31. I.S NO. 8272 – 1976 Gypsum plaster for use in the manufacture of fibers plaster boards.
32. I.S.NO. 2441 – 1963 Fixing coiling covering code of practice for.
33. I.S.NO. 2835 – 1977 Specification for flat transparent sheet glass.
34. I.S NO. 2395 (part 1) – 1966, 2395 (part 11) – 1967 painting to concrete masonry, plaster surface code of practice for part –1 operation and workmanship part II schedule.
35. I.S.NO. 3548 – 1966 Glazing in building code of practice.
36. I.S.NO 6279 – 1965 Specification for ready mixed paint brushing, matt or egg-shell flat finishing, interior.
37. I.S.NO. 137 – 1965 Specification for ready mixed paint brushing, matt or egg-shell flat finishing, interior to Indian standard colors as required.

38. I.S.NO. 133- 1975 Specification for ready mixed paint brushing, wooden coating, interior it Indian standard colors.
39. I.S. NO 129 – 1950 Specification for enamel interior (a) under coating (b) finishing.
40. I.S.NO. 120- 1950 Specification for ready mixed paint brushing, finishing interior oil glass, for general purposes to Indian standard colors.
41. I.SNO. 533-1973 Specification for gum spirit of turpentine (oil of turpentine.)
42. I.S.NO. 101 – 1964 Methods of test for ready mixed paints and enamel.
43. I.S.NO. 75-1973 Specification for linseed oil, and refined.
44. I.S.NO. 77 – 1973 Specification for linseed oil, and refined.
45. I.S.NO. 124 (part1) – 1976 Specification for ready mixed paint brushing finishing semi- gloss for general purpose.
46. I.S.NO. 5884 – Specification for woolen carpets.
47. I.S.NO. 104- 1979 Specification for ready mixed paint Brushing finishing, zinc chrome primer.
48. I.S. NO 5391 – 1969 Adjustable metal chairs for use of typist and operators in telephone exchanges.
49. I.S.NO. 8756 – 1978 Ball catches for use in wooden almirahs.
50. I.S.NO 3499 – 1976 (part 11) chairs for office purposes metal revolving and tilting.
51. I.S.NO. 5416-1969 General purposes wooden chairs methods of test for.
52. I.S NO. 6185 – 1971 High chairs specification and safety requirements for.
53. I.S.NO> 4116 – 1976 Joints used in wooden furniture code of practice for.
54. I.S.NO 3485 – 1966 Joints used in wooden furniture code of practice for.
55. I.S.NO. 7070- 1973 Shelving racks wooden (adjustable and non-adjustable) type.
56. I.S.NO 4414-1977 table tops (wooden)
57. I.S.NO. 5967-1969 Tables, wooden method of test for.
58. I.S.NO. 3564 –1975 Door closures (hydraulically regulated).
59. I.SNO. 3564 – 1979 Drawer locks, cupboards and box locks.
60. I.S.NO. 7981 – (part1) – 1975 Glossary of terms relating to builder's hardware – part 1 locks.
61. I.S.NO. 204- (part 1 & 11) 1978 Tower bolts ferrous metals and non-ferrous metals.

Note: The various items to be used in the interior decoration work shall be of ISI standards. Whenever the items/ products do not have ISI marks standard, shall be got tested from Laboratory for its quality etc. necessary testing charges shall be borne by the contractor.

SPECIFICATIONS FOR ELECTRICAL WORKS

General:

The scope of work covers execution and completion of the electrical installation work in accordance with drawings & specifications.

Rules & Regulations:

The installation shall be generally carried out in confirmatory with the requirements of Indian Electricity Act 1910 (as amended up to date) and the latest Indian Electricity Rules and supplementary Regulations of the State Electricity Departments and Electricity Undertakings and where the installation is subject to inspection and approval of Fire Insurance and Explosives Authorities, such installation shall be planned and executed to conform to their special Rules.

1.0 Point Wiring:

1.1 Supply:

The following material shall be included in a point wiring and accessories.

a) Conduit - PVC rigid 2.0mm thick conduit and accessories.

b) Wires - PVC insulated copper conductor multi-stranded flexible type wires ISI mark of 1.0, 1.5, 2.5, 4.0, 6.0, 10, 16sq.mm

c) Switches - 5 Amp single pole, two-way switch, 5-amp socket, 15 Amp switch and socket, fan Regulators with flush metal boxes wherever concealed and front plates and boxes of company make for surface mounting all of approved make.

d) Cover plates for outlet boxes - 3 mm thick formica / Hylam sheet specially for electrical purposes.

e) Hardware's - screws and washers non rusting type brass type.

Switch Boards and outlet Boxes - Factory made boxes of approved make for flush mounting for switches and accessories and 16 SWG m.s. sheet with Gl boxes as outlet boxes with knock-outs for conduit entries and tapped holes for screws.

Holders - Pendant holders / angle holders / ceiling rose etc. of approved make white in color.

g) Industrial Sockets - Industrial type metal clad with metallic top.

1.2 Installation:

All conduit shall be concealed / surface mounted in / on walls, beam, column, slabs or concealed in false ceiling in all A/C areas etc. by necessary Charis or clamping with saddles, spacers of hot deep Gl. made. Charis shall be made in walls to conceal the conduits and then refilling of the Charis with cement mortar All switch boards and outlet boxes (placed for bracket wall points) shall be concealed / surface in/on walls and should be kept in line and level with help of spirit level. Fan boxes shall be provided with nut welded on top with threaded hook and check nut. Wire drawing should be done with the help of draw wire. The conduits shall be cleaned of all foreign materials before inserting the wires Drawing of wires should be done such that the insulation of wires is not damaged.

All works shall be done as per instruction and satisfaction of the Consultant.

For surface conducing wiring, the conduit fitting switch/ceiling fan regulator boxes etc. shall be installed surface exposed. Flexible conduits shall not be used earth continuity conductors. Separate earth wire shall be provided either inside or outside the flexible conduits which shall be connected by means of earth clips to the earth system at one end and to the equipment at the other end as per IS 3043-1987.

Size of wire shall be chosen to limit Voltage drop within 5 %. Area of conductor shall be 1.0, 1.5, 2.5, 4.00 and 10.0 sq. mm copper. Generally, not more than 8 to 10 points shall be wired in one circuit.

1.3 Testing:

After completion of wiring, installation of switches etc., testing shall be done for insulation resistance as specified in the tender

Notes: No Joints shall be allowed in any wires in the conduits, all wires shall only be joined oi connected at termination points. All circuits shall have individual neutrals and one neutral shall riot complete the whole wiring system.

Circuit's mains shall start from Distribution board to switch board or from Meter board to Distribution. The circuit's mains include supply and installation of two nos. of wires with earth wire for single phase mains and four nos. of wires with earth wire for three phase mains.

2.1 Supply:

a) Conduit - PVC rigid 2.0mm thick conduit and accessories.

b) Wires - PVC insulated copper conductor multi-stranded flexible type wires ISI mark of 1.0, 1.5, 2.5, 4.0, 6.0, 10, 16 sq.mm

2.2 Installation:

a) For conceal wiring system all conduits shall be laid in the slab before casting of slab and shall be concealed in walls by making charts in walls and refilling the same before the final plaster of wall is done. All the switch

boards and outlet boxes also shall be installed concealed in line and level.
b) For surface wiring system all conduits / PVC trunking shall be clamped with hot deep GI. saddles / spacers on wall, ceiling, beam, column etc. in line align with the help of spirit level. All the switch boards and outlet boxes shall be surface mounted type and to be installed in line and level.
c) Wires shall be drawn in conduit after cleaning of conduits and drawn with the help of draw wires. No damage to the insulation of wires should be done while drawing.

2.3 Testing:

After completion of wiring, installation of switches etc.. testing shall be done for insulation resistance as specified in the tender.

3.0 Distribution Boards:

3.1 Supply:

Distribution boards shall be of sheet metal with rated bus bars, factory made. They shall be for three-phase or single-phase distribution system as per the requirements or schedule of quantities.

3.2 Installation:

The distribution board shall be concealed in wall, flush mounted or surface mounted and should be in line and level. These shall be factory tested. Final MCBs on sub circuits shall be marked by permanent markers on the DB door

3.3 Test:

After installation of MCBs, it shall be tested.

4.0 M.C. B & ELMCB.

4.1 Supply:

MCB: These shall be SP.SPN.TP or TPN as specified in drawings Rating of 2A, 6A, l6A, 25A. 30A, 63A. 10KA fault level, as per IS-8828--S978; BS 3871-part l.
ELMCB: These shall be of SPN. TPN and specified in drawings of rated value. ELMCB - BS-4293 neutral advance feature at closing neutral will be first to contact at the time of opening neutral breaks last after allowing the phases to open first Since the ELCB is to be used as main switch, it shall have safe interrupting clearance as per IEC 408/IS 4064. The ELCB shall have terminals to terminate aluminum conductor up to 25 mm2. The ELMCB shall have sensitivity of 30 - 300 mA as per requirements

4.2 Installation:

All ELMCB and MCBs shall be installed in the DB on din rail provided in the DB, spares shall be blocked by blank plates.

4.3 Testing:

All ELMCB should be tested for overloading, short circuit, earth leakage tripping and MCBs should be tested for overloading and short circuit tripping

5.0 Material:

All materials, fittings and appliances used in the electrical installation shall be of the best quality of approved manufacturer and shall conform to the latest Indian Standard Specifications wherever these exist.

6.0 Workmanship:

Good workmanship and neat appearance are the prerequisites for compliance with the various sections of these specifications. The work shall be carried out under direct supervision of a person holding Certificate of Competency issued by the State Government and in accordance with the statutory rules and regulations in force. The relevant ISI code of practice shall be followed wherever applicable.

7.0 Drawing:

The set of all relevant electrical drawings, with specifications are furnished to the Contractor for his own use until the completion of the contract. However wherever required, detailed drawings shall be prepared and got approved.
On completion of the work, completion drawings shall be prepared and five copies of the same should be submitted to the Employer. The completion drawings shall indicate clearly the main switch board, the runs of various mains and sub-mains, position of points and their controls. All circuits shall be clearly indicated and numbered in the wiring diagrams and all points shall be given the same number as the circuit to which they are electrically connected.

8.0 Marking & Apparatus:

When a board is connected to voltage higher than 250 volts, all the terminals or leads of the apparatus mounted on it shall be marked in the following colors to indicate the different poles or phases to which the apparatus or its different terminals may have been connected.

Three Phases	--	Red, Blue & Yellow
Neutral	--	Black
Off wire	--	White or Grey

Earth wire -- Green

Where four wire three phase wiring is done, the neutral shall be in black color and the other three wire in another color. Where more than one switch, each such switch has shall be marked to indicate which section of the installation it controls. The main switch shall be marked as such and where there is more than one main switch is the building, each such switch shall be marked to indicate which section of the installation it controls.

All marking required under this clause shall be clear and permanent.

9.0 Materials:

All materials used in the construction of fittings shall be of such quality, design and construction that will provide adequate protection in normal use against mechanical and electrical failures and exposures to the risk of injury or electric shock and shall withstand the effects of exposure to atmosphere.

10.0 Ceiling Rose:

Ceiling rose and similar attachments - A ceiling rose or any other similar attachments shall not be used on a circuit, the voltage of which normally exceeds 250 Volts. Normally only one flexible cord shall be attached a ceiling rose. Specially designed ceiling roses shall be used for multiple pendants

11.0 Socket Outlets & Plugs:

A socket outlet shall not embody fuse terminals as an integral part of it. But the fuse may be embodied in plug in which case the plug shall be non-reversible and shall be so arranged and connected that the fuse is connected to an outer or phase conductor or the non-earthed conductor of the circuit. Every socket outlet shall be controlled by switch will be on the live side of the line. In an earthed system of supply, the outlet and plug shall be three pin type and the third terminal connected to earth.

Every lighting fitting shall be controlled by a switch and where control at more than point is necessary by as many as two ways and intermediate switches as there are control points. Lights, fans and socket outlets shall be so located as to provide maximum comfort to the occupant and to enable him to utilise the electricity in the most economical manner.

Where conductors are required to be drawn through tube or channel leading to the fittings, the tube or channel must be free from sharp angles or protecting edges and of such size as will enable them to be wired with the conductors used for the final sub-circuit without removing the braiding or taping. As far as possible all tubes or channels should be of sufficient size to permit looping back.

c) Where a light fitting is supported by one or more flexible cords, the maximum weight to which the twin flexible cords can be subjected shall be as follows:

SIZE OF TWIN FLEXIBLE CORDS

Nominal cross sectional		No. & diameter area of in wires		Maximum permissible weight	
Sq.Inch	Sq.m.	Sq.Inch	Sq.m.	Sq.Inch	Sq.m.
0.006	0.5	14/0.0076	14/0.193	1.4	3
0.0010	-	23/0.0076	23/0.93	2.3	5
0.0017	1.5	40/0.0076	40/0.193	4.3	10

Where a weight is greater than 4.5 Kgs. (10 Lbs) then it has to be supported, two or three twin flexible cords shall be used so that the maximum weight to which any cord is subjected does not exceed the above values, or Alternatively other support viz. suitable metal pipe or suitable support shall be provided.

No inflammable shade shall form a part of a light fitting unless such shade is well protected against all risks of fire. Celluloid shade or light fitting shall not be used under any circumstances.

Enclosed type fittings shall be provided with a removable glass receptacle, arranged to enclose the lamp completely and of such size or construction as to prevent undue heating of the lamp or if the position of fitting be such that the glass receptacle is liable to mechanical damage the glass shall be protected by a suitable wire guard.

12.0 Fittings Wire:

The use of fitting wire shall be restricted to the internal wiring of the lighting fittings. Where fittings wire is used for wiring fittings, the sub-circuit leads shall terminate in a ceiling rose or connector from which they shall be carried into the fittings.

13.0 Lamp Holders:

Lamp holders for use on brackets and the like shall have not less than 1.3 cm (1/2") nipple and all those for use with flexible pendant shall be provided with cord grips. All lamp holders shall be provided with shade

carriers. Where center contact Edison screw lamp holders are used, the outer or screw contact shall be connected to the ' middle wire ' or the neutral or to the earthed conductor of the circuit.

14.0 Lamps:

All incandescent lamps, unless otherwise required, shall be hung at height of 2.5m (8 ft.), above the floor level They shall be provided with caps of the following patterns:

Up to and including 200 watt.	-	Standard Bayonet (B)
Above 200 watts and not exceeding 300 watts	-	Edison Screw (E.S.)
Above 300 watts	-	Golliath Screw (GS)

15.0 Fans, Regulators and Clamps:

Ceiling Fans: Ceiling fans including their suspension shall conform to IS : 374-1951 and to the following requirements :

All ceiling fans shall be wired to ceiling roses or to special connector boxes and suspended from hooks or shackles with insulators between hooks and suspension rods. There shall be no joint in the suspension rod but if joints are unavoidable then such joints (2") minimum length and both ends of the pipes shall touch together within couplers and shall in addition to, be secured by means of split pins; alternatively, the two pipes may be welded.

Canopies on top of suspension rod shall effectively hide the suspension.

The leadings-in-wire shall be of nominal cross section area not less than 0.002 sq.inch (3.00.029") and shall be protected from abrasion.

ii) Exhaust fans shall be erected at the places indicated by the Architects. For fixing an exhaust fan, a circular hole shall be provided in the wall to suit the size of the frame, which shall be fixed by means of rag bolt embedded in the wall. The exhaust fan shall be aired as near to the hole as possible by means of a flexible cord, care being taken that the blades rotates in the proper direction.

TESTING OF INSTALLATION

16.0 Insulation Resistance:

The insulation resistance shall be measured by applying between earth and the whole system of conductors or any section thereof with all fuses in place and all switches closed and except in earthed concentric wiring all lamps in position or both poles of the installation otherwise electrically connected together, a direct current pressure of not less than twice the working pressure provided that it need not exceed 500 volts for medium voltage circuits. Where the supply is derived from the three wire (AC or DC) or a poly phase system, the neutral pole of which is connected to earth either direct 01 through added resistance, the working pressure shall be deemed to be that which is maintained between the outer or phase conductor and the neutral.

The insulation resistance measured as above shall not be less than 50, divided by the number of points on the circuits provided that the whole installation shall be required to have an insulation resistance greater than one megohm.

Control rheostats, heating and power appliances and electrical sings may, it required, be disconnected from the circuit during the test, but in that event the insulation resistance between the case of frame work and all live parts or each rheostat appliance and sign shall not be less than that specified in the relevant IS specifications shall not be less than half a megohm.

The insulation resistance shall also be measured between all conductors connected to one or phase conductor of the supply and all the conductors connected to the middle wire or the neutral or to the other pole or phase conductors of the supply and its value shall not be less than that specified in sub clause(b)

On completion of an electric installation (or an extension to an installation) a certificate shall be furnished by the contractor countersigned by the qualified supervisor the installation was carried out. The certificate shall be in the prescribed form as required by the local Electrical Supply Authorities. One such recommended form is given in Appendix-B.

Testing of earth continuity path: The earth continuity conductor including metal conduits and metallic envelopes of cables in all cases shall be tested for electric continuity and the electrical resistance of the same along with the earthing lead but excluding any added resistance or earth leakage circuit-breaker measured from the connection with the earth electrode to any point in the earth continuity conductor in the completed installation shall not exceed one ohm.

Testing of polarity of non-linked single pole switches:

In a two-wire installation a test shall be made to verify that all non-linked single pole switches have been fitted in the same conductor throughout and such conductor shall be labeled or marked for connection to an

outer of phase conductor or to the non-earthed conductor of the supply.
In a three wire or a four-wire installation, a test shall be made to verify that every non-linked single pole switch is fitted in a conductor which is labeled or marked for connection to one of the outer or phase conductor of the supply.

17.0 CONDUIT CAPACITY:

Maximum number of PVC insulated cables confirming to IS: 694-1977 that can be drawn in one conduit shall be as follows:

Nominal cross-sectional area of conductor	SIZE OF CONDUIT											
	20 mm		25mm		32mm		38mm		51mm		64mm	
	S	B	S	B	S	B	S	B	S	B	S	B
1.5	5	4	10	8	18	12	--		--		--	
2.5	5	3	8	6	12	10	--		--		--	
4	3	2	6	3	10	8	--		--		--	
6	2	-	5	4	8	7	--		--		--	
10	2	-	4	3	6	5	8	6	--		--	
16	-	-	2	2	3	3	6	5	10	7	12	8
25	-	-	-	-	3	2	5	3	8	7	9	7
35	-	-	-	-	-	-	3	2	6	5	8	6
50	-	-	-	-	-	-	-	-	5	3	6	5
70	-	-	-	-	-	-	-	-	4	3	5	4

NOTE:

1. The above table shows the max. Capacity of conduits for a simultaneous drawing of cables.
2 The columns headed 'S' applies to runs of conduit which have distance not exceeding 4.25m between draw in boxes and which do not deflect from the straight by an angle of more than 15 The columns headed 'B' apply to runs of conduit which deflect from the straight by an angle of more than 15.

18.0 CABLES

18.1 Cables shall be supplied by Electrical Contractor

18.2 Cable Specifications:

All cables shall be as per latest IS 1554 Part I PVC insulated heavy duty electric cables Part I for working Voltages up to and including 1100 V.
All power cables shall be PVC insulated, armored, inner sheathed, PVC insulated aluminum conductor. Control cables shall be of copper conductor.
The core insulation and inner sheath shall confirm to the requirement of Type A IS 5831 STI IS respectively. Similarly, for outer sheath. Cables shall have armor of steel wire up to 0 D of 18 mm and flat steel strip for higher OD.
Cables shall be supplied in drums of 1000 mts. for and up to 6 sq mm and 10 sqmm and above in 500 mts.

18.3 Cabling:

Cabling shall be done with help of jack and rollers. Cable shall be passed through RCC Hume Pipe wherever road crossing or pathway crossing is there. All cables shall rise form cable trenches in GI Pipes. Cable shall be tagged as per cable schedule at every 30 mts. by Aluminum tags of minimum 2mm thick securely fastened. They shall also be identified near the terminations
Above the cable trenches cable route markers shall be installed as per rules and regulations at every 30 mts and at every turnings of the cables or branching of cables
All cables shall be laid in trenches at a depth of 750mm and as shown in drawings. Before laying of cables sand shall be spread then the cable shall be laid which shall again be covered with sand minimum 150mm from the top of the largest dia of the cable. Then second class bricks shall be laid across the trench completely covering the trench, lastly excavated soil shall be back filled and compacted by watering intermittently
All cables after laid shall be checked for insulation level and meggered before back filling. Cable entries in Gl pipes or Hume pipes shall be sealed by cable compound or putty for smaller dia of pipes.
If required for the- cable- to run on cable trays then the cable shall be clamped by 16 SWG GI saddles and damps all works should be done to the satisfaction of the Engg - in Charge.

18.4 Terminations:

Cable shall be terminated by means of single compression glands and terminated by solderless crimped type lugs. All should be done to the satisfaction of the Engg.-in-Charge. If the cores do not have any color identification, then they should be identified by insulation tape of various phases. Cable shall enter any termination point by means of double compression glands, using reducers if required or drill of holes in gland

plates. IF panel installed on a cable trench which does not have any bottom excess then holes shall be drilled in one line for the cables then the gland plates is cut into two halves from the centre of the hole. Cables inserted and sealed and the armour in the bottom should open and earthed to the earth bus. Crimping of lugs shall be done by hand crimping tool or hydraulic crimping tool with conducting jelly applied to conductors. Insulation shall be cut immediately after the lugs and care should be taken that the conductor is not left open. All jointing and crimping shall be carried out by licensed and experienced jointers approved E.I.C. and termination and straight joint shall be of 'Taped' or heat shrinkable type as specified.

18.5 Testing:

Before energizing, the megger test shall be carried out for insulation resistance between phase to phase and phase to earth.

For cable up to 1.1 KV grade 1000 KV mugger shall be used.

D.C. High Voltage test shall be conducted after installation on the following and test results are recorded as per format furnished by the Engineer-in-charge.

a) All 1000 Volts grade cables in which straight through joints have been made.

b) All cables above 1100 V grade.

For record purposes test data shall include the measure values of leakage current verses time.

The DC High voltage test shall be performed as detailed below in the presence of the EIC or his authorized representative only.

Cables shall be installed in final position with the entire straight through joints complete. Termination shall be kept on unfinished so that the motors, switchgears, t transformers, etc.. Are not subjected to test Voltages

The Test Voltage shall be as under:

i) For cable 3.3 KV Grade 5.4 KV DC

ii) For cable 66 KV Grade 10.8 KV DC

iii) For cable 11 KV Grade 18 KV DC

Cable schedule and layout drawings must be marked for AS BUILT conditions during the installations work and shall be approved by the Site Engg.

IDENTIFICATION OF EARTHED AND EARTHED NEUTRAL CONDUCTORS AND POSITION OF SWITCHES AND CUTOUTS THEREIN:

Where the conductors include an earthed conductor of two-wire system or an earthed neutral conductor of a multi-wire system or a conductor which is to be connected thereto, the following conditions shall be compiled with

1. An indication of a permanent nature shall be provided by the owner of the earthed or earthed neutral conductor, or the conductor which is to be connected thereto, to enable such conductor to be distinguished from any live conductor. Such indication shall be provided.

a) Where the earthed or earthed neutral conductor is the property of the bidder, at or near the point of commencement of the supply.

b) Where a conductor forming part of a consumer's system is to be connected to the bidder's earthed or earthed neutral conductor, at the point where such connection is to be made.

c) In all other cases, at a point corresponding to the point of commencement of supply or at such other point as may be approved by an inspector.

2. No cut-out, link or switch other than a linked-switch arranged to operate simultaneously on the earthed or earthed neutral conductor and live conductor shall be inserted or remain inserted in any earthed or earthed neutral conductor of a two-wire system or in any earthed or earthed neutral conductor of a multi-wire system or in any conductor connected thereto with the following exceptions

a) A link for testing purposes - OR -

b) A switch for use in controlling a generator or transformer.

NOTE: The Electrical Contractor Shall Produce Copy of Valid License for Practicing Issued by Statutory Authority for This Purpose Before Commencing the Work.

INSTALLATION TESTS CERTIFICATE
BY ELECTRICAL CONTRACTOR

This contractor is to certify that the work is carried Out
Work confirming to IE Rules and code of practice. He has to
Give the test report is under.

(i) Insulation Resistance test is R - N M. Ohms
Y - N M. Ohms
B - N N. Ohms

(ii) Load test: -

5A - 1000 W Power Point - 15 Minutes

15A - 3000 W Power Point - 15 Minutes

(iii) Earth resistance for each electrode - 1 Ohm
- 2 Ohm
- 3 Ohm
- 4 - N - E
Volts

(iv) Certificate of makes of materials used in the work

(v) Circuit diagram

(vi) Certified that the electrification work has been carried out under the supervision of licensed Electrical supervision.

(vii) Certified that the earthing plate / pipe has been verified and Placed at correct depth confirming to IE Rules.

Signature of Electrical Supervision Signature of Contractor

Name:

License No.

IMPORTANT POINTS TO BE NOTED

1) Rates for LIGHT, FAN, EX. FAN, CALL BELL, RAW POWER ETC. POINTS include the cost of main wires and PVC pipes from LDB-ROW POWER DB to DIFFERENT SWITCHBOARDS WITH REQUIRE CIRCUITS

2) Rates for COMPUTER POWER POINTS include the cost of wires and PVC pipes from UPS DB to COMPUTER POWER POINTS.

3) Rates for COMPUTER I/O include the cost of DATA cables and PVC pipes from SERVER SWITCH to COMPUTER NODES.

4) Rates for TELE POINTS include the cost of TELEPHONE Wires and PVC pipes from EPABX/CRONE BOX to TELE. POINTS.

5) Rates for SMOKE/HEAT DETECTORS includes the cost of wires and PVC pipes

6) Rates for A.C./POWER POINTS include the cost of wires and PVC pipes from A.C. DB to DIFFERENT A.C. AND POWER POINTS WITH REQUIRE CIRCUITS.

7) THE CONTRACTOR SHOULD SUBMIT THE BUILTUP SLD OF PANEL, SLD OF DIFFERENT DBS TO DIFFERENT SWITCHBOARDS WITH NUMBERING, SLD OF DATARACK TO DIFFERENT I/O POINTS WITH NUMBERING, TELE. KRONE BOX TO DIFFERENT TELE. POINTS WITH NUMBERING, ETC. AFTER EXECUTION OF THE BRANCH.

8) THE CONTRACTOR SHOULD USE MAX. 3 CIRCUITS IN ONE CONDUIT FOR UPS & RAW POWER POINTS.

9) THE CONTRACTOR SHOULD USE MAX. 3 WIRES OF DATA & TELE. IN ONE CONDUIT.

10) EVERY CONDUIT – UPS, RAW POWER, DATA & TELE. SHOULD BE SEPARATE.

11) ELECTRICAL WORK SHALL BE CARRIED OUT LICENSED ELECTRICIAN AND LICENSED CONTRACTOR. WORK SHALL BE CARRIED OUT AS PER I.E RULES, IS CODE. CONTRACTOR IS SOLELY RESPONSIBLE FOR ANY FIRE/ SHORT CIRCUIT IN THE WORK EXECUTED.

LIST OF APPROVED MAKES FOR ELECTRICAL & ELECTRICAL WORKS		
MAKE / SPECIFICATION DETAIL		
SR.NO.	**LIST OF NOMINATED MATERIALS& UPPLIERS**	**SUGGESTED MAKE LIST**
1	Electrical	
	Light Fittings	Philips / Wipro / Osram / Havells / Crompton G.
	MCCB, MCB , RCCB, DB, ICTPN TP, HRC Fuse, change over switch, switchfuse Unit	L&T, ABB, Legrand, Siemens, Schneider
	FRLS insulated Elec. Wire/ cable armored, unarmored, Sheathed, unsheathed, flexible LT cable, Multi core, single core cable, flat cable	Finolex/Polycab/Havells/RR kabel/KEI
	PVC conduit (HEAVY DUTY ONLY)	CAP/Finolex/Polycab
	PVC insulated copper conductor Wires	Finolex/ Polycab/RR Cable
	Distribution Box	Legrand/ Schneider/ ABB/Siemens
	MCB & MCCB	Legrand/ Schneider/ ABB/Siemens/L&T
	Light Fixture & Lamps	Philips/ Wipro Osram / Havells / Crompton G./ Halo nix
	HT cable	Polycab/Havells
	Modular Switches	ABB/ Legrand/ MK/ANCHOR/ELLEYS/ROMA
	DLP Trunking	Legrand/Schneider
	Power cable	CCI/ Sky tone/ Universal/ LAPP/ Torrent
	End Termination	Raychem/ Mahindra/ELMEX
	PANEL	Crompton/L&T/C&S
	Fan	Crompton/Havells/Bajaj/Usha
	Raceway & Alu. Trunking	Tata/Jindal/Zenith
	Casing Capping	Finolex/Cap
	Weather proof socket outlet with MCB	ABB/MDS/LEXIC/Neptune/Elcon-Clipsal, Siemens, Schneider (Merlin Gerin)
	Miniature Circuit Breaker	ABB/MDS/LEXIC/ Clipsal/Siemens/HPL
	Earth Leakage Circuit Breaker	MDS/LEXIS/Siemens/HPL
	MCB Distribution Boards in sheet steel housing (double door)	ABB/MDS/LEXIC/Siemens/HPL
2	Distribution	
	MV Contractor/Timer/Relays/Starters	Legrand/ Schneider (MG)/ ABB/Siemens/L&T

	Molded case circuit breakers	Legrand/ Schneider (MG)/ ABB/Siemens/L&T
	SFU/Fuses	HPL/ L&T. Siemens, GE Power, Schneider (MG)
	ACB	Schneider (MG)/ ABB/Siemens/L&T
	Single Phase Preventer (Current base)	L&T, Minilec
	Raising Mains & Tap Off (Power coated)	Zeta, C&S, Siemens
	MV Switchboards (Powder Coated)	Tricolite Electrical Industries, conlec Engineers Pvt. Ltd,Vidyut Control Pvt Ltd., Trinitron Milestone Switchgear, Unilec Ltd, Madhu Electrical Advance Electro Control Pvt Ltd.
3	Low Tension System	
	Light & Fan Wire	Polycab, Finolex, Havells
	Telephone Wires	Delton, Skyline, Finolex, Rallison, Batra Henley
	Telephone Tag Blocks	Krone / Pouyet/ TVS
4	Cables and Accessories	
	1100Volts grade Cables	CCI, Universal, Fort Gloster, Polycab, RPG (Asian), Nicco
	Cable Lugs	Dowells
	Cable compression Glands	Peeco/ Comet
	Cable Trays / Cable ladders	Slotco, Bharti, RICCO, Pilco, MM Enterprises
5	Metering & Protection	
	Cast Resin current transformers	Gilbert Maxwell, Kappa AE, Precise
	Meters (Digital)	L&T Roshab, Automatic Electric, Siemens, Socomex
	Selector switches	HPL/L&T Salzer, Kaycee
	Indication lamp	L&T Vaisno Teknic
	KWH Electronics Digital Meter	Secure, L&T, Enercon, Socomec- HPL
6	EPABX	
	Exchange/ Console Panel	Copper connection, Flash Hymax, Accord CG, Tata Telecom, Panasonic
	CVT	Logicstat, Blue Bird, Selvon, Max Power
	UPS	HPL- Socomec, Tata Liebert, APC, Invensys, Copper Connection
	Hand Set	Beetle, Tata phone, Crompton
	Tape off	Cat Vision, Shyam

7	Electrical Items	
	Panel Switch Gear & related Item	
	LT Panel/Bus Duct	By any Panel manufacturer who process C.P.R.I. certificate for specified fault level & IP level protection
	Fuse Disconnector switch/switch fuse unit	L&T, Siemens/ Schneider/ABB/Legrand
	Ammeter Voltmeter	AE/L&T/MECO/Rishabh
	Digital Meters/ Intelligent Multifunctional Digital mater	AE/HPL/CONZERV
	Selector Switch, Push button switch / emergency switch	KAY CEE/ L&T/ Siemens/ Schneider
	Indication Lamp	AE/L&T/Siemens/ Schneider
	CT's	L&T / AE/ Kappa
	AT's	L&T/Siemens/ Schneider/ Legrand
	Voltage stabilizer for air conditioner (4/5KVA)(170-270V)	V Guard/Microtek
	Air Conditioner - Split Inverter AC(5/3 star) - (.75 ton -1ton,1.5 ton,1.8ton-2ton)	Daikin/Blue Star/ Carrier
	Air Conditioner - Cassette Inverter AC (5/4/3 star) - (2.9 ton - 3.5 Ton)	Daikin/Blue Star/ Carrier
8	Transformer	
	Distribution Transformer	Jindal /Areva/ Muskaan/Alstom
	11 or 33 KV VCB	Crompton/ Alstom/ ABB
	HT Termination & Jointing kit	Ray Chaem / Mahindra/ ELMEX
	Cable Glands	Dowell's / Siemens/Braco
	Lugs & Thimbles	Dowell's / Johnson
	Up to & including 11KV cables (ISI marks)	CCI/ Skytone/ Gloster/ Havells
	Insulating Mats	ISI Marked
	Capacitor Bank (ISI marked)	GE Power/ BHEL/EPCOS/ L&T
	Lightning Arrestor	Altas/ Alstom/ GE power
	Protection & Another Relay	ABB/ Siemens/ Schneider/ L&T/ Allen Bradley
9	Internal Wiring Related Works	
	MCB/RCCS/Isolators (ISI) marked MCB DB	L&T Siemens/ Schneider/ Legrand
	PVC Conduit	CAP / BEC/ Seiko/ AKG
	PVC insulated copper wire (ISI marked)	Skyline/ Finolex/ Havells/ Polycab
	Telephone Cable	Sky tone/ Delton/ NICCO/Polycab/ Finolex

	Switch, TV & Telephone socket & boxes (Modular Type)	CPL/ Legrand/ABB/Anchor
10	Miscellaneous Items	
	Lightning Protection Unit	Erico/ Phoenix/ INDELEC
	Relays	L&T/ABB/Siemens/BCH
	Contractors	L&T/ GE Power/BCH/ Siemens/ABB
	Changeover switch	C&S/Havells/ L&T/HPL
	KWH, PF, Frequency meter	BHEL/ AE/Havells/ L&T/ALSTOM
	Push Buttons	L&T/ Siemens
	Timers	L&T/ Legrand/ Schneider/Siemens/GE
	Timer Switch	L&T/ Legrand/ Schneider/Siemens/GE
11	Networking	
	Switches	Brocade/Cisco/Digi-Link/3Com/Nortel/Foundry/D-Link
	Patch Panel, Patch cord and I/o	Digi-Link / Tyco(AMP) /Schneider/D-Link
	Cable	Digilink/Clipser/National/Polycab/Lapp/Finolex
	Racks	ComRack / HCL / ValRack / APW President
	Light fittings	
	WIPRO MAKE – Immaculate series - 600 mm x 600 mm – 36 W - CRCO10R036HP57. (make)	
	WIPRO MAKE – Halo make – 6W - CRDL11R008HP57. (make)	
	WIPRO MAKE – Halo make – 22W - CRDL11R023HP57. (make)	
	PHILIPS MAKE – Smart Glow – 600 mm x 600 mm - 37W. (make)	
	PHILIPS MAKE – Green Led – 7W and 12 W (make)	
	PHILIPS MAKE – Line Light– 28 W. (make)	

Note:

[a] Where other Material are proposed to be used these should be got approved from the Architect/Bank's Engineer before execution of particular item. In case of Non- Availability of any material of specified make, the Alternative equivalent make should be used only after it is approved in writing by the Employer or the Architect. The Material shall be used in preferential Order only.

[b] Before starting of work, contractor must get all samples/make approved from Architect/Bank's authorities before using at site.

[c] Consultants/Bank's authorities reserve the right to add or delete name of any manufacturers and when required.

[d] Consultants/Bank's authorities reserve rights to select any of the specified brands mentioned above.

LIST OF INDIAN STANDARDS REFEREED TO

SR. NO.	IS NO.		DESCRIPTION
1)	IS:2026-1977	:	Distribution transformers & fittings.
	IS:3639	:	Fittings and acc. For P.T
2)	IS:7886	:	
	IS:660	:	Installation of Transformer
3)	IS:2516-1972	:	Specification for A.C circuit breakers
4)	IS:335	:	Insulating oil for Transformers & switch gear.
5)	IS:2505	:	CT for measuring and protection.
6)	IS:3155	:	Voltage Transformer.
7)	IS:3236 Part II	:	Voltage Transformer.
8)	IS:373	:	Busbar arrangement and marking.
9)	IS:2099	:	Bushing
10)	IS:5621	:	Large Hollow Porcelains
11)	IS:2544	:	Insulators
12)	IS:2629 & 2633	:	Hot Dip Galvanizing
13)	IS:3842	:	Relays
14)	IS:1248:-1958	:	Meters (measuring).
15)	IS:3072-1975	:	Installation of Switch gears.
16)	IS:692	:	HV cable
17)	IS:1255	:	Installation of HV cable and jointing
18)	IS:3043	:	Code of practice for earthing
19)	IS:4047-1977	:	HD Air breaker, Switch gears and fuses for Voltage not exceeding 1000 Volts.
20)	IS:8106-1966	:	Selection, installation and maintenance of fuses up to 650 Volts.
21)	IS:4237:1967	:	General requirements for switch gear and control gear for voltage not exceeding 1000 Volts
22)	IS:2607:1976	:	Air-break isolators for Voltage not exceeding 1000 Volts.
23)	IS:8623-1977	:	Factory built assemblies of switch gear and control gear for voltage up to and including 1000 Volts A.C and 1200 Volts D.C
24)	IS:375-1963	:	Marking and arrangement of switch gear busbars main connectors and auxiliary wiring.
25)	IS:2147-1962	:	Cubical Boards
26)	IS:8084-1972	:	Insulated conductor rating.
27)	IS:2675-1983	:	Enclosed distribution fuse boards and cutouts for not exceeding 1000 Volts.
Voltage			
28)	IS:8828-1978	:	Miniature Circuit Breaker.
29)	IS:9926-1981	:	Fuse wire used in re-wearable type electric fuses up to 650 Volts.
30)	IS:1554 (Part I)	:	PVC insulated electric cables Heavy duty.
31)	IS:3961 (Part II)	:	Recommended current rating for cables.
32)	IS:2982	:	Copper conductor in insulated cables and cores.
33)	IS:8130	:	Conductor for insulated electric cables and flexible cords.
34)	IS:3975	:	Mild steel wires, strip and tapes for armoring cables.
35)	IS:5831	:	PVC insulation and sheath of electric cables.
36)	IS:1753	:	Aluminum conductor for insulated cables.
37)	IS:4288	:	PVC insulated and PVC sheathed solid aluminum conductor cables of voltage rating not exceeding 1100 volts.
38)	IS:961	:	Recommended current rating for Cable.

39)	S:732	:	Code of practice for electrical wiring installation system Voltage not exceeding 650 Volts.
40)	IS:1646	:	Code of practice for fire safety of Buildings (general) electrical installation.
41)	IS:1953	:	Rigid steel conduits for electrical wiring.
42)	IS:2667	:	Fittings for rigid steel conduits for electrical wiring.
43)	IS:3480	:	Flexible steel conduit for electrical wiring.
44)	IS:3837	:	Accessories for rigid steel conduits for electrical wiring.
45)	IS:694	:	PVC insulated cables (wires).
46)	IS:2509	:	Rigid non-metallic conduits for electrical wiring.
47)	IS:6946	:	Flexible (playable) nonmetallic conduits for electrical installation.
48)	IS:1293	:	Three pin plugs and sockets.
49)	IS:8180	:	Conductors for insulated electrical cables and flexible codes.
50)	IS:9537-1980	:	Specification for conduit for electrical installation.
51)	IS:3419	:	Accessories for non-metallic conduits for electrical wiring.
52)	IS:3854	:	Switches.
53)	IS:6538	:	Plugs.
54)	IS:2834-1954	:	Shunt Capacitors for power systems.
55)	IS:2208	:	HRC cartridge fuse and links up to 660 volts.
56)	IS:1913-1969	:	General and safety requirement for lighting fittings.
57)	IS:2944-1981	:	Code of practice for lighting public thorough fares.
58)	IS:3528	:	Waterproof electric lighting fittings.
59)	IS:3553-1966	:	Water tight electric lighting fitting.
60)	IS:1239-1958	:	Mild Steel tubular and other wrought steel pipe fitting.
63)	IS:2149-1970	:	Luminaries for street light.
64)	IS:9224	:	HRC fuses having rupturing capacity of 90 KA
65)	IS:2312-1967	:	Exhaust Fan.
66)	IS:374-1979	:	Class I Ceiling Fan.

NOTE: All codes and standards mean the latest where not specified otherwise the installation shall generally follow the Indian Standard codes of practice of relevant British Standard Codes of Practice in the absence of corresponding Indian Standards.

PLEASE FOLLOW:

a. Indian Electricity Act of 1910 and rules issued there under revised up to date.
b. Special Attention should be given to Rule No. 50.
c. Regulations for electrical equipment in building issued by The Bombay Regional Council of insurance Association of India

TECHNICAL SPECIFICATIONS FOR AIR-CONDITIONING WORKS

1.0 Scope

1.1 Supply Installation, testing and commissioning of the split air-conditioners meeting in all respects the intents of the specifications. The supply of the units shall comprise:

a) Outdoor unit

b) Indoor Unit

c) Refrigerant piping connecting the two and drain piping

d) Electrical wiring from the socket – outlet through the indoor and outdoor units with provision for local remote control.

2.0 Outdoor Unit

2.1 The outdoor condensing unit shall comprise a compressor, condenser coil, condenser fan, refrigerant connections and a casing. The compressor shall be hermetic type resiliently mounted for quiet operation. The compressor drive shall be a single-phase motor refrigerant cooled and shall have an inbuilt over load protector. The unit shall be capable of frequent starting and stopping without causing any over load.

2.2 The condenser coil shall be a copper tube with aluminum fins. The tube diameter shall be not less than 10mm with a wall thickness of 0.4 mm copper. Tube shall have aluminum fins adequately bonded through a process of mechanical expansion. The number of fins shall not exceed 520 per meter (13 per inch) and the number of rows in each case shall be for the specified output. The condenser fan shall be a multi-blade propeller type designed for low noise and directly driven by a totally enclosed fan motor. The refrigerant connections shall be brought out into plain stub ends.

2.3 All the components shall be enclosed in a casing formed from heavy gauge 1.6mm galvanized sheet steel totally rust inhibited.

3.0 Indoor Unit

3.1 The indoor unit shall be versatile and shall be capable of mounting on the ceiling with simple site alteration. The unit shall consist of an evaporator fan and motor, evaporator coil, wherever shown in drawing additional drain tray, air filter, outlet for duct connection and controls shall be provided.

3.2 The evaporator fan shall be double inlet; double width centrifugal forward curved impellers statically and dynamically balance. The impellers shall be mounted on either side of a double shafted 2/3 speed motor directly driving the fans. The fans shall be housed in a sheet steel a high impact ABS plastic enclosure which is acoustically treated. The evaporator coils shall be similar to the condenser coil and made of copper tube with aluminum fins and the refrigerant lines brought out to plain stub ends within the unit casing.

All duct able split air conditioner should have of the following controls.

High Pressure Cut Out.

Low Pressure Cut Out.

Protection for motor.

Over load protector.

4.0 Installation

4.1 The outdoor unit shall be installed as mentioned in the NIT. The indoor unit shall be ceiling suspended as shown on drawings/ as per the requirement of client.

4.2 Refrigerant lines shall be inconspicuously and generally as shown in the drawings and as directed on site. The suction and liquid lines shall be bonded together and insulated with 6mm thick elastomeric tubing. All power wiring shall be drawn from the nearest socket outlet and shall include the control wiring, power wiring, on-off switch with speed controller.

4.3 All pipe sizing shall be done taking into account the length and rise.

4.4 A 12mm insulated drain pipe shall be provided as shown on the drawing and as directed on site.

5.0 Testing

5.1 The unit shall be tested for establishing the capacity and power consumption. Tests shall be carried out in accordance with IS 5141 – 1969 (revised upto date) computed results shall tally with specified capacity and power consumption figures furnished with the tender offer.

5.2 On completion of piping the system and the piping shall be tested using Nitrogen gas by raising the pressure to 1.5 times the working pressure and holding the test pressure for 3 hours.

5.3 Tests shall be carried out on

a) the compressor and drive motor side

b) condenser side for heat rejection

c) Cooling coil for cooling capacity

d) Evaporator air volume

5.4 A test certificate from prototype factory tests will be acceptable.

6.0 Mode of Measurement

6.1 Each unit shall be measured as one item of work which shall consist of:

i) Outdoor unit

j) Indoor unit

k) Refrigerant and drain piping (with insulation)

l) Electrical power control wiring, room thermostat and control panel

m) Refrigerant chage & oil

n) Erection

o) Commissioning and testing

7. REFRIGERENT PIPING.

7.1 Scope. The scope of this section covers supply, installation of refrigerant piping & drain piping with insulation as specified here & as shown in the drawings.

7.2 Refrigerant copper Piping

- 16/18 gauge copper tubing shall be used to make connections to equipment's wherever required.
- Flare fittings e.g. flare nuts; tees, elbows, reducers etc. shall be of brass.
- The pipes and fittings shall be connected by means of welded joints. The connections to gauges, controls etc. (if any) shall be with soft copper tubing and flare fittings. Refrigerant piping routing shall be decided be Engineer – in – Charge.
- The refrigerant piping installation shall be as per drawing.

7.3 Drain Piping.

- All condensation drainage shall be pitched in the direction of flow to ensure adequate drainage with an adequate trap seal to prevent leakage / infiltration.
- Provide pitch of 20 mm per meter for a smooth drainage of condensate.
- Condensate drain piping fixing shall be as per drawing.
- The routing of Drain Piping shall be decided by Architect/ Engineer – in – Charge.
- The material for the drain pipe is GI.
- Drain piping supporting shall be as per drawing.

7.4 Suction Line Insulation.

The Suction Line shall be insulated with 19mm thk. Nitrile Rubber Insulation covered with aluminum foil (As per Specified with K Value of 0.027-0.029 K Cal/Hr.M Deg C at 0-16 Deg C)

7.5 Drain Piping Insulation.

The drain pipes shall be insulated with 25mm thick TF quality EPS insulation (density 16kg/cum) finished with 26 G al cladding.

7.6 Mode of Measurement.

- Refrigerant pipes with insulation shall be in linear measure along the center line of the pipe including accessories, supports etc and paid for per RMT.
- Condensate drain pipes with insulation shall be in linear measure along the center line of the pipe including accessories, supports etc and paid for per RMT.

AIR DISTRIBUTION

1.1 Scope

The scope of this section comprises of supply, fabrication, installation and testing of all sheet metal ducts and supply, installation, testing and balancing of grilles and diffusers, in accordance with these specifications and the general arrangement shown in the drawings. The duct work will conform to IS standards/codes and relevant ASHRAE Guidelines. For this purpose, it is contractors responsibility to arrange at site all necessary equipment's like drilling machine, welding machine, etc. and necessary work force. The duct rates mentioned in the BOQ are inclusive of nuts, bolts, sheets, supports, gaskets etc. complete and duly installed.

1.2 Duct Material

The material for various application of air distribution ducting shall be as follows: -

Application	Material
1) Air Conditioning.	Cold rolled sheets continuous galvanised with a zinc coating of 120GSM as per IS: 277 – 1977.
2) Supports & Duct Flanges.	Mild Steel Structural Steel Sections.

3) Gasket.	Foamed rubber.
4) Bonding	Mastic Sealant.

1.3 Duct Fabrication.

The ducts shall be fabricated from galvanized steel sheets (GSS) class VIII conforming to ISI:277 – 1962 (revised) or aluminum sheets conforming to IS:737 – 1955 (for aluminum ducts, if any). The thickness of the sheets should be as follows:

Thickness of Sheets for Rectangular Duct Construction

Maximum Side	Thickness of Sheets	Gauge
Upto 750 mm.	0.63 mm	24
From 751 to 1500 mm	0.80 mm	22

1.4 All galvanized plain sheets shall be reasonably flat and free from twist. The zinc shall be clean, even and free from galvanized spots. Sheets shall not crack or peel during bending or fabrication. All sheets shall be procured from approved manufactures.

1.5 All ducts for air conditioning and ventilation shall be rectangular in cross section and fabrication.

1.6 All duct shall be fabricated and installed unless otherwise stated as per IS : 655 – 1963 with amendment – 1 (1971 edition.)

Ducts shall be straight and smooth on the inside with neatly finished joints. All joints shall be made airtight. The gauges, joints and bracing for sheet metal duct work shall further conform to the provisions as shown on the drawings. The internal ends of slip joints shall be made in the direction of air flow. Ducts larger than 1000 mm shall be cross-broken. Duct sections upto 1200mm length may be used with bracing angles omitted. Tapering angle should not be more than 30 degree. Change in dimensions and shape of ducts shall be gradual. Curved elbows shall have a centre line radius equal to one and half of the duct. All Air turns of 45 degree or more shall be installed in all abrupt elbows and shall consist of curved metal blades or vanes arranged to permit the air to make the turns without appreciable turbulence. Guide vanes shall be fabricated out of 0.63 mm (24 SWG) thick G. S. sheets and equally spaced on side runner to be riveted /bolted to duct sheets. Guide vanes shall be securely fastened to prevent noise or vibration. GI splitter dampers complete with brass metal lever shall be installed at each bifurcation/trifurcation point of duct for proper flow of air quantity in each duct. Joints, seams sleeves, splitters, branches, take-offs and supports are to be as per duct details as specified.

1.7 Duct Installations

All ducts shall be installed as per the drawings and in strict accordance with approved for construction drawings prepared by the contractor. During the construction the contractor shall temporarily close duct openings with sheet metal covers / polyethylene sheets to prevent debris-entering ducts and maintains them clean.

All necessary allowances and provisions shall be made by the contractor for beams, pipes or other obstructions in the buildings, whether or not the same are shown on the drawings. Where it becomes necessary to avoid beams or other structural work, plumbing or other pipes and / or conduits, the ducts shall be transformed, divided or curved to one side, the required area being maintained as approved or directed by the Architect/Consultants.

If a duct cannot be run as shown on the drawings, the contractor shall install the duct between the required points by any path available, subject to the approval of the Architect/Consultants.

All duct work shall be of high quality approved galvanized steel sheet, guaranteed not to crack or peel on bending or fabrication of ducts.

All ducts shall be rigid and shall be supported from the ceiling / slab by means of MS Rods of 8 mm (3/8") dia. with MS angles at the bottom as shown in the drawing. The rods shall be anchored to RC slab using Anchor/dash fasteners. A rubber gasket of 5 mm thickness shall be provided between duct and angle to avoid metal-to-metal contact and vibration. Double nuts will be provided under angle supports.

The hanger spacing for duct supporting shall be not more than 2 meters.

Where ducts touch with wall or ceiling or beams or columns or floor, a rubber gasket of 5 mm thickness shall be provided between them.

All flanges, bracing and supports are to be mild steel and are to be essentially given a coat of red oxide primer.

Fire retarding flexible canvas / Rexene connections not less than 100 mm and not more than 200 mm are to be fitted to the delivery of all IDU's.

1.8 Duct Supports.

Duct supports shall be as follows:

Duct Perimeter	**Support.**	**Location.** (mm)

Up to 1800	40 X 40 X 3 mm MS angle With 9 mm tie rod.	At Transverse Joints.
Over 1800 to 2500	40 X 40 X 6 mm MS angle With 12.5 mm tie rod.	At Transverse Joints.
Over 2500	50 X 50 X 6 mm MS angle With 15 mm tie rod.	At Transverse Joints.

1.9 Volume Control Damper (VCD) & Duct damper

- The Volume Control dampers & Duct Dampers shall be lever operated and complete with locking devices, which will permit the dampers to be adjusted and locked in any position, and clearly indicating the damper position.
- The dampers shall be of splitter, butterfly or louver type. The damper blade thickness shall not be less than 1.25 mm (18 gauge).
- Manual volume opposed blade dampers shall be complete with frames and bronze bearings as per drawings. Dampers and frames shall be constructed of 1.6 mm thick galvanized steel sheets and blades shall not be more than 225 mm wide.
- For air balancing an opposed blade damper with quadrant and thumbscrew lock should be provided.
- At the junction of each branch duct with main duct VCD's must be provided. At the delivery of all IDU's VCD's must be provided.
- The dampers shall be of Extruded aluminum.
- Installation of VCD's shall be as per drawings.

1.10 Fire Damper

- Dampers could be fusible link type as indicated in BOQ.
- Fire dampers shall be provided at the delivery of all IDU's.
- The dampers shall be of multiple blade type. The blades shall be constructed with minimum 1.8 mm thick aluminum sheets. The frame shall be of 1.6 mm thick. Other materials shall include return spring, locking device and temperature sensor.
- Installation of fire damper shall be as per drawings.

1.11 Standard Grilles and diffusers

- The supply and return air grille/diffuser shall be fabricated from extruded aluminum sections of thickness not less than 1.5 mm. The supply air grille/diffuser shall have single / double louvers. The front horizontal louvers shall be of adjustable type. The rear vertical louvers shall be of aluminum extruded sections and adjustable type. The return air grille shall have single horizontal extruded section fixed louvers.
- The damper blades shall also be of extruded aluminum. The grille flange shall be fabricated out of aluminum-extruded section. Grilles longer than 450 mm shall have intermediate supports for the horizontal louvers.
- The ceiling type square/circular diffusers shall be of aluminum-extruded section with flush or step-down face.
- All supply diffusers shall be provided with extruded aluminum dampers, with arrangement for adjustment from the bottom. (The center portion should be spring loaded for easy removal and fitting).
- All grilles and diffuser shall be epoxy powder coated of 15 Micron in approved color.
- Diffuser and grille shall be installed as per drawings.
- The linear grilles shall be provided with End Pieces at ends.

1.12 Fresh Air arrangements

- Extruded aluminum construction duly anodized (20 microns and above) fresh air louvers with bird screen and extruded construction dampers shall be provided in the clear openings in the masonry walls near the IDU's or as per drawing.

- Louvers, dampers, cowl, ducts and fresh air fan, if required with speed regulator shall be provided as shown in the drawings and as per Bill of Quantities.
- Fresh air dampers shall be of interlocking, opposed blade louver type. Blades shall be similar to those specified in "Air Distribution".
- Fresh air fan and fresh air intake as per BOQ.

1.13 Testing and Balancing

After completion of the installation of the complete air distribution system all ducts shall be tested for air leaks. All dampers of supply air diffuser and supply air grille shall be balanced as per user's requirements. The entire air distribution system shall be balanced using approved anemometer.

1.14 Mode of Measurement.

All sheet metal ducting complete with duct supports, turning vanes, canvas connections erected in position shall be measured externally and paid per unit. All dampers shall be excluded in the duct area.

All manual control/splitter including Fire & Volume control damper sections with operations linkages, locking quadrant, sheet steel enclosure, frame, erection, supporting etc. shall be measured on the basis of quantity as mentioned in BOQ and will be paid as per unit rate.

Fresh air louvers with bird screen, damper, frame, ducting, erection & sealing shall be measured on the basis of quantity as mentioned in BOQ and will be paid as per unit rate.

Grilles/diffuser including volume control damper, installation etc. will be measured on the basis area and paid per unit area.

1.2 Duct Thermal Insulation Thermal Insulation:

The ducts shall be insulated with 19mm thick Al foil faced nitrile rubber (Class: O). All joints shall be sealed with 50 mm wide adhesive based aluminum tape. The thermal conductivity of the material shall be not more than 0.032 W/(m0K) and density not less than 33 kg/m3 .

1.3 Duct Acoustic Insulation

Acoustic Insulation:

a. Acoustic insulation of duct shall be with 12 mm thick rigid board of fiber glass wool of density 48 kg/m3 and covered with 32 G Perforated Aluminum sheet and fastened with sheet by screw and washer with pitch not less than 12 inches.

b. Acoustic insulation shall be as per drawing after cleaning the internal surface of the duct to make it free from dirt and dust.

1.4 Mode of Measurement.

Acoustic Insulation shall be calculated on the basis of the prime duct size and paid for per unit area.

All duct thermal insulation shall be measured on the basis of duct prime surface area with addition of insulation thickness and paid for per unit area.

8. ELECTRICALS

8.1 Scope.

The scope of this section covers supply, installation & Testing of cables, Control Panel with Voltmeter & Ammeter connecting Indoor Unit & Outdoor Unit as per specification.

8.2 Electrical.

- The supply should be complete with appropriate earthing as per IE Rules.
- Each Unit should have a separate control panel. The control panel shall consist of Voltmeter & Ammeter with selector switches.
- Depending on the number and capacity of units to be installed, each unit should have separate control through a main incoming switch with adequate capacity of approved makes.
- Each ODU should have separate SFU adjacent to the unit / within the unit and visible from the unit.
- Electrical cabling should be done with armored copper cable of approved makes only.
- Fuse switches should be HRC cartridge type with visible indication.
- The cabling shall be done as per drawings or instruction from Engineer – in –charge.
- The cabling supporting shall be done as per drawing.

- **AC's Testing of installation**
- Scope of Supply includes the following:
- Supply of the equipment / system as specified above
- Installation & Commissioning as specified in above

- Training as specified below.
- On site comprehensive Warranty for -01- Year (12 months) as specified in below.
- Optional 5 (Five) Years comprehensive maintenance contract after the expiry of -01- years warranty.
- Inspection & Tests
- General
- 1. The Supplier shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services as are specified here. The Supplier shall at its own expense and at no cost to the Bank carry out all such tests and/or inspections of the Goods and Related Services as are specified in the tender.
- 2. The inspections and tests may be conducted on the premises of the Supplier or its subcontractor(s), at the point of delivery and/or at the Goods final destination. If conducted on the premises of the Supplier or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data - shall be furnished to the inspectors at no charge to the bank.
- 3. The Manuals and Drawings shall be in the ruling language (English) and in such form and numbers as stated in the Contract.
- 4. Unless and otherwise agreed, the goods and equipment shall not be considered to be completed for the purposes of taking over until such Manuals and Drawing have been supplied to the Purchaser.
- 5. Installation demonstration is to be arranged by the supplier and the same is to be done within 15 days of the arrival of the equipment at site.
-
- Training.
- 1) Number of persons - 01 person
- 2) Period of Training - 1 week
- 3) Nature of Training - Operation, maintenance & trouble shooting
- Incidental Services
- On site Comprehensive Warranty:
- • -01- Years (12 months) from Installation & Commissioning and date of acceptance
- • Down-time call attendance should be within 72 hours.
- • In case the Equipment / System remains non-operational for more than -07- days then warranty period will be extended for the equivalent period for which Equipment / System remained non-operational. Warranty extension in such case shall be done without prejudice to any other Term & condition of the contract.
- Delivery Schedule / Time period for completion: 30 DAYS from the date of Site handover.

IST OF APPROVED MAKES FOR AIR-CONDITIONING WORKS		
SR. NO.	**PARTICULAR**	**APPROVE MAKE**
1.0	Air Conditioner - Split Inverter AC(5/3 star) - (.75 ton -1ton,1.5 ton,1.8ton-2ton)	Daikin/Blue Star/ Carrier / Mitsubishi/ Toshiba/
2.0	Air Conditioner - Cassette Inverter AC (5/4/3 star) - (2.9 ton - 3.5 Ton)	Daikin/Blue Star/ Carrier / Mitsubishi/ Toshiba
3.0	Copper Pipe	Mandev / Rajco / Totaline
4.0	Hard Cpvc Pipes	Supreme / Prince /Astral/Finolex
5.0	G.I. Sheet	Jindal / Lloyd Steel / Tata/Sail
6.0	Insulation Material:	
a)	Nitrile Rubber Roll And Tube (Class-O)	Armaflex/ K-Flex/ A-Flex/ Up Twiga
	Duct Acoustic Insulation	Armaflex/ K-Flex/ Up Twiga
	Electrical:	
	Switch Gear	Mk / Siemens / Schneider/Havells
8.0	Armoured / Flexible Control Cable	Finolex / Kei / Rr Kabel/Havells
9.0	Pvc Rigid Conduits & Accessories	1.5mm Thick Mms Isi And Fia Approved
10.0	Tfa	Zeco /Vts /Citizen / Edgetech /Blowtech
11.0	Blower / Fans	Kruger / System Air / Nicotra /Flaktwood /Daikin / Mitsubishi / Toshiba / Hitachi
12.0	Low Voc Adhesive	Pidilite
13.0	Grilles/ Fire Dampers/Diffusers/ Vcd	Caryaire/Premier/ Dynacraft / Ravistar/ Equivalent
14.0	Expanded Polystyrene	Thermolloyd/ Beardsell/ Astha Polymer/ Equivalent
15.0	M.S. Pipe	Tata/ Jindal/ Equivalent
16.0	Valves	Advance/C&R/ Audco/ Leader
17.0	Strainer	Sant/ Ds Engineering
18.0	3/2way Mixing Valves	Johnson / Belimo / Honeywell
19.0	Pressure Gauges/ Thermometer	H Guru/ Waree

CONTRACTOR SHALL CONFIRM MAKE OF MATERIAL TO BANK/SHAW ARCHITECTS BEFORE STARTING OF WORK.

CONTRACTOR SHALL USE ONLY 1 COMPANY MAKE ITEM IN WHOLE PROJECT.

CONTRACTOR STRICTLY USE THE MATERIAL AS PER ABOVE APPROVE MAKE LIST ONLY.

Following IS CODES will be applicable for the project.

1. IS : 655 - 1963 : Ducting work.
2. IS : 659 - 1964 : Safety Code for Air-conditioning.

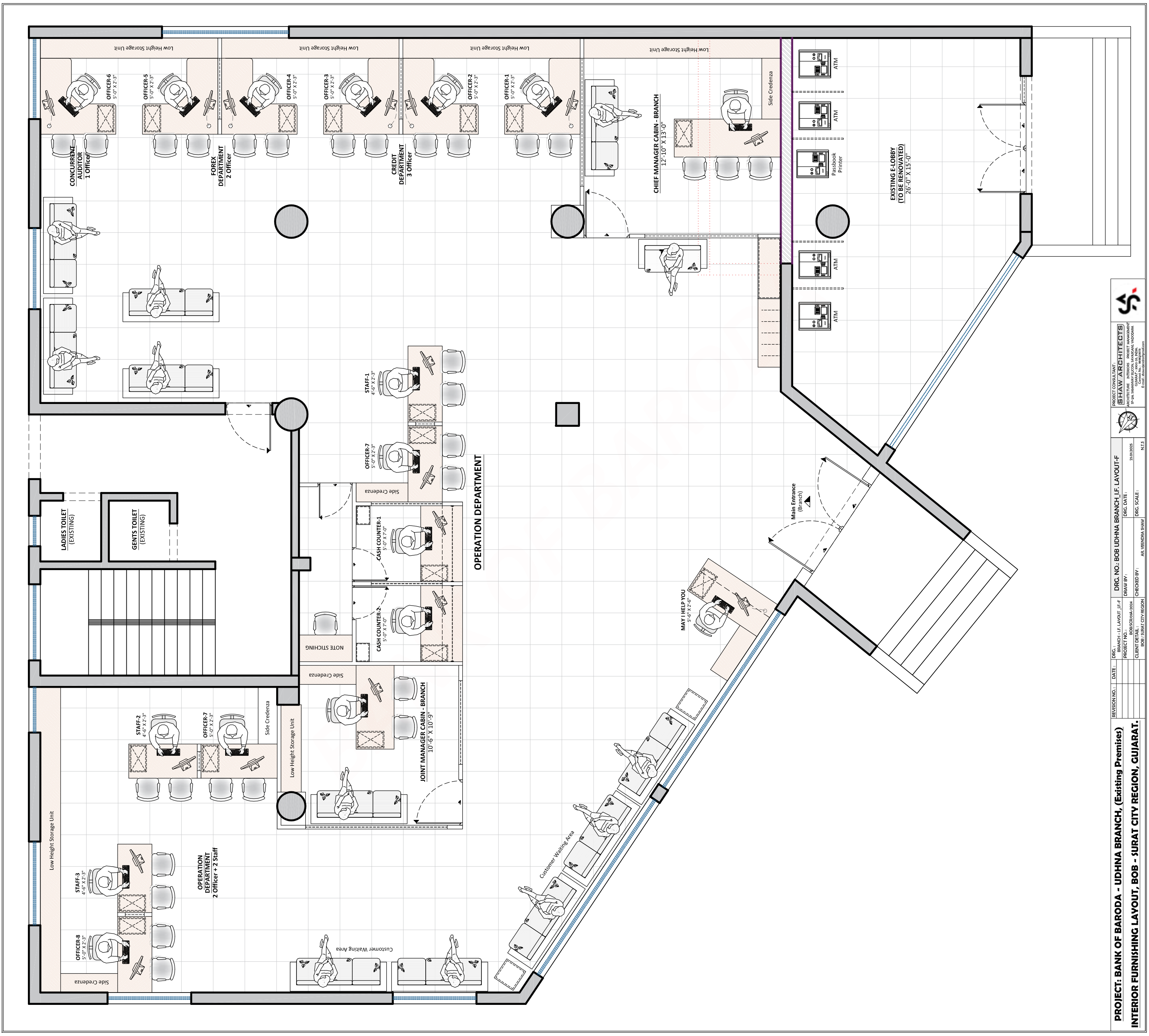
3.	IS : 660 - 1963	:	Safety Code for Mechanical Ref.
4.	IS : 5111-1969	:	Code of Practice and Measurement Procedure for Testing Refrigerant compressors.
5.	IS : 325-1970	:	Specifications for 3 Ph. Induction Motor. Also confirm to IS : 1231 for Foot Mounted and IS : 2223 for flange mounted motors.
6.	IS : 2147-1962 voltage switch gears	:	Degree of protection provided by enclosures for low and control gears.
7.	IS : 3012-1965	:	Code of Practice for installation PART-I) maintenance of switch gear.
8.	IS : 3061-1982	:	Code of Practice for Fire precautions in welding & cutting operations.
9.	IS : 3651-1967	:	Glossary of terms used in Refrigeration & Air-conditioning.

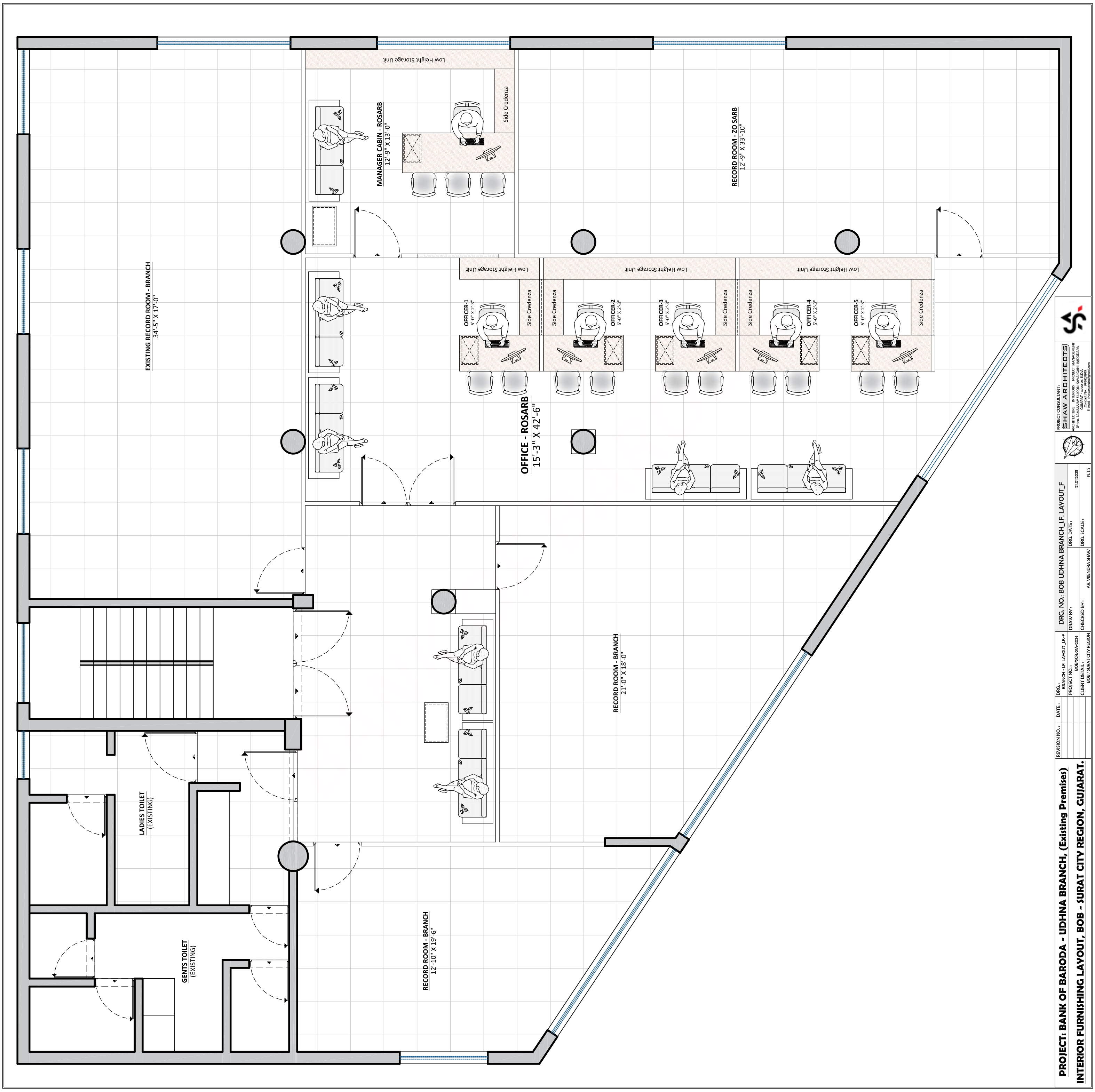
IS STD. FOR INSULATION WORK

11.	IS : 4671-1984	:	Expanded polystyrene For Thermal Insulation purposes
12.	IS : 661-1974 Storages.	:	Code of Practice for Thermal Insulation of Cold
13.	IS : 7240-1981 Thermal Insulation	:	Code of Practice for Application and finishing of material at Temp. from 80°Cto 40°C.
14)	IS : 7413-1981	:	Code of Practice for Application and finishing of Thermal Insulation Material at Temp. from 40°C to 700°c.
15)	IS : 8183 - 1976	:	Specifications for Bonded Mineral Wool.
16)	IS : 1239	:	Pipes up to 150 MM Dia.
17)	IS : 3589	:	Pipes above 200 MM Dia.
18)	IS : 780/ISI Certificates	:	Valves of PN 1.6 rating
19)	IS : 5312 / ISI Certificate	:	Check Valves
20)	IS : 277	:	For Sheet galvanizing spec.
21)	IS : 900	:	Installation of motor
22)	IS : 4064 & 4047	:	Switch fuse unit.
23)	IS : 2516	:	ACB
24)	Relevant ISS	:	MCCB
25)	IS : 3043 - 1963	:	Earthing
26)	IS : 3043	:	Earth Station.
27)	IS : 732 - 1963	:	Testing of Electrical Installation
28)	IS : 520 compressor and	:	Standard for positive displacement Refrigeration, condensing unit.
29)	IS : 2825	:	Unfired pressure vessels
30)	IS : 4503	:	Shell and Tube type Heat Exchanger
31)	IS : 1520	:	Horizontal Centrifugal Pumps for Chiller, Cold, Fresh Water.
32)	IS : 737	:	Specification for Wrought al. And al. Sheet and strip.
33)	IS : 3069 thermal materials.	:	Glossary of items symbols & units relating to
34)	IS : 702	:	Industrial bitumen.
35)	IS : 8183	:	Rounded Mineral Wool.

NOTE: All codes and standards mean the latest where not specified otherwise the installation shall generally follow the Indian Standard codes of practice of relevant British Standard Codes of Practice in the absence of corresponding Indian Standards.

NOTE: -


Low Height Storage Unit
OFFICER-6
OFFICER-5
OFFICER-4
OFFICER-3
OFFICER-2
OFFICER-1
CONCURRENT AUDITOR 1 Officer
FOREX DEPARTMENT 2 Officer
CREDIT DEPARTMENT 3 Officer
CHIEF MANAGER CABIN - BRANCH
12'-10" X 13'-0"
Side Credenza
ATM
Passbook Printer
EXISTING E-LOBBY (TO BE RENOVATED)
26'-0" X 15'-0"
STAFF-1
OFFICER-7
OPERATION DEPARTMENT
CASH COUNTER-1
CASH COUNTER-2
NOTE STICHING
LADIES TOILET (EXISTING)
GENTS TOILET (EXISTING)
Main Entrance (Branch)
MAY I HELP YOU
JOINT MANAGER CABIN - BRANCH
10'-6" X 10'-9"
STAFF-2
OFFICER-7
Low Height Storage Unit
Customer Waiting Area
STAFF-3
OFFICER-8
OPERATION DEPARTMENT 2 Officer + 2 Staff
Customer Waiting Area
SHAW ARCHITECTS
PROJECT: BANK OF BARODA - UDHNA BRANCH, (Existing Premises)
INTERIOR FURNISHING LAYOUT, BOB - SURAT CITY REGION, GUJARAT.


Low Height Storage Unit
Side Credenza
MANAGER CABIN - ROSARB
12'-9" X 13'-0"
RECORD ROOM - ZO SARB
12'-9" X 33'-10"
EXISTING RECORD ROOM - BRANCH
34'-5" X 17'-0"
OFFICER-1
OFFICER-2
OFFICER-3
OFFICER-4
OFFICER-5
5'-0" X 2'-3"
OFFICE - ROSARB
15'-3" X 42'-6"
RECORD ROOM - BRANCH
21'-0" X 18'-0"
LADIES TOILET
(EXISTING)
GENTS TOILET
(EXISTING)
RECORD ROOM - BRANCH
12'-10" X 19'-6"
SHAW ARCHITECTS
DRG. NO: BOB UDHNA BRANCH_I.F. LAYOUT_F
PROJECT: BANK OF BARODA - UDHNA BRANCH, (Existing Premises)
INTERIOR FURNISHING LAYOUT, BOB - SURAT CITY REGION, GUJARAT.

1. MAKE OF ANY OTHER ITEM LEFT OUT SHALL BE APPROVED BY CLIENT/CONSULTANTS BEFORE PROCUREMENT.

2. MAKE OF THE ACCESSORIES FOR TRANSFORMER, HT PANEL ETC. AND ANY OTHER ITEMS SHALL ALSO BEAPPROVED BY PROJECT MANGER.

3. THE SPECIFICATIONS INDICATED ABOVE ARE MINIMUM REQUIREMENT ONLY. THE CONTRACTOR SHOULD SUPPLY, ERECT AND COMMISSION THE EQUIPMENTS/ SYSTEM ACCORDING TO LATEST EDITIONS OF IEC AND EI/IS STANDARDS.

SIGNATURE OF TENDERER

DECLARATION

I/We have inspected the site of works and have made me / us fully acquainted with the local conditions in and around the sites of works. I/We hereby declare that I/We have gone through the conditions laid down in the Notice Inviting Tender, Conditions of Contract, Technical Specifications and understood the same and on the basis of the same I/We quoted our rates in the Schedule of Quantities attached with the tender documents.

I/We shall also uniformly maintain such progress as may be directed by the Employer / Architect to ensure completion of same within the target date as mentioned in the tender document.

Witness:

_____

Signature of Tenderer

Address_____

_____ Date: _____