TENDER DOCUMENT

Vol. I

(NIT, GCC, Special Conditions, Annexures & Appendix and Technical Specifications)

Notice Inviting Tender for Civil, Electrical, plumbing &allied works at Bank's Residential Flats, BOB House, Bank of Baroda, Vadodara, Gujarat."

BANK OF BARODA,
FACILITIES MANAGEMENT
DEPARTMENT,5TH FLOOR,
BARODA BHAVAN, ALAKPURI,
BARODA – 390005

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बैंक ऑफ़ बड़ौदा
Bank of Baroda
विजया VIJAYA | देना DENA

VOLUME – I

CONDITION OF CONTRACT

Name of Work:- Notice Inviting Tender for Civil, Electrical, plumbing & allied works at Bank's Residential Flats, BOB House, Bank of Baroda, Vadodara, Gujarat."

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SECTION A

NOTICE INVITING TENDER

NIT REFERENCE NO. BCC:FM:115:Note:258

NOTICE INVITING TENDER

To,

Asstt. General Manager
Bank of Baroda, Facilities Management Dept.,
Head Office, Alkapuri, Vadodara

Tender for Civil, Electrical, plumbing & allied works at Bank's Residential Flats, BOB House, Bank of Baroda, Vadodara, Gujarat."

Dear Sir,

1.1 **The Bank of Baroda (BOB),** herein called the Employer / Owner, hereby invite tender from experienced contractors for **Civil, Electrical, plumbing & allied works at Bank's Residential Flats, BOB House, Bank of Baroda, Vadodara, Gujarat."** on item rate basis.

1.2 The tender forms can be downloaded from bank's website https://www.bankofbaroda.in/tenders/corporate-office from **26/05/2023 to 15/06/2023 up to 1500 hrs**.

1.3 Submission of Tender

The Tender is to be submitted in three separate envelopes, each sealed and clearly identified as to envelope number and contents as indicated below. The three envelopes shall be contained in a large envelope **superscribed " Civil, Electrical, plumbing & allied works at Bank's Residential Flats, BOB House, Bank of Baroda, Vadodara, Gujarat."."**

1.4 Your tender duly filled in, signed and sealed, should be addressed and hand delivered to **The Asstt. General Manager, Facilities Management, Bank of Baroda, 5th Baroda Bhavan,Alkapuri, Vadodara 390 007 on or before 1500 hrs of 15/06/2023 in the tender box placed at Ground floor Bank of Baroda, Baroda Bhavan, Alkapuri, Vadodara 390 007.**

1.5 Each Tenderer shall submit one copy of Conditions of Contract (Vol.-I), Specifications (Vol.- II) and 1 copy of Bill of Quantities(Price bid) (Vol.-III) for preparation of this Tender. Tenderers shall submit the documents in Envelope No. 1, Envelope No. 2 and Envelope No. 3 as stated below.

1.6 (i) **Envelope No. 1**

Envelope No. 1 shall contain the following:

a) **Earnest Money Deposit** of **Rs. 37,000/- (Rupees Thirty Seven Thousand only)** in the form of Demand Draft / Pay Order only in favour of Bank of Baroda drawn/issued on any Nationalized / Scheduled Bank and payable at Vadodara. (Exempted for NSIC/MSME for valid certificate)

(ii) **Envelope No. 2**

i. Vol. I and Vol. II duly stamped and signed oneach page.

ii. All submittals as per Clause 6 of **Information and Instructions to Tenderers.**

iii. Any others as stated in tender Documents.

This envelope shall be superscribed "Envelope No. 2 - Technical Bid for **Civil, Electrical, plumbing & allied works at Bank's Residential Flat, BOB House, Bank of Baroda, Vadodara, Gujarat."."**

(iii) **Envelope No. 3**

Envelope No. 3 shall contain Priced Bill of Quantities duly filled in and signed on each page by the Tenderer. Rate quoted in the original copy of B.O.Q. shall be considered as valid. No commercial or technical condition or qualification of any sort shall be indicated by the tenderer in the Envelope No. 3 otherwise the tender shall be liable for rejection. **This envelope shall be superscribed** "Envelop No. 3 - Priced Bid for **Civil, Electrical, plumbing & allied works at Bank's Residential Flats, BOB House, Bank of Baroda, Vadodara, Gujarat."."**

1.7 Late Tenders

Tenders received late on account of any reason whatsoever and telegraphic tenders will not be entertained.

1.8 Opening of Tender

The Envelope No. 1 i.e. the Technical Bid of the Tender will be opened immediately after last date and hour of submission i.e. on **15/06/2023 at 1530** hrs or any extended date duly intimated in presence of Tenderers who wish to be present. Representatives who wish to be present during the tender opening shall carry a proper letter of authority issued by the Competent Authority of the firm / company to attend the same, without which they shall not be allowed therein.

1.9 Prebid Meeting

BOB discourages the stipulation of any additional conditions by the Tenderer along with their

offer. However, in case the Tenderer wishes to include any condition / stipulation / clarification in the tender document, he should submit the same in writing to Employer on or before 05/06/2023**.** A prebid meeting will be held on **06/06/2023** at the office of **The Asstt. General Manager, Bank of Baroda, 5th Floor, Baroda Bhavan, Alkapuri , Vadodara 390 007** at **12:00 PM**. The clarifications / conditions etc. of all the Tenderers, if any, will be examined and after discussions with all the Tenderers in the prebid meeting, the conditions acceptable to BOB will be intimated to the Tenderers through Corrigendum/Addendum on bank's website only. In case any further clarifications are required by the Tenderers, they may notify the Employer or Bank's Engineerat least 7 days prior to the deadline of submission of bids. Copy of the response for the above clarifications as well as any others at Employer's initiative will be forwarded to all tenderers through Addendum / Corrigendum but without identifying its source.The Tenderer shall return the above documents duly signed in Envelope No. 2 and this shall form part of the Tender document.

1.10 The Tender without EMD will summarily be rejected.

1.11 No other conditions shall be accepted thereafter and the Tenderer shall give a declaration accepting all the conditions given in the Tender or Addenda / Corrigendum if any. **Tender along with any conditions is likely to be rejected.**

1.12 Evaluation of Tender

The bidders who submit the documents as required as well as other criteria as stipulated in the Tender will be qualified for opening of their Price Bid.

1.13 Validity of Tender

The Tender shall be valid for a period of 90 days, from the last date of submission of the tender. The tenders shall not be entitled during the said period of 90 days to revoke or cancel or vary the tender. In case of tenderer revoking or canceling or varying this tender, the EMD shall be forfeited.

1.14 **For any further information on the tender**, following offices / persons to be contacted :

M/s Bank of Baroda, Facilities Management Dept. Head Office , Vadodara.

1. **Mr. Mukund Anand,**
   Manager (Civil)Mobile
   No. : 7874623126
   Email : pe.bcc@bankofbaroda.com

1.15 BOB shall not be bound to accept the lowest tender and reserves the right to reject any or all the Tenders without assigning any reason therefor.

Yours faithfully,

……..

SECTION B

Notice Inviting Tender for Civil, Electrical, plumbing & allied works at Bank's Residential Flats, BOB House, Bank of Baroda, Vadodara, Gujarat."

IMPORTANT INSTRUCTIONS FOR Tendering

B.1	Important instructions for Tendering
	• This is an off-online tender event of Bank of Baroda. • Bidders (Contractors/ firms) are requested to read the terms & conditions of this tender before submitting their tenders. • Bidders who do not comply with the conditions with documentary proof(wherever required) will not qualify in the Tender process for opening of Commercial bid. • The intending bidders are required to submit their offer physically before the last date of submission of tender. • All the terms and conditions shall be as **per NIT reference no. BCC:FM:115:Note:258** available on Bank's website **https://www.bankofbaroda.in/tenders/corporate-office** • Complete Tender (Part I - Technical Bid) and (Part II - Commercial Bid) alongwith EMD shall be dropped in the tender box placed at Ground floor Bankof Baroda,Baroda Bhavan, Alkapuri, Vadodara before last date of submission of the tender.
B.2	Bid Submitting & Opening
	• Part I Technical bid will be opened on specified date and time as given in the tender at Ground floor Bank of Baroda, Baroda Bhavan, Alkapuri, Vadodara. Interested Bidder(s) can attend the said bid opening. • Part II Commercial bid will be opened only those bidder(s) who's Part-I Technical Bid is found to be acceptable by Bank of Baroda. Such bidder(s) will be intimated date of opening of Part-II Commercial bid, through valid email confirmed by them. • All entries in the tender should be entered in Technical & Commercial Formats without any ambiguity. • All notices /corrigendum shall be issued on the Bank's website only. • Tender cannot be accessed after the due date and time mentioned in tender. • The process of bidding for submission of Technical and Commercial Bid is offline.
B.3	Submission of Technical Bids and Commercial Bids
	The TENDER response shall be submitted in two parts. Part I shall comprise of Technical Bid and Part II shall contain Commercial Bid. These bids shall be dropped in the tender box placed at Ground floor Bank of Baroda, Baroda Bhavan,Alkapuri, Vadodara before last date of submission of the tender.

	➢ **The prices offered to the Bank must be Indian rupees** ➢ Any price variation on account of change in tax structure (+ or -) shall be payable/recoverable during the contract period. ➢ No price increase on account of exchange rate fluctuations. Please note that any changes in the technical / prequalification criteria mentioned in this Tender Document shall be inserted as addendum in the tender section of Bank's Website **https://www.bankofbaroda.in/tenders/corporate-office**
B.4	Opening of Technical Bids
	The Technical Bids will be opened on the last date of submission in the presence ofBank's authorized committee at Ground floor, Bank of Baroda, Baroda Bhavan, Alkapuri, Vadodara. The representatives of the bidders may remain present during the opening of Technical bids. No separate intimation will be given to the bidders in this regard.
B.5	Evaluation of Technical Bids
	Technical Bids will be evaluated on the basis of fulfilling Bidders Profile Details and compliance to Eligibility criteria, Technical specification, other terms and conditions stipulated in the tender document. Commercial Bids of only those bidders who qualify in the technical evaluation / demonstration, based on the criteria laid down herein above, will be opened. The Bank reserves the right to reject any or all the tenders without assigning any reason thereof.
B.6	Evaluation of Commercial Bids
	After the technical evaluation of the tenders, the price/commercial bid of only technically qualified bidders (as per the criteria mentioned herein above) shall be considered for price bid evaluation. The Bank reserves its right to seek and obtain substantiating data from the bidders for verification of the credentials submitted. The Date of opening of Price Bid shall be advised separately to all technically qualified bidders. Bank may at its discretion, request the shortlisted bidders to givea demonstration of their proposed system at their cost before opening of price bid.This will also be considered as a part of technical evaluation. Lowest quoted bidder (L-1) shall be awarded work subject to satisfying terms and conditions of tender.
B.7	Site address
	Bank of Baroda , BOB house, Old Padra Road, Baroda

SECTION C

INTRODUCTION

Sr.No.	Name of work	Approx. Project Cost (Rs.)
1	**Civil, Electrical, plumbing & allied works at Bank's Residential Flat, BOB House, Bank of Baroda, Vadodara, Gujarat.**	**37.50 Lakhs**

The above Project of Bank of Baroda for '**Civil, Electrical, plumbing & allied works at Bank's Residential Flats, BOB House, Bank of Baroda, Vadodara, Gujarat."**

Firms who fulfill the following minimum pre- qualifying / eligibility criterions need only apply:

- Average Annual financial turnover of the firm during the last -3- years ending 31st March,2023, should be at least **Rs 11.25 Lacs**. Supported with audited balance sheets.

- Experience of having successfully completed similar works / job i.e. Office building, Residential building, Commercial building, Institutional building minimum 3000 sq.ft. mentioned hereinabove for Public Sector Undertaking, Govt. Project or Corporate Sector, Banks, reputed firms in commercial/residential building during last – 7 years (as on 21.05.2023) should be either of the following.

A) Three similar completed works each costing not less than **Rs 15 Lakhs**

OR

B) Two similar completed works each costing not less than **Rs. 18.75 Lakhs**.

OR

C) One similar completed work costing not less than Rs.**30 Lakhs.**

Note : Similar type of work means- Work having Civil, Interior Furnishing, Electrical, Plumbing & allied etc. executed for Office building/Residential building/Commercial building/Institutional building mentioned hereinabove for Public SectorUndertaking, Govt. Project or Corporate Sector, Banks, reputed firms during last – 7 years (as on 31.03.2023) (For Costing-Multiple Projects/multiple location shall not be considered)

i. **Tenders by those bidders who do not submit Performance Certificates from their previous employers /clients with relevant details i.e. Project cost, date of completion of project, shall be liable to be summarily rejected.**

ii. The proposed work shall be executed by bidder and not as Joint Venture, tie-ups etc.

Duly filled & signed application /offers/Tender shall be submitted online only.

Prequalification and Final selection of Contractor will be the ultimate choice of Bank. The Bank reserves the right to accept or reject any or all the application/s without assigning any reasons whatsoever.

Basic Information			
	Description	**Bidders response**	**Documents submitted**
1	Name of the Bidder/Organization		
2	Full address of the Registered office		
3	Full address of the Local office (if any)		
4	Contact no.		
5	Email id		
6	Year of Establishment		
7	Type of Organization(Whether sole proprietorship, Partnership, Private Ltd. or Ltd Co.		
8	Registered/empanelment with Govt. /Semi Govt./PSU Organization		
9	Name and qualification of the Proprietor / Partners /Directors of the Organization / Firm		
A	Name		
	Qualification		
b	Name		
	Qualification		
C	Name		
	Qualification		
10	Single point contact from Bidder side		
	Name		
	Contact no.		

	Email id		
11	Avg. Annual Turnover, in last 3 years (Up to 2023) should not be less than Rs 11.25 lakhs		
	2020-21		
	2021-22		
	2022-23		
12	Three projects (costing not less than Rs 15 lakhs)		
a. 1	Complete address of the Project		
a. 2	Address of office from where completion certificate is issued		
a. 3	Contact number		
a. 4	email id		
a.5	Designation of signatory of completion certificate		
a.6	Area of the building		
a.7	Final project cost		
a.8	Date of completion of project		
a.9	Completion certificate issuance date		
a.10	Scope of work		
b.1	Complete address of the Project		
b.2	Address of office from where completion certificate is issued		
b.3	Contact number		
b.4	email id		
b.5	Designation of signatory of completion certificate		
b.6	Area of the building		
b.7	Final project cost		
b.8	Date of completion of project		
b.9	Completion certificate issuance date		
b.10	Scope of work		
c.1	Complete address of the Project		

c.2	Address of office from where completion certificate is issued		
c.3	Contact number		
c.4	email id		
c.5	Designation of signatory of completion certificate		
c.6	Area of the building		
c.7	Final project cost		
c.8	Date of completion of project		
c.9	Completion certificate issuance date		
c.10	Scope of work		
13	Two projects (costing not less than Rs 18.75 lakhs)		
a.1	Complete address of the Project		
a.2	Address of office from where completion certificate is issued		
a.3	Contact number		
a.4	email id		
a.5	Designation of signatory of completion certificate		
a.6	Area of the building		
a.7	Final project cost		
a.8	Date of completion of project		
a.9	Completion certificate issuance date		
a.10	Scope of work		
b.1	Complete address of the Project		
b.2	Address of office from where completion certificate is issued		
b.3	Contact number		
b.4	email id		
b.5	Designation of signatory of completion certificate		
b.6	Area of the building		

b.7	Final project cost		
b.8	Date of completion of Project		
b.9	Completion certificate issuance date		
b.10	Scope of work		
14	One completed project (costing not less than Rs 30 lakhs)		
a.1	Complete address of the Project		
a.2	Address of office from where completion certificate is issued		
a.3	Contact number		
a.4	email id		
a.5	Designation of signatory of completion certificate		
a.6	Area of the building		
a.7	Final project cost		
a.8	Date of completion of project		
a.9	Completion certificate issuance date		
a.10	Scope of work		
15	No. of years of experience in the field		
16	Valid solvency certificate from Bank		
	Name of Bank		
	aAmount		
	Validity		
17	GST No.		
18	PAN No.		
19	Whether any Civil Suit / litigation arisen in contracts executed / beingexecuted 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. Give name of court, place,		
	status of pending litigation.(Attach separate sheet if required)		
20	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.		
21	References with Address & Telephone Numbers of two persons, Email (Engineers, or top officialsof an organization) for whom you have executed similar works, who may bedirectly contacted by the Bank about the ability, competence or capability of your organization.		
22	Any other information		
23	Section A, B, E : Seal and signed by Bidder attached		
24	Section D: Bidders eligibility criteria attached		
25	Section F : duly seal and signed on letter head		
26	Annexure K (Part of Section I): Pre Contract Integrity Pact duly seal and signed		

SECTION D

ELIGIBILITY CRITERIA

All the supporting Documents are required to be submitted alongwith technical part 1. Details filled in this form must be accompanied by sufficient documentary evidence, in order to verify the correctness of the information. **All the documents submitted should be attested by the bidder**.

E.	Prequalification Criteria for Bidder who is submitting the bid.		
	Prequalification Criteria	Bidders Response Yes/No.	Documents Required
E.1	Bidder's Average Annual turnover of last three years should not be lessthan Rs 11.25 Lakhs i.e. 2020-21, 2021-22, 2023-23,		
E.2	**Similar type of work means- Work having Civil, Interior Furnishing, Electrical, Plumbing & allied etc. executed for Office building/Residential building/Commercial building/ Institutional building mentioned hereinabove for Public Sector Undertaking, Govt. Project or Corporate Sector, Banks, reputed firms during last – 7 years (as on 31.03.2023) (For Costing-Multiple Projects/multiple location shall not be considered)** Area not less than 3000 sq.ft.(for single project) during last – 7 years (as on31.03.2023) should be either of the following.		

E.3	The bidders should have satisfactorily executed the work of similar nature in Semi Govt./ Govt. & Public/ Private Sector Organizations during last seven (7) years (up to 31.03.2023)		
	A) Three similar completed works each costing not less than Rs. 15 Lakhs. OR B) Two similar completed works each costing not less than Rs. 18.75 Lakhs. OR C) One similar completed work costing not less than Rs. 30 Lakhs.		

1.

Proforma 1

DETAILS OF KEY PERSONNEL, GIVING DETAILS ABOUT THEIR TECHNICAL QUALIFICATION & EXPERIENCE INCLUDINGTHAT IN YOUR ESTABLISHMENT

Sr. No.		Name and Designation	Age	Qualifi-cation	Experie nce	Nature of Works handled	Name ofthe projects handled costing over Rs.52 Lacs.	Date from which Employed inyour organization	Indicate details of Experience for similar projects
1		**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	Details of qualified in-house Civil Engineer								
2	Details of qualified In-house Interior Decoration supervisor/Jr. Civil Engineer/Jr. Electrical/Mechanical Engineer, with details of experience in similar works.								
3	If the applicant is Having existing association/collaboration or likely to form a consortium of/ with other Consulting								

1.

	Engineers/ Contractor for the special work,the details ofthe intended setup shall begiven along with details of Technical Staff similar lines to the above.								

Notes:

1. Information has to be filled up specifically in this format. Please do not writeremark "As indicated in Boucher".
2. Indicate other points, if any, to show your technical and managerial competency to any important point in your favour.

Proforma 2

Work capability and details of works in hand.

B) List of important works ON HAND not less than **Rs.15** lakhs for civil,Electrical, & Plumbing & allied work.

Sr. No	Name of the project & location.	Name & full postal address of the owner. Also indicate whether Govt. Semi-Govt. Private body or Financial Institution with full postal address & detailsof contact person of the owner.	Contract Amount (Rs.) for civil, Electrical, & Plumbing & allied work. Work only withcopy of Work Order	Completion Period Stipulated (Year)	Actual (Year)of completion	Any other relevant information.
1	2	3	4	5	6	7
1)						

Notes :

1. **Information has to be filled up specifically in this format.Please do not write remark "As indicated in Brochure".**

SECTION - E

INFORMATION AND INSTRUCTIONS TO TENDERERS

BANK OF BARODA

INFORMATION AND INSTRUCTIONS TO TENDERERS

1. Scope of Work :

1.1 The brief description of work to be carried out and its scope are given in the General Condition of Contract and the **"Special Conditions of Contract"** of these documents.

2. Site Inspection and Information :

2.1 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 making a tender and for entering into a contract and must examine the Drawings, inspect the site of the work and acquaint himself with all the information about all the local conditions, means of access to the work, nature of the work and all matters pertaining thereto.

2.2 Access for Site visit will be given during the Tender period by appointment on application to the Asstt. General Manager, Facilities Management Department, Bank of Baroda, 5th floor, Baroda Bhavan, Vaododara. The tenderer shall ascertain the location, size and condition of the areas available for his use as working areas and all other information affecting this Tender.

2.3 The Employer will not be responsible and will not reimburse any expenses which may be incurred or losses to person or property suffered by any Tenderer in connection with visits to and examination of the site and in the preparation of his tender for submission.

2.4 The tenderers should note that information, if any, as regards to the site and local conditions, as contained in these tender documents has been given merely to assist the tenderers and is not deemed to be complete.

2.5 The tenderers should note and bear in mind that the Employer shall bear no responsibility for the lack of acquaintance of the site and other conditions or any information relating thereto, on their part. The consequences of the lack of any knowledge, as aforesaid, on the part of the tenderers shall be at their risk and cost and no charges or claims whatsoever consequent upon the lack of any information, knowledge or understanding shall be entertained or payable by the Employer either during tender stage or during the construction period.

3. **Rates & Discrepancies etc. :**

3.1 The contractor shall quote the rate after careful examination Tender documents.

3.2 The tenderers shall quote the rates both in figures and words. If some discrepancies found between the rates quoted in figures and words, the following procedure shall be adopted for checking and arithmetic calculation:

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

ii) When the rates quoted by the tenderer in figures and words tally but amount is incorrect, the rate quoted by the tenderer in words shall be taken as correct.

iii) When it is not possible to ascertain the correct rate by either of the above methods, the rates quoted in words shall be taken as correct.

iv) All erasures and alterations made while filling the tender must be attested by initials of the tenderer. Overwriting of figures is not permitted and failure to comply with either of these conditions will render the tender void at the Employer's option. No advice of any change in rate or conditions after opening of the tender will be entertained.

v) **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.**

vi) The rate quoted shall be inclusive of all material, labour, profit, tools and tackles, lead and lift, transportation, cutting etc complete including all the taxes, duties, cess, excise, octroi, LBT, etc. The GST will be paid over and above quoted rates as per the prevailing rates to the contractor on production of necessary documents.

3.3 The Contractor shall not be entitled to any compensation for any loss suffered by him on account of delays, in commencing or executing the work, whatever the cause of delays may be, including delays arising out of modifications to the work entrusted to him or in any sub- contract connected therewith or delays in awarding contracts for other trades of the project or incommencement of completion of such works or in procuring Government controlled or other building materials or in obtaining water and power connections for construction purposes or forany claim in respect thereof. The Employer does not accept liability for any sum towards lossof overheads & profits of the contractor besides the accepted amount, subject to such variationsas are provided for herein or as deemed fit to Employer. However, necessary time extensionwill be allowed if the delay is not attributable to contractor.

3.4 The Tenderers shall before tendering carefully examine the Tender Documents including these Information's & Instructions to Tenderers, General Conditions of Contract, Special Conditions of Contract, General Particulars & Requirements to Specifications, Detailed Specification and other matters referred to therein, the Schedules and the Bill of Quantities and if there should be or appear to be any ambiguity in / or discrepancy between any of these documents or between figured and measured dimensions and other aspects upon the Drawings, he shall immediately refer the matter to the Employer / Bank's Engineer **for clarification before submission of Tender. However, in case of any discrepancies between Specifications and B.O.Q. items, B.O.Q. item shall supersede the others for quoting of rates.**

4.0 **Forms & Documents :**

i) The tenderer must use only the forms issued by the Employer to fill the rates.

ii) The Tender Form and the documents attached to it shall not be detached one from the other, and no alteration or mutilation (other than filling in all the blank spaces) shall be made in any of the documents attached hereto.

iii) All documents of the tender are to be read in conjunction with each other and rates quoted by the tenderer shall take this aspect into consideration.

5.0 **Signing of Documents :**

i) Each page of the tender documents should be signed by the person or persons submitting the tender in token of his / their having acquainted himself / themselves withthe General Conditions of Contract, Specifications, Special Conditions, etc., as laid down. Any tender with any of the documents not signed will likely be rejected.

ii) The tender submitted on behalf of a firm shall be signed by all the partners of the firm or by a person who has the necessary authority on behalf of the firm to enter into the proposed contract. Otherwise, the tender may be rejected by the Employer

iii) Tender shall contain full address, Telephone Nos., Fax No. for serving notices / addendums required to be served to the Tenderer in connection with the Tender.

iv) Power of Attorney in the name of person(s) who has / have signed the tender document.

6.0 **The Tender shall accompany the following information and documents:**

a) A construction programme in the form of Bar chart showing the sequence of operation

together with the estimated time for major activities.

b) Full details of any special methodology or technique the Tenderer proposes to use for the construction or for any other purpose.

c) List of Proposed Technical man-power including their qualification & experience.

d) List of proposed specialized contractors / associate if any, along with their credentials in respect to the trades of works together with their address.

e) Information regarding any changes from the previous submission made by the Tenderer for prequalification in respect of following aspects

- Details of Business & Technical Organization
- Financial resources

f) The Tenderers shall attach to their tender a copy, duly authenticated by a notary, of the documents containing the constitution of the consortium, company or firm by which the Tender is submitted so as to indicate by what persons and in what manner a contract may be entered by the consortium, company or firm and what persons would be directly responsible for the due performance of the Contract and can give valid receipt on behalf of the consortium, company or firm.

g) List of the equipment, formwork and staging to be erected / installed / deployed at the site for timely completion of the works.

7.0 **Earnest Money**

No Tender will be considered as responsive which is not accompanied by Earnest Money Deposit (EMD) in the form of Demand Draft / Pay Order drawn in favour of BOB from a Nationalised /scheduled bank. In the event of the Tenderer withdrawing his Tender before the expiry of 90 days from the date fixed for receiving the Tenders or such other extended dates as agreed to or if the tender is accepted, the Contractor fails to pay the security deposit as stipulated/or if he fails to commence the work within stipulated time, the Earnest Money willbe forfeited. The Demand Draft/Pay order/Bank guarantee submitted against the Earnest Money Deposit will be returned without any interest to the unsuccessful Tenderers within **180 days** after the date fixed for receiving tenders. **The Tender without EMD/valid NSIC/MSMEcertificate will be summarily be rejected.**

8.0 Initial Security Deposit ;

The successful Tenderer shall deposit a sum equal to 2% of the accepted Contract value, in the form of DD from nationalized Bank within 7 days of issue of letter of Acceptance / Work Order failing which the employer at his discretion may revoke the letter of Acceptance / Work order and forfeit the Earnest Money Deposit.

9.0 **Performance Guarantee**

The successful tenderer to whom the Contract is awarded shall deposit a sum equal to 5% of the accepted contract value in the form of Bank Guarantee from a **Nationalised or Scheduled Bank**. The Performance Guarantee shall be deposited within 14 days from the date of issue of Letter of Acceptance / Work Order failing which the Employer at his discretion may revoke the Letter of Acceptance / Work Order and forfeit the Earnest Money Deposit. The Bank Guarantee for Performance Guarantee shall be valid till the issue of Virtual Completion Certificate.

10.0 The Tenderer (whether or not he submits a tender) shall treat the details of the documents as secret and confidential. In case a tenderer does not submit his tender, he shall return the blank **Tender documents.**

11.0 **Examinations & Evaluation of Tenders :**

Employer will examine each Tender to satisfy whether - i) has been properly signed, ii) is accompanied by required security and documents and their correctness. A substantially responsive Tender is one, which conforms to all terms, condition and specifications of Tender Documents without material deviation or reservation. The Tender Evaluation will be as under :-

i) The Tender which does not fulfill the submission of documents as specified in Sl. No. – 6 of Information & Instruction to Tenderers or elsewhere in the Tender document will be treated as unqualified and will be rejected.

ii) The Tenders whose documents are found in order and satisfactory as stated above will be treated as responsive Tenders and the Price Bid of responsive Tenders will only be opened.

During evaluation employer may ask for any clarification or documents including breakdown of unit rates to the tenderer but no change in the price or substance of the bid will be sought.

12.0 **Award of Contract :**

Subject to **Clause no. 13** herein below Employer will award the contract to the Bidder whose bid has been determined to be substantially responsive and whose offer has been found lowest after arithmetical checking.

13.0 The Employer does not bind himself to accept, the lowest or any tender and reserves to itself the right to accept or reject any or all the tenders, either in whole or in part, without assigning any reasons for doing so. The Employer also has the right to re-invite the tender at his sole discretion.

13.1 **Bank have right to award the work to more than one contractors. Keeping in view of the quantum of work, work may be divided among L1, L2 & L3. Ratio of the work division among L1, L2 & L3 will be 60:20:20 OR among L1 & L2 in 60:40. But L2 & L3 should carry out the work at the rate of L1.**

14.0 Throughout all the documents the term 'Bid' and 'Tender' and their derivatives like Bidders, Tenderer are synonymous.

15.0 All BOQ item also include all accessories, men, material required for lead/lift up to all floors in BOB House building for material pre-application, preparation, supply, installation, fixing application, cleaning after finishing, complete in all aspect

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SECTION - F

FORM OF TENDER

FORM OF TENDER

PLACE :

DATE : . .2023

To,

The Asstt. General Manager,
Bank of Baroda,
Facilities Management
Department,5th floor,Baroda
Bhavan,Alakpuri Baroda –
390005.

Dear Sir,

Having examined the Specifications, Designs and Bill of Quantities relating to the worksspecified in the memorandum hereinafter set out and having examined the site of the works specified in the said memorandum and having acquired the requisite information relating thereto asaffecting the tender, I / We hereby offer to execute the works specified in the said memorandum within the time specified at the rates mentioned in the Priced Bill of Quantities or any agreed rates on negotiation and in accordance in all respects with the specifications, designs, drawings and instructions in writing referred to in conditions of contract, Appendix to the form of Tender, articlesof agreement, Addenda, Bill of Quantities and with such materials as are provided for, by, and in allother respects in accordance with such conditions so far as they may be applicable.

MEMORANDUM

(a) Description of works	:	Tender for Civil, Electrical, plumbing & allied works at Bank's Residential Flats, BOB House Appartment, Bank of Baroda, Vadodara, Gujarat.".."
(b) Earnest Money Deposit	:	**Rs. 37,000/- (Rupees Thirty Seven Thousand Only).** (Exempted for valid certificate of NSIC/MSME)
(c) Initial Security Deposit	:	2% of the Contract Value by Bank Demand Draft within 7 days of issue of LOA / Work Order.
(d) Performance Guarantee	:	5% of Contract Value in the Form of Bank Guarantee from any Nationalized Bank within 14 days of issue of LOA / Work Order.

(e)	Retention Money / Security Deposit		Retention Money to be deducted in cash @ **8%** of each Interim Bill subjected to total Security Deposit i.e. Retention Money and Initial Security Deposit does not exceed 5% of Contract Value or final Actual Value of work whichever is greater.
(d)	Time allowed for completion	:	**-2- (Two) calendar months** from date of commencement/handover of site whichever is later.
(e)	Splitting of the work	**:**	**Bank has right to split / award the work to more than one contractors. Keeping in view of the quantum of work, work may be divided among L1, L2 & L3. Ratio of the work division among L1, L2 & L3 will be 60:20:20 OR among L1 & L2 in 60:40. But L2 & L3 should carry out the work at the rate of L1.**

2. Should this tender be accepted, I / We hereby agree to abide by and fulfill the terms and provisions of the said Conditions of Contract annexed hereto so far as they may be applicable or in default thereof to forfeit and pay to **Bank of Baroda** the amount mentioned in the said conditions.

3. I / We have deposited a sum of Rs. 37,000/- (Rupees Thirty Seven Thousand Only) as earnest money in the form of Demand Draft with the **Bank of Baroda, payable at Vadodara** should I / We fail to execute the contract when called upon to do so, I / We do hereby agree that this sum shall be forfeited by **Bank of Baroda.**

4. Our bankers are: (With full address):

   (i)

   (ii)

   The names of partners of our firm are:

   (i)

   (ii)

   Names of the partner(s) of the firm authorised to sign

Name of person having power Attorney to sign the Contract (Certified true copy of the Power of Attorney should be attached)

Yours faithfully,

Signature of Contractor

(Signatures and addresses of witnesses)

(i)

(ii)

APPENDIX TO FORM OF TENDER

Item	Reference Clause No.	Description
Contract Value / Tender Value	1 (xxii) of GCC	Total value of the Tender as accepted by the Employer.
Date of Commencement	5 (iii) of GCC	7 (seven) days from the date of issue of the Acceptance letter / Work order or the date ofhanding over of site whichever is later.
Time of Completion	32 of GCC	2 months from the date of commencement / handing over of site whichever is later.
Liquidated Damages for Delay	37 of GCC	0.5% of Contract Value per week or part Thereof
Limit of Liquidated Damages	37 of GCC	5% of Contract Value.
Defects Liability Period	36 of GCC	365 days from the date of virtual Completion Certified by the Engineer-in-Charge / Bank's Engineer.
Earnest Money Deposit	7 of IIT	Rs. 37,000/- (Rupees Thirty Seven Thousand Only) in the form of Demand Draft/BC from Nationalised/scheduled Bank in favour of Bank of Baroda payable at Vadodara
Insurance	41 of GCC	As per **41 of GCC**
Mobilisation Advance	31 (i) of GCC	Maximum 10% of Contract Value against irrevocable Bank Guarantee as specified.
Recovery of Mobilisation Advance	31 (i) of GCC	To be recovered with 12% rate of interest from Contractors Interim Bills in 3 equal installment or 50% of value of work completed whichever is earlier.
Secured advance on Materials at site	31 (ii) of GCC	75% of the cost of materials or 60% of the relevant item rate whichever is less as determined by the Engineer. Sole decision of Bank whether accept or reject the request.

Item	Reference Clause No.	Description
Minimum Value of Work for Interim certificate	31 (iii) of GCC	Rs. 11.00 Lakhs for each Interim Bills.Non submission of PBG, Initial Security Deposit, Acceptance & Agreement shall be treated as non compliance and no payment shall be released till submission of same.
Payment of Interim Bill	31 (iii) of GCC	Adhoc payment of 75% of the net payment to be released within 10 working days from the date of receipt of Bank's Engineer's certificate. Balance 25% to be released after 15 workingdays from the date of receipt of Bank's Engineer's Certificate.
Initial Security Deposit	8 of IIT	2% of Contract Value in the form of Demand Draft from a Scheduled Bank within 7 days from the date of issue of LOA / Work Order .
Performance Guarantee	9 of IIT	5% of Contract Value in the form of Bank Guarantee from Nationalized & Schedule Bank within 14 days from the date of issue of LOA / Work Order.
Submission of Final Bill	31 (iv) of GCC	Within 30 days from the date of virtual completion as certified by the Engineer.
Payment of Final Bill	31 (iv) of GCC	Within 30 days from the date of submission of the bill by the Contractor along with complete information & voucher.
Retention Money / Security Deposit from Interim bills	30 of GCC	To be deducted in cash @ 8% of each Interim Bill subjected to total Security Deposit i.e. total of Retention Money & Initial Security deposit does not exceed 5% of Contract Price or Final Actual Value whichever is greater.
Release of Security Deposit	30 of GCC	50% upon issue of certificate of virtual completion and 50% after issue of no dues certificate subject to **Clause no. 35 of GCC (after DLP)**.

ARTICLES OF AGREEMENT

(On Non Judicial stamp paper of Rs. 500/-)

ARTICLE OF AGREEMENT made on this ..... day of_____Two Thousand Twenty Two BETWEEN the Bank of Baroda, ...hereinafter called "Employer" (which expression shall include its successors and assigns wherever the context or meaning shall so require or permit) of the one part and _____

_____

_____ hereinafter called the "Contractor" (which expression shall include its successors and assigns wherever the context or meaning shall so require or permit) of the other part.

WHEREAS the Employer is desirous of carrying out Civil, Electrical, plumbing & allied works at Bank's Residential Flats, BOB House Appartment, Bank of Baroda, Vadodara, Gujarat.".."

AND WHEREAS the Contractor has agreed to execute upon and subject to the conditions set forth herein and to the conditions set forth in the special conditions and in the Bill of Quantities and Conditions of Contract (all of which are collectively hereinafter referred to as "The said terms & conditions") the works, shown upon the said drawings and or described in the said specifications and included in the said bill of quantities at the respective rates therein set forth amounting to the sum as therein arrived at or such other sum as shall become payable there under (herein after referred to as the said "Contract Value").

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the said Contract Value to be paid at the times and in the manner set forth in the said terms & conditions, the contractor shall upon and subject to the said terms & conditions execute and complete the works shown on the said drawings, and described in the specifications and / or bill of quantities.

2. The Employer shall pay the contractor The Said Contract Value or such other sum as shall become payable at times and in the manner specified in the said terms & conditions.

3. The said terms & conditions and Appendices thereto shall be read and construed as forming part of this Agreement and the parties hereto shall respectively abide by submit themselves to the said terms & conditions and perform the agreements on their part respectively in the said terms & conditions contained.

4. This Contract is neither a fixed Lump sum Contract nor a Piece Work Contract but is a Contract to carry out the work in respect of the entire work as defined in the contract

documents to be paid for according to actual measured quantities at the rates contained in the bill of quantities or as provided in the said Contract documents.

5. The Contractor shall afford every reasonable facility for the carrying out of all works relating to Civil, Electrical, Plumbing & allied work"in the manner laid down in the said terms & conditions.

6. The Employer reserves to itself the right of altering the Drawings and nature of the work by adding to or omitting any items of work or having portions of the same carried out without prejudice to this Contract.

7. Time shall be considered as the essence of this Contract and the Contractor hereby agrees to commence the work within 7th day of the date of issue of Acceptance letter or the date of handing over of site whichever is later as provided for in the said terms & conditions to complete the entire work within 3 months subject nevertheless to the provisions for extension of time.

8. All payments by the Employer under this contract will be made only at Vadodara, Gujarat.

9. All disputes arising out of or in any way connected with this agreement shall be deemed to have arisen at Vadodara and only courts in Vadodara shall have jurisdiction to determine the same.

10. That the several parts of this Contract have been read by the Contractor and fully understood by the Contractor. The Contractor shall not be entitled for the payment for the quantities beyond the tendered quantities unless ordered for by specific written instructions from the engineer.

IN WITNESS WHEREOF THE Employer and the Contractor have set their respective hands to these presents and two duplicates hereof the day and year first hereinabove written. (If the contractor is a partnership or an individual).

IN WITNESS WHEREOF the Employer has set its hands to these presents through its duly authorized official and the Contractor has caused its common seal to be affixed hereunto and the said two duplicates / has caused these presents and the said two duplicates hereof to be executed on its behalf, the place, day, month and year first hereinabove written (If the contractor is a Company).

Signature Clause.

SIGNED AND DELIVERED by the

Bank of Baroda by the hand of
Shri_____
(Name and Designation)

in the presence of

(i) _____

Address _____

(2)_____

Address _____
Witness

SIGNED AND DELIVERED by----

(If the party is a partnership firm or an individual should be signed by all or on behalf of all the partners.)

in the presence of

(i) _____

Address _____

(2)_____

Address _____
Witness

The COMMON SEAL OF CONTRACTOR was hereunto affixed pursuant to the resolutions passed by its Board of Directors at the meeting held on ----------in the presence of

----

(If the contractor signs under its common seal the signature clause should tally with the sealing clause in the Articles of Association)

(1)----------

(2)----------

Directors who have signed these presents in token thereof in the presence of

(1)----------

(2)----------.

SIGNED AND DELIVERED BY the Contractor by the hand of

Shri_____
and duly constituted attorney

(If the contractor is signing by the hand of power of attorney whether a company or individual.)

******

SECTION - G

GENERAL CONDITION OFCONTRACT

GENERAL CONDITIONS OF CONTRACT

1. Definitions & Interpretations

In construing these conditions, the Specifications, Bill of quantities and Contract Agreement etc. the following words shall have the meaning herein assigned to them except where the subject or context otherwise requires.

(i) a. **"Employer" / "Owner"** means **Bank of Baroda (BOB)** a Corporate Body constituted under Banking and Companies (Acquisition and Transfers of Undertaking)Act 1970 and having its Head Office at Mandvi, Vadodara with its dealing office at Bank of Baroda, Facilities Management Department,5th floor, Baroda Bhavan, Alkapuri, Vadodara 390005..

b. **"Engineer-In-Charge (EIC) / Client"** means authorized representative of Bank of Baroda.

c. **" Bank's Engineer"** means., authorized representative of Bank ofBaroda India and their authorised nominees & representatives or such other firms / persons, asshall be nominated by the Employer.

(ii) **Contractor" shall** mean :-

a) In the case of a Partnership firm :- ---------- and ---------- trading as partners in the name and style of ---------- and having a place of business at ---------- and shall include the partners for the time being of the said firm and the legal representatives of a deceased partner.

b) In the case of individual Contractor :- Shri _____ trading in the name and style of_____and shall include his heirs, successors & legal successors & legal representatives.

c) In the case of Company :-_____a company incorporated under_____20___ and having its registered office at _____ and office at_____and shall include its successors and assignee.

(iii) **"Site"** shall mean the site of the contract works including any building and erections thereon and any other land (inclusively) as aforesaid allotted by the Employer for the Contractor's use.

(iv) **"Contract"** shall mean the following documents, all duly signed, collective in that

order of precedence.

a) Articles of Agreement

b) Letter of acceptance of Tender / Award of Work

c) The Bid including Appendix to Bid, Addendum if any

d) Special Conditions of Contract

e) General Conditions of Contract

f) Priced Bill of Quantities

g) Technical Specifications (including any further instructions by Engineer / EIC during construction work)

h) Drawings (Tender drawings / Working drawings issued during construction)

(v) **"Notice in writing" or "written notice"** shall mean a notice in written, typed or printed characters sent (unless delivered personally or otherwise proved 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.

(vi) **"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.

(vii) **"Net Prices" :** If in arriving at the contract amount, the Contractor shall have added to or deducted from the total amount of the items in the Tender any sum, either as a percentage or other wise, then the net 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 and similar percentage or proportionate sum provided 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 accounts shall be held to mean rates or prices so arrived at.

(viii) **"Works"** means the permanent works described in the "Scope of Work" and / or to be executed in accordance with the Contract and includes materials, apparatus, equipment,temporary supports, fittings and things of all kinds to be provided, the obligations of theContractor hereunder and work to be done by the Contractor under the contract.

(ix) **"Drawings"** means the drawings prepared by the Interior Designer s and issued by the Engineer-in-Charge / Engineer & referred to in the Specifications and any modification

of such drawings and such other drawings as may be issued by the Engineer from time to time.

(x) **"Bill of Quantities"** means the Schedule and Quantities of items, materials & rates, summaries, etc. as finally accepted.

(xi) **"Specification"** means the specifications given in these documents including relevant Indian standard specification where so required and where such a specification is not available, the specification will be provided and approved by the Interior Designer//Employer/BANK'S ENGINEER.

(xii) **"Temporary Works"** means all temporary works of every kind required in or about the execution, completion or maintenance of the works.

(xiii) **"Materials"** means the materials, apparatus, equipments, fittings, fixtures and all such other material which are incorporated in the 'work".

(xiv) **"Virtual Completion of the Works"** means the completion of the whole of the works substantially in all respects as evidenced by issuance of a Certificate of Completion by the Engineer-in-Charge / Bank's Engineer.

(xv) **"Period of Maintenance / Defect Liability Period"** shall mean the period of 365 (Three hundred Sixty Five) days calculated from the date of virtual completion of the works as certified by the Engineer-in-Charge / Bank's Engineer.

(xvi) **"Urgent Works"** means any urgent works, which in the opinion of the Engineer-In-Charge / Engineer becomes necessary at the time of execution and / or during the progress of work to obviate any risk of accident or failure or to obviate any risk of damage to the structure or services or required to accelerate the progress of work for which becomes necessary for safety and security or for any other reason, the Engineer / Employer may find it necessary.

(xvii) **"Market Rate"** means the rate as decided by the Engineer-in-Charge / Engineer on the basis of cost of materials at site inclusive of any tax, duty, octroi etc. at the time of execution of work.

(xviii) **"Approved"** means approved in writing; "Approval" means approval in writing.

(xix) **"Month"** means calendar month.

(xx) **"Week"** means seven consecutive calendar days.

(xxi) **"Day"** means a calendar day beginning and ending at 00 Hours and 24 hours respectively,

(xxii) **"Contract Value / Tender Value"** means the total value of the tender as accepted by the Employer.

(xxiii) **Interpretations / Marginal Note / Heading / Catch Lines**.

The Marginal Notes, Headings and in the catch lines hereto and in the annexures hereto are meant only for convenience of reference and shall not in any way be taken into account in the interpretation of these presents and the annexures hereto. The Contractor will have to carry out and complete the said work in every respect in accordance with this contract.

Words imparting the singular only also include the plural and vice versa where the context requires.

2. **Language and Law**

The language in which the Contract documents shall be drawn up shall be English only and the law governing the Contract is the law of Union of India.

3. **Errors, Omissions and Discrepancies**

In all cases of errors, omissions and / or doubts or discrepancies in any of the items or specifications, a reference shall be made to the Engineer whose elucidation, elaboration or decision shall be considered as authentic. The Contractor shall be held responsible for any error that may occur in the work through lack of such reference and precaution.

4. **Scope of Contract**

The Contract comprises the construction, completion and maintenance of the works and except in so far as the Contract otherwise stipulates the provision of all labour, materials, constructional plant, machinery temporary works and everything whether of a temporary or permanent nature required in and for such construction, completion and maintenance so far as

necessary for providing the same as specified in or reasonably to be inferred from the Contract.

5. (i) **Letter of Acceptance / Award**

Before signing of the Contract, the Employer shall issue by registered post or by otherwise depositing at the registered office of the Contractor, Letter of Acceptance / Award to enter into a Contract with the Contractor for the execution of the works in accordance with the contract. Until a formal contract agreement is prepared and executed, the tender documents i.e. Volume I, II, III & set of drawings together with the relevant correspondence exchanged from receipt of the tender to acceptance and together with the Employer's letter of Acceptance / Award shall constitute a binding contract between the parties.

(ii) **Contract Agreement**

On receipt of intimation from the Employer of the acceptance of his / their tender, the successful tenderer shall be bound to implement the contract & within seven **days thereof**, the successful tenderer shall sign an agreement in accordance with the draft agreement. The Contract shall be executed in quadruplicate and the Employer, the BANK'S ENGINEER, the Interior Designer and the Contractor shall be entitled to one executed copy each for their use.

(iii) **Commencement of Works**

Contractor shall commence the work within 7 days from the date of issue of the Acceptance Letter / Work Order issued to the Contractor or the date of handing over of site which ever is later.

(iv) **Possession of Site**

Save in so far as the Contract may prescribe the extent of portions of the Site of which the Contractor is to be given possession from time to time and the order in which such portions shall be made available to him and subject to any requirement in the Contract as to the order in which the Works shall be executed, the Employer will within 7 days from the date of issue of acceptance letter / work order give to the Contractor possession of so much of the Site as may be required to enable the Contractor to commence and proceed with the programme and otherwise in accordance with such reason able proposals of the Contractor as he shall, by notice in writing to the Engineer, make and will from time to time as the Works proceed give to the Contractor possession of such further portions of the Site as may be required to enable the Contractor to proceed with the construction of the Works in accordance with the said programme or proposals (as the case may be).

If the Contractor suffers delay or incurs expense from failure on the part of the Employer to give possession in accordance with the terms of this clause the EIC shall grant an extension of time for the completion of the works on approval from Employer.

(v) **Wayleaves, etc.**

The Contractor shall bear all expenses and charges for special or temporary wayleaves required by him in connection with access to the Site. The Contractor shall also provide at his own cost any additional accommodation outside the Site required by him for the purpose of the Works.

6. **Custody of Drawings & Specifications**

The Contractor will be given free of cost two copies of Drawings during the progress of the works. Any further copies of such Drawings required by the Contractor shall be obtained by him from the Engineer on payment of necessary charges to be fixed by the Interior Designer. The Contractor shall keep one copy of all Drawings at the works site and the Employer / Interior Designer / BANK'S ENGINEERshall at all reasonable time have access to the same. Before the issue of the final certificate to the Contractor, he shall forthwith return to the Employer allDrawings and Specifications. No drawings shall be taken as in itself an order for execution unless, in addition to the Interior Designer signature, it is marked "Fit for Construction" by BANK'S ENGINEER.

7. **Disruption of Progress**

The Contractor shall give adequate but not less than 4 weeks time written notice to the Engineer whenever planning or progress of the Works is likely to be delayed or disrupted unless any further drawing or order, including a direction, instruction or approval, is required tobe issued by the Engineer. The notice shall include details of the drawing or order required explaining why and by when it is required and of any delay or disruption likely to be suffered ifit is late.

8. **Further Drawings and Instructions**

The Contractor shall carry out and complete the said work in every respect in accordance with this Contract and with the directions of and to the satisfaction of the Employer / Interior Designer / BANK'S ENGINEER. The Engineer may in his absolute discretion or in consultation withEmployer / Interior Designer and from time to time issue further drawings and / or written instructions, details, directions and explanations which are hereafter collectively referred to as"Engineer's Instructions" in regard to:-

(a) The variation or modification of the design, quality or quantity of items of works or the addition or omission or substitution of any item.

(b) Any discrepancy in the Drawings or between the Bill of Quantities and / or Drawings and / or Specification.

(c) The removal from the site of any material brought thereon by the Contractor and the substitution of any other material therefore.

(d) The removal and / or re-execution of any works executed by the Contractor.

(e) The dismissal from the works of any persons employed thereupon.

(f) The opening up for inspection of any work covered up.

(g) The amending and making good of any defects.

The Contractor shall forthwith comply with and duly execute any work comprised such Engineer's instructions provided always that verbal instructions, directions and explanations given to the Contractor or his representative upon the works by the Engineer shall, if involving a variation, be confirmed in writing by the Contractor within three days & if not dissented from in writing within a further three days by the Engineer, such shall be deemed to be Engineer's instructions within the scope of the Contract.

9. BANK'S ENGINEER

BANK'S ENGINEERduties are to watch and supervise the works of and to test any materials to be used or workmanship employed in connection with the works, quality control, Project Scheduling and monitoring and co-coordinating with all other Agencies and Civil Contractor & MEPF contractors/ agencies, recording of measurements, certification of bills, preparing extra/deviation items, excess/ saving statement, preparing Minutes of Meeting etc. They 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 work.

The BANK'S ENGINEERshall have no power to revoke, alter, enlarge or relax any requirements of this contract or to sanction any day work, additions, alterations, deviations or omissions unless such an authority may be confirmed by written order/ instructions of the employer.

The BANK'S ENGINEERshall act in consultation with the Structural Consultant/ Bank's Engineerin regardto the quality of all structural aspects of work and in consultation with the

Interior Designer forInterior decoration work, will finalise the selection of finishing materials. The BANK'S ENGINEERshall jointly record the measurements with Contractor's representative for all items of works and on completion hand over the records to the Employer.

The BANK'S ENGINEERshall have the power to give notice to the Contractor or his Engineer-In- Charge, about the non-approval of any work or materials and such works shall be suspended orthe use of such materials should be discontinued until the decision of the Interior Designer / Employer but such examination shall not in any way exonerate the Contractor form the obligation to remedy any defects which may be found to exist at any stage of the work or afterthe same is completed. Subject to the limitations of this clause, the Contractor shall take instructions only from the Interior Designer/ Employer as the case may be through BANK'S ENGINEER.

The BANK'S ENGINEERshall have such other power and discharge other functions as are specifically provided in this contract included such incidental or consequential powers or duties, subject always to such specific instructions or directions of the Employer, which shall be duly notified to the Contractors.

10. **Contractor's General Responsibilities**

The Contractor shall provide at his cost everything necessary for the proper execution of the works according to the intent and meaning of the Drawings, Bill of Quantities and Specifications taken together with whether the same may or may not be particularly shown or described therein provided that the same can reasonably be inferred therefrom, and if the Contractor finds any discrepancy in the Drawings or between the Drawings, Bill of Quantities and Specifications, he shall immediately and in writing refer the same to the Engineer.
The successful tenderer is bound to carry out any items of work necessary for the completion of the job even though such items are not included in the Bill of Quantities and rates. Instructions in respect of such additional items and their quantities will be issued in writing by the Engineer on approval from Employer.

The Contractor must co-operate with the other contractors appointed by the Employer so that the work shall proceed smoothly to the satisfaction of the Engineer.

The Contractor must bear in mind that all the work shall be carried out strictly in accordance with the Specifications as given in these documents and also in compliance of the requirements of the local public authorities and to the requirements / satisfaction / direction of the Engineer and no deviation on any account will be permitted.

The Contractor shall have to use materials from the makes / manufacturers specified in the list of materials of approved brand and / or manufacture contained in contract documents and as approved by Engineer in Consultation with Employer.

11. **Safety of Site Operations**

The Contractor shall take full responsibility for the safety, stability and adequacy of all site operations and methods of construction including all temporary works, provided that the Contractor shall not be responsible, except as may be expressly provided in the Contract, for the design or specification of the permanent works.

The integration of MEPF services above and below false ceiling shall be co-operated / co-related during the execution of the work and final integration drawing incorporating all services shall be prepared by Interior Contractor/ Agency before and after undertaking interior decoration/ furnishing and furniture work.

12. **Watching & Lighting**

The Contractor shall in connection with the Works provide and maintain at his own cost adequate lights, guards, fencing, warning signs and watch & ward staff when and where necessary or as directed by the Engineer or as directed by duly constituted authority for the protection of the works or for the safety and convenience of the public or pilferage of materials from site.

13. **Care of Works**

From the commencement to the certified completion of the whole of Works, the contractor shall take full responsibility for the care thereof and of all Temporary Works and in case any damage loss or injury shall happen to the works or to any part thereof or to any Temporary Works from any cause whatsoever. Contractor have to protect the existing carpet/workstations/tables/lighting fixtures and other items by covering PVC sheet without and cost. If any damages are happen, recovery shall be carried out from the bills of contractor.

The Contractor shall at his own cost repair and make good the same so that on completion, the works shall be in good order and condition and in conformity to every respect with the requirements of the Contract and the Engineer's instructions. The Contractor shall also be liable for any damage to the Works occasioned by him including his subcontractors in the course of any operations carried out by him for the purpose of completing any outstanding work and complying with his obligations under **Clause no. 36** hereof. The Contractor shall indemnify the Employer from all risks on this account.

14. (i) **Contractor's Senior Representative for Execution & Co-ordination of Works**

The Contractor shall have on site at all times during working hours throughout the course of the Contract at least one competent senior representative who shall be empowered to make decisions binding on the Contractor in respect of all matters likely to arise in connection with the execution & coordination of the Works at site and shall keep the Engineer and the Employer informed at all times about the name and designation of such representative.

Any directions, explanations, instructions or notices given by the Engineer to such representative shall be held to be given to the Contractor.

(ii) **Contractor's Employees**

The Contractor shall provide and employ after approval from the Engineer on the site in connection with the execution, completion and maintenance of the Works all Engineering staff / technical assistants as are qualified, skilled and experienced in their respective trades, foremen and leading hands as are competent to give proper supervision, ensuring quality & output to the work they are required to supervise, and also such skilled, semi-skilled and unskilled labour as are necessary for the proper and timely execution, completion and maintenance of the works. The contractor must be appoint Project Manager having civil Engineering degree having minimum 5 yrs. Experience or The supervisory / Jr. Engineering staff shall be minimum 3 yrs. experience in execution of such works.

(iii) **Removal of Contractor's Employees**

The Contractor shall on the direction of the Engineer immediately dismiss from the works any person employed thereon by him who may, in the opinion of the Engineer, be incompetent or misconduct himself and such person shall not be again employed on the works without the permission of the Engineer (EIC).

(iv) **Unauthorised Persons**

No unauthorised persons are to be allowed on the site. The Contractor shall instruct all such persons to keep out and shall take steps to prevent trespassing.

15. **Compliance with Statutes, Regulations, Etc.**

The Contractor shall confirm to the provisions of any Act of the legislature relating to the works and to the regulations and bye-laws of any authority, and of any water, electric supply, local and other companies and / or authorities with whose systems the structure is proposed to be connected, and shall, before making any variations from the Drawings or Specifications that may be necessitated by so regulations, give to the Engineer written notice,specifying the

variation proposed to be made and the reason for making it and apply for instructions thereon. In case, the Contractor shall not within ten days of submission of such notice, receive such instructions, he shall proceed with the work conforming to the provisions,regulations, or bye-laws in question, and any variation so necessitated shall be dealt with under **Clause no. 29** thereof.

The Contractor shall bring to the attention of the Engineer all notices required for execution by the said Acts, regulations or bye-laws to be given to any authority and pay to such authority, or to any public office all fees that may be properly chargeable in respect of the works, and lodge the receipts with the Engineer.

16. **Setting Out**

The Contractor shall set out the works and shall be responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions, and alignment of all parts thereof. If at any time any error in this respect shall appear during the progress of the works or within the defects liability period the Contractor shall, if so required, at his own expense rectify such error to the satisfaction of the Engineer.

17. (i) **Quality of Materials & Workmanship & Test**

All materials and workmanship shall be the best of the respective kinds described in the Contract and in accordance with the Engineer's instructions and shall be subjected from time to time to such tests as the Engineer may direct at the place of manufacture or fabrication or on the Site or at Government recognized / any approved testing laboratory

The Contractor shall upon the instruction of the Engineer furnish him with documentation to prove that the materials and goods comply with the requirements of contract and for requirement stated above. The Engineer may issue instruction in regard to removal of material from site or any work, if these are not in accordance with the Contract. The Contractor shall provide such assistance instruments, machinery, labour and materials as are normally required for examining, measuring, sampling and testing any material or part of work before incorporation in the Works for testing as may be selected and required by the Engineer.

(ii) **Samples**

All samples of adequate numbers, sizes, shades & pattern as per specification shall be supplied by the Contractor without any extra charge. Apart from adhering to any special provision made in the specifications regarding submission of samples the contractor shall provide to the Engineer samples alongwith the detailed literature of allmaterials he proposes to use in the building irrespective of the fact that a specific make/ material might have been stipulated atleast before 90 days of their incorporation in work. If

certain items proposed to be used are of such nature that samples cannot be presented or pre pared at the site, detailed literature / test certificate of the same shall beprovided instead to the satisfaction of the Engineer. Before submit ting the samples / literature the contractor shall satisfy himself that the material / equipment for which he is submitting the samples / literature meet with the requirement of the specification. The Engineer shall check the samples and give his comments and / or approval to the same. Only when the samples are approved in writing by the Engineer, the contractor shall proceed with the procurement and installation of the particular material / equipment. The approved samples shall be signed by the Engineer for identification andshall be kept on record at site office until the completion and acceptance of the work and shall be available at the site for inspection / comparison at any time. The contractorshall keep with him a duplicate of such samples to enable him to process the matter.

For items of work where the samples are to be made at the site, the same procedure shall be followed. All such samples shall be prepared at a place where it can be left undisturbed until the completion of the project.

The Engineer shall communicate his comments / approval to the Contractor to the samples at his earliest convenience. Any delay that might occur in approving of the samples for reasons of its not meeting with the specifications or other discrepancies, inadequacy in furnishing samples of best qualities from various manufacturers and such other aspects causing delay on the approval of the materials / equipments, etc. shall be to the account of the contractor. In this respect the decision of the Engineer shall be final.

On delivery of the supplies of materials / equipment for permanent works at the site, the contractor shall specifically arrange to get the supply inspected by the Engineer and compared with the approved sample and his specific approval obtained before using the same in the work.

(iii) **Inspection & Testing During Manufacture**

The Engineer shall be entitled during manufacture to inspect, examine and test on the Contractor's premises during working hours the materials and workmanship and check the progress of manufacture of all fabrication materials to be supplied under the Contract, and if part of the said materials is being manufactured on other premises the Contractor shall obtain for the Engineer permission to inspect, examine and test as if the said Plant were being manufactured on the Contractors premises. Such inspection, examination or testing if made shall not relieve the Contractor from any obligation under the Contract.

(iv) **Dates for Inspection & Testing**

The Contractor shall agree with the Engineer the date on and the place at which any plant / works will be ready for testing as provided in the Contract and unless the Engineer shall attend at the place so named on the date agreed the Contractor may proceed with the tests, which shall be deemed to have been made in the Engineer's presence, and shall forthwith forward to the Engineer duly certified copies of the test readings. The Engineer shall give the Contractor 24 hours notice in writing of his intention to attend the tests.

(v) **Facilities for Testing at Manufacturer's Works**

Where the Contract provides for tests on the premises of the Contractor or of any sub-contractor the Contractor shall provide such assistance, labour, materials, electricity, fuel, stores, apparatus and instruments as may be requisite and as may be reasonably demanded to carry out such tests efficiently.

(vi) **Certificate of Testing**

As and when fabrication materials shall pass the tests referred in this, the Engineer shall furnish to the Contractor a certificate in writing to that effect.

(vii) **Rejection**

If as a result of such inspection, examination or test of the works the Engineer shall decide that such material is defective or not in accordance with the Contract he shall notify the Contractor accordingly stating in writing his objection and reasons therefore. The Contractor shall with all speed make good the defect or ensure that the material complies with the Contract. Thereafter, if required by the Engineer, the tests shall be repeated under the same terms and conditions and that all reasonable expenses to which the Employer may be put by the repetition of the tests shall be deducted from the Contract Sum.

(viii) **Delivery of Materials & Equipment**

Unless the Engineer shall otherwise direct, no material shall be delivered to site until the Engineer shall have issued, in respect of such material, a certificate under **Clause no. 17** above. Likewise Fabrication Materials or Contractor's Equipment shall be delivered to Site only upon an authorisation in writing applied for and obtained by the Contractor from the Engineer.

The Contractor shall be responsible for the reception on site of all Materials and Contractor's Equipment delivered for the purposes of the Contract.

(ix) **Inspection & Testing and Re-inspection & Retesting**

All deficiencies revealed by testing and inspection shall be rectified by the Contractor at his own expense and to the satisfaction and approval of the Engineer. Rectified components shall be subject to retesting and re-inspection.

(x) **Inspection Reports**

The Contractor shall provide the Engineer with 3 copies of reports of all inspections and tests.

(xi) **Cost of Tests**

The cost of making any test shall be borne by the Contractor if such test is intended by or provided for in the Specification or Bill of Quantities or required as per standard practice of the trade / BIS and as advised by Bank's Engineer/ Employer (EIC).

(xii) **Costs of Tests not provided for, etc.**

If any test is ordered by the Engineer which is either

(a) not so intended by or provided for or not required as per standard practice / BIS.

(b) (in the cases above mentioned) is not so particularised, or

(c) though so intended or provided for but ordered by the Engineer to be carried out by an independent person authorised by Engineer at any place other than the site or the place of manufacture / fabrication and shows the materials, plants not to be in accordance with the provision of contract then the cost of such test shall be borne by the Contractor.

18. **Absence of Specification**

If the specifications do not contain particulars of materials and works which are obviously necessary for the proper completion of the works, and the intention to include, which is inferred, all such materials and works shall be supplied and executed by the Contractor without extra charge. If the Contractor requires additional information, he shall request in writing well in advance to commencement of the particular work to the Engineer who will issue such detailed information as necessary within a reasonable time. Generally, in absence of any specification BIS code, CPWD and PWD Specification shall be followed in order of preference.

19. **Obtaining Informations Related to Execution of Work**

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

20. **Contractor's Superintendence**

The Contractor shall give all necessary personal superintendence during the execution of the works, and as long, thereafter, as the Engineer may consider necessary until the expiry of the "Defects Liability Period" stated hereto.

21. **Access for Inspection**

The Employer, Interior Designer, Engineer and their respective representatives shall at all reasonable times have free access to the work and / or to the workshops, factories or other places where materials are lying or from which they are being obtained and the Contractor shall give to the Employer, Interior Designer, the Engineer and their representatives every facility necessary for checking measurements, inspection and examination and test of the materials and workmanship. No person not authorised by the Employer, Interior Designer or the Engineer except the representatives of public authorities shall be allowed on the works at any time.

22. (i) **Examination of Work Before Covering Up**

No work shall be covered up or put out of view without the approval of the Engineer and the Contractor shall afford full opportunity for the Engineer to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon. The Contractor shall give due notice to the Engineer of any such work or foundations is or are ready or about to be ready for examination and the Engineer shall without unreasonable delay, unless he considers it unnecessary and advises the Contractor accordingly, attend for the purpose of examining and measuring such work or for examining such foundations.

(ii) **Uncovering and making openings**

The Contractor shall uncover any part or parts of the Works or make openings in or through the same as the Engineer may from time to time direct and shall reinstate and make good such part or parts to the satisfaction of the Engineer. If any such part or parts have been covered up or put out of view after compliance with the requirements of sub-clause (i) of this Clause and are found to be executed in accordance with the

contract the expenses of uncovering, making openings in or through reinstating and making good the same shall be borne by the Employer but in any other case all such expenses shall be borne by the Contractor and shall be recoverable from him by the Employer or may be deducted by the Employer from any monies due or which may become due to the Contractor.

23.(i) **Assignment**

The whole of the works included in the contract shall be executed by the Contractor and the Contractor shall not directly or indirectly transfer, assign or sublet the contract or any part / share thereof or any interest therein without the prior written consent of the Employer & no undertaking shall relieve the Contractor from the full & entire responsibility of the contract or from active superintendence of the works during their progress.

(ii) **Work is to be Carried Out to the Satisfaction of Employer / Engineer**

The Contractor shall carry out all the works strictly in accordance with Drawings, detailed Specifications and instructions of the Engineer. If in the opinion of the Employer or EIC changes have to be made in the works the Contractor shall carry out the same, and payment, if any, arising out of these shall be made as per the terms of the contract.

(iii) **Removal of Improper Work & Materials**

The Engineer 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 or times as may be specified in the order, of any materials which in the opinion of the Engineer are not in accordance with the Specifications or the instructions of the Engineer, the substitution of proper materials, and the removal and proper re-execution of any work executed with materials or workmanship not in accordance with the Drawings and Specifications or instructions, and the Contractor shall forthwith carry out such order at his own cost. In case of default on the part of the Contractor to carry out such order, the Employer shall have the power to employ and pay other persons to carryout the same, and all expenses consequent thereon, or incidental thereto, as certified by the Engineer shall be borne by the Contractor, or may be deducted by the Employer from any moneys due, or that may become due, to the Contractor.

(iv) **Urgent Repairs**

If by reason of any accident or failure or other event occurring to in or in connection with the Works, or any part thereof, either during the execution of the Works or during the Period of Defect Liability / Maintenance any remedial or other work or repair shall, in the opinion of the Engineer / Employer or their representative be urgently necessary for security and safety of life or for the works or of adjoining property, and the Contractor is unable or unwilling at once to do such work or repair, the Employer may employ his own or other workmen do such work or

repair, as the Engineer / EIC or their representative may consider necessary. If the work or repair so done by the Employer which is in the opinion of the Engineer, the Contractor was liable to do at his own expense under the Contract, all costs and charges incurred by the Employer in so doing shall on demand be paid by the Contractor to the Employer or may be deducted by the Employer from any amount due or which may become due to the Contractor. Provided always that the Engineer or the Engineer's representative (as the case may be) shall, as soon after the occurrence of any such emergency, as may be reasonably practicable notify, the Contractor thereof in writing.

(v) **Default of Contractor in Compliance**

If the Contractor after receipt of written notice from the Engineer / EIC requiring compliance within ten days fails to comply with such further drawings and / or Engineer's instructions the Employer may employ and pay other persons to execute any such work whatsoever that may be necessary to give effect thereto, and all costs incurred in connection therewith shall be recoverable from the Contractor by the Employer on the Certificate of the Engineer as a debt or may be deducted by him from any moneys due to the Contractor.

24. (i) **Production of Vouchers, Etc.**

The Contractor shall when required by the Employer / Engineer produce all quotations, invoices, vouchers and accounts or receipts in connection with expenditure in respect of Prime Cost items.

(ii) **Nominated Specialist Agencies / Objection to Nomination**

All Specialists, Merchants, Tradesman and others executing any work of supplying and fixing any goods for which prime cost items or provisional sums are included in the Bill of Quantities and / or Specification who may be nominated or selected by the Engineer are hereby declared to be sub-Contractors employed by the Contractor and are herein referred to as nominated Sub-Contractors.

No nominated Sub-Contractor shall be employed on or in connection with the works against whom the Contractor shall make reasonable objection or who will not enter into a contract providing:

(a) That the nominated Sub-Contractor shall indemnify the Contractor against the same obligations in respect of the Sub-Contract as the Contractor is under in respect of this contract.

(b) That the nominated Sub-Contractor shall indemnify the Contractor against claims in respect of any negligence by the Sub-Contractor, his servants or agents or any misuse by him or them of any scaffolding or other plant, the property of the Contractor or under any Workmen's Compensation Act in force.

(c) Payment shall be made to the nominated Sub-Contractor by the contractor within fourteen days of his receipt of payment from the Employer provided that before any Certificate is issued, the Contractor shall upon request furnish to the Engineer proof that all nominated Sub-Contractor's accounts included in previous certificates have been duly discharged, in default whereof the Employer may pay the same upon a Certificate of the Engineer and deduct the amount thereof from any sums due to the Contractor. The exercise of this power shall not create privity of contract as between Employer and Sub-Contractor.

25. **Quantities and Variation**

i) The Bill of Quantities (BOQ), unless otherwise stated shall be deemed to have been prepared in accordance with the Indian Standard Method of Measurement and quantities in B.O.Q. are to be considered as estimated and not accurate. The rates quoted shall remain valid for variation of quantity against each individual item by + 25%.

ii) Variation Exceeding 25% of Tender Quantity : When the quantity of any item varies by + 25% of Tender Quantity, the rate for such item of works will be determined on the basis Cl. No. 29 (c) hereof or as decided by the Employer / EIC. No compensation for deletion or non-execution of item will be considered.

26. **Works to be measured**

The Engineer may from time to time intimate to the Contractor that he requires the works to be measured & the Contractor shall forthwith attend or send a qualified Representative to assist the Engineer in taking such measurements and calculations and to furnish all particulars or to give all assistance required by any of them.
Should the Contractor not attend or neglect or omit to send such Representative, then the measurement taken by the Engineer or a person approved by him shall be taken to be correct measurements of the works. Such measurements shall be taken in accordance with the Mode of Measurements detailed in the Specifications.

The Engineer shall take joint measurements with the contractor and the measurements shall be entered in the measurement book / sheet by the Engineer's representative.

The Contractor or his Representative may at the time of measurement take such notes and measurements as he may require.
All authorized extra works, omissions and all variations made without the Engineer's knowledge, but subsequently sanctioned by him in writing (with the prior approval in writing of the Employer) shall be included in such measurements.

27. **Claims for additional expenses**

Contractor have to take prior approval in writing from EIC before execution of additional/nonscheduled work, no payment shall be paid for such type of work.

28. **Variations**

Any alteration, omission or variation ordered in writing by the Engineer shall not vitiate this contract. In case the Engineer / EIC think proper at any time during the progress of the works to make any alterations in, or additions to or omissions from, the works or any alteration in the kind or quality of the materials to be used therein, the Engineer shall give notice thereof in writing to the Contractor or shall confirm in writing within seven days of giving any such oral instructions. The Contractor shall alter, add to, or omit from, as the case may be, in accordance with such notice, but the Contractor shall not do any work extra to or make any alterations or additions to or omissions from the works or any deviation from any of the provisions of the Contract, stipulations, Specification or Contract Drawings without the previous consent in writing of the Engineer and the value of such extras, alterations, additions or omissions shall in all cases be determined by the Engineer in accordance with the provisions of **Clause no. 29** hereof, and the same shall be added to or deducted from the Contract value, as the case may be.

29. **Valuation of Variations**

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

(a) Rates for all extra items, wherever possible, should be derived out of the accepted tender rates. The accepted net rates or prices in the contract shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced herein.

(b) Where the extra works are not of similar character and / or not executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items or works are carried out, then the contractor shall within 7 days of the date of receipt of order to carry out the work, inform the Engineer of the rate which he intends to charge for such items of work, supported by analysis of the rate or rates claimed and the Engineer shall fix such rate or prices as in the circumstances in his opinion are reasonable and proper, based on the verification of market rate.

(c) It is further clarified that for all such authorized extra items where rates cannot be derived from accepted tender rates, the Contractors shall submit rates supported by rate analysis worked on the “market rate basis", for material including all taxes, octroi and delivery at site, labour, hire / running charges of equipment and wastages etc. plus 20% towards establishment charges including water & electricity, contractor's overheads & profit or like. **GST will be paid extra as per the prevailing statutory norms.** In case of variation in items of works, which are subcontracted to specialist agencies, specialist agencies’ profit and overhead is deemed to be included in above stated 20%. **Items derived from market rates shall not be eligible for escalation.**

The measurement and valuation in respect of the Contract shall be completed within the "Period of Final Measurement" stated in the Appendix.

30. **Security Deposit / Retention Money**

For due fulfillment of the contract by the Contractor, 8% of the value of each Interim Bill will be retained by the Employer towards Retention Money until the total Security Deposit including Initial Security Deposit amounts to 5% of the Contract Value or Actual Value of work whichever is higher. 50% of the security deposit shall be released to the contractor after issue of virtual completion certificate and balance 50% on issue of “No Dues Certificate” as per **Clause no.35.** The amounts retained by the Employer shall not bear any interest.

All compensation or other sums of money payable by the Contractor to the Employer under the terms of this contract may be deducted from the security deposit if the amount so permits and the Contractor shall, unless such deposit has become otherwise payable, within ten days after

such deduction make good in cash the amount so deducted.

The security deposit of the contractor will be forfeited if he fails to comply with any of the conditions of the contract.

31. **Certificates & Payment**

(i) **Mobilisation Advance**

(a) On written application from the Contractor, the Employer may grant mobilization advance upto 10% of the amount of accepted tender less the value of probable costs for the Cement and Steel reinforcement bars. The mobilization advance will be released in two equal installments, each against production of Bank Guarantee for 110% of the amount requested as mobilization advance. The first installment shall be released after contractor has commenced the work at site and Contractor satisfies Bank's Engineer/ Employer with production of documentary evidence that this amount of Mobilisation Advance shall be used for procurement of materials / equipment / labour for the work. Second installment will be released by the Employer on satisfying 1st installment of mobilization advance was used for purpose for which it was granted. The advance shall attract simple interest at the rate of 12% per annum (applicable to both installment). The advance shall be secured by a Bank Guarantee from a Nationalized Bank for the 110% of amount of mobilization Advance plus interest at the rate of 12% per annum (in approved Proforma), which will be recovered in the manner described hereinafter. Banks reserve right to accept or reject the request of the contractor for the same without assigning any reason.

(b) The amount of mobilization advance, which may be given to the Contractor, shall be at the sole discretion of the employer.

(c) The mobilization advance shall be utilized by the contractor for the purpose of this contract and for no other purpose.

(d) Recovery of the mobilization advance and of interest there on shall be made by the deduction from the contractor's running account bills on pro-rata basis till completion **of 50% of value** of work or from the first Eight (3 bills or final whichever is earlier) running bills whichever occurs earlier.

(e) If any time the contractor fails to execute the contract to the satisfaction of the employer for any reason whatsoever the employer shall be entitled to reach forthwith the entire amount so advanced with interest, cost and legal expenses, etc. and/ or recover the whole balance amount as the case may be from the bill if any, payable tothe contractor or by

enforcing the Bank guarantee at the discretion of the Employer.

(ii) **Secured Advance on Materials at Site- Sole discretion of the Bank of Baroda/EIC**

The Contractor will be paid secured advance against cement, reinforcement steel & Structural steel and other non perishable and quantifiable material as decided by Engineer and stacked at site for use in permanent works and in the opinion of the Engineer are required to be procured in advance. The advance paid for the materials stacked at site shall be maximum 75% of the cost of the materials or **60% of the relevant item rate, whichever is less at the discretion of Employer** and the Contractor shall produce necessary vouchers / documents in support of cost of each material. No advance shall be admitted for perishable materials or cannot be stored and quantified properly and materials procured prematurely as decided by the Engineer. The secured advance so given to the Contractor will be recovered from nextthree (3) R.A. Bills.

Where in any Certificate (of which the Contractor has received payment), the Engineer has included the value of any unfixed materials intended for and / or placed on or adjacent to the works such materials shall become the property of the Employer and they shall not be removed except for use upon the works, without the written au- thority of the Engineer. The Contractor shall be liable for any loss of or damage to, such materials.

The materials shall also be in conformity with contract specifications and of approved quality as stated in relevant clauses hereof. These advances shall be made on the basis of the quantity of each material lying at site at the time of preparation of each interim bill. The Contractor shall sign Indemnity Bond as per **Annexure I** for any loss either due to theft or fire etc.

(iii) **Interim Bill**

(a) The Contractor shall be paid by the Employer from time to time by installments under Interim Certificate to be issued by the Engineer to the Contractor on account of the works executed when in the opinion of the Engineer, work to the approximate value named in the Appendix to Form of Tender "Minimum value of Work for Interim Certificate" (or less at the sole discretion of the Engineer / Employer) has been executed in accordance with this contract, subject to a retention of the percentage of such value named in the Appendix to form of tender hereto as 'Retention Percentage for Interim Certificates' until the total amount retained shall reach the sum named in the Appendix to form of tender as 'Security Deposit'.

b) The contractor shall generally be paid one Interim bill in a month satisfying the

minimum value of work, which shall include work done and secured advance against material. If in the opinion of the Engineer the progress of the work warrants a second payment in a month, the same shall be so arranged by the Employer.

c) After submission of bill along with complete information, vouchers, etc. to the satisfaction of the Engineer and after making necessary deductions toward Income Tax, Work Contract Tax and other recoveries deductible at source, the bill will be paid as follows:

i) An adhoc payment of 75% of the value of work done as assessed by the Engineer and vetted by EIC/ Bank's Engineershall be released within 7 working days by the Employer, after certification by the Engineer/ Bank's Engineerwho will certify within reasonable period from submission ofBill with necessary vouchers, documents etc.

ii) Balance amount shall be certified by the Engineer/ Bank's Engineeron submission of bill and payment shall be released by the Employer within 15 working days of certificate receipt from the Engineer/ Interior Designer.

d) All Interim Bill payment shall be regarded as payment by way of advance against the final payment only & not as payment for the work actually done.

e) All payments under this Clause will be released after due checking & verification by EIC/ Bank's Engineer.

f) Pending consideration of extension of date of completion, interim payments shall continue to be made as herein provided, without prejudice to the right of the employer to take action under the terms of the contract for delay in the completion of work, if the extension of date of completion is not granted by the competent authority.

g) Deleted.

(iv) **Final Bill**

a) The Contractor shall submit final bill within 30 days from the date of issue of virtual completion certificate with all relevant informations, testing reports, copy of GST bills of material purchased and details, documents as-built drawing etc. complete.

b) The Engineer within 30 days of submission of the final bill, shall issue a certificate of payment against the final bill to the Employer / EIC who shall thereupon, within 30 days from the date of receipt of the certificate, shall release the balance payment to the contractor after effecting all recoveries, including advances and payments against interim certificates.

(c) The Engineer / EIC/ Interior Designer shall have power to withhold Certification if the works or any parts thereof are not being carried out to his satisfaction.

(d) The Engineer / EIC/ Interior Designer may by any Certificate make any correction in any previous Certificate, which shall have been issued by him.

(e) No payment shall be made to the Contractor if the Contractor fails to insure the works and keep them insured till the issue of the Virtual Completion Certificate.

(f) Contractor have to submit the copy of GST bill for material purchased alongwith RA bills and final for certification of payment. Site address must be mentioned on the GST bill. If contractor fail to submit the GST bill if desired by bank ,than no payment shall be made for the particular items.

(g) Contractor have to submit the copy of GST bill as mentioned above as and when demanded by bank, if fail, than no payment shall be made for the particular items.

32. **Time for Completion**

The entire work is to be completed in all respects within 2 months from the Date of Commencement as stated in Appendix to "Form of Tender" or such extended time as may be allowed under **Clause no. 33** hereof. Time is the essence of the contract and shall be strictly observed by the contractor.

If required in the contract or as directed by the Bank's Engineer/Engineer / Employer, the contractor shall complete certain portion of the work before the completion of the wholeof the work. However the completion date for whole of the work shall not change for above.

33. **Extension of Time for Completion**

i. If the Contractor needs an extension of time for the completion of the work or if the completion of work is likely to be delayed for any reasons beyond the due date of

completion stipulated in the contract, the Contractor shall apply to the Employer for extension of time in writing at least 30 days before the expiry of the scheduled time and while applying for extension of time, Contractor shall furnish the reasons in detail and his justification, if any, for the delays.

ii. If in the opinion of the Bank's Engineer/Engineer the works be delayed for reasons beyond the control of the contractor, the Bank's Engineer/Engineer with due consultation with Employer maymake a fair and reasonable extension of time for completion of the contract works such time extension will be said as "Authorised Time Extension" which will not qualify for levy of liquidated damages.

iii. If the works be delayed beyond the authorized time extension, the Bank's Engineer/Engineer withdue consultation with Employer may allow extension of time for completion of contract works but with levy of Liquidated damage as stated under **Clause no. 37**.

Further, the contract shall remain in force even for the period beyond the due date of completion irrespective whether the extension is granted or not.

iv. The contractor shall be bound to extend validity of all insurance covers, Bank Guarantees till such period of completion as may be considered necessary at contract cost.

34. **Virtual Completion Certificate**

Virtual Completion of works means the completion of whole of the work substantially in all respects including all types of testing, obtaining all necessary statutory approvals and is fit for occupation. The works shall not be considered as completed until the Engineer in Consultation with Employer has certified in writing that they have been virtually completed. The Defects Liability Period shall commence from the date of virtual completion as certified by the Bank's Engineer/Engineer.

35. **Approval Only by No Dues Certificate**

(i) **Final Completion Certificate**

On successful completion of entire works covered by the Contract to the full satisfaction of Employer / Bank's Engineer/Engineer, the Contractor shall ensure that the following works have been completed to the satisfaction of Engineer : *(a)* clear the siteof all scaffolding, wiring, pipes, surplus materials, Contractor's labour, equipment andmachinery *(b)* demolish, dismantle and remove all Contractor's site offices and other temporary works, structures & constructions and other items and things whatsoever brought upon or erected at the site or any land allotted to the Contractor by the Ownerand not incorporated in the permanent works *(c)* remove all rubbish, debris etc. from the site and the land allotted to Contractor and shall clear, level and dress, compact thesite as required and said land to the satisfaction of the Engineer *(d)* shall put the Ownerin undisputed custody and possession of the site and all land allotted by the

Owner to the Contractor *(e)* All defects / imperfections have been attended & rectified to full satisfaction of the Engineer during the Defect Liability Period.

Unless the Contractor shall have fulfilled the provisions of the clause, the works shall not be deemed to have been completed.

Upon the satisfactory fulfillment by Contractor as stated above, the Contractor shall be entitled to apply to the Engineer for a Final Completion Certificate in respect of the entire work.

If the Engineer is satisfied of the completion of the work relative to which the Completion Certificate has been sought, the Engineer shall within 14 (fourteen) days of the receipt of the application for Completion Certificate, issue a Completion Certificate in respect of the works for which the Completion Certificate has been applied.

This issuance of a Completion Certificate shall be without prejudice to the Employer's rights and Contractor's liabilities under the Contract, including the Contractor's liability for the Defect Liability Period nor shall the issuance of a Completion Certificate in respect of the works or work at any site be construed as a waiver of any right or claim of the Employer against the Contractor in respect of work or the works at the site and in respect of which the Final Completion Certificate has been issued.

(ii) **No Dues Certificate**

The Contract shall remain valid and shall remain incomplete until no dues Certificate shall have been signed by the Bank's Engineer/Engineer and delivered to the Employer with acopy to the contractor. Such a certificate shall be given by the engineer within 30 days of completion of defects liability period (the last period to be considered if different periods to be considered if different parts of the work) or within 30 days from the dateof payment of final bill whichever is later.

36. **Defect Liability Period**

Any defect, shrinkage, settlement or other faults which may appear within the "Defects Liability Period" stated in the Appendix hereto or, if none stated, then within 365 days after the date of the virtual completion of the works as certified by the Engineer, arising in the opinion of the Engineer from materials or workmanship not in accordance with the contract, shall upon the direction in writing of the Engineer, and within such reasonable time as shall be specified therein, be amended and made good by the Contractor, at his own cost and in case of default the Employer may employ and pay other persons to amend and make good such

defects, shrinkage, settlements or other faults, and all damages, loss and expenses consequent thereon or incidental thereto shall be made good and borne by the Contractor and such damage, loss and expenses shall be recoverable from him by the Employer or may be deducted by the Employer, upon the Engineer's Certificate in writing, from any money due orthat may become due to the Contractor, or the Employer may in lieu of such amending and making good by the Contractor deduct from any monies due to the Contractor, a sum, to be determined by the Engineer equivalent to the cost of amending such work and in the event of the amount retained under **Clause no. 30** hereof being insufficient, recover the balance from the Contractor, together with any expenses the Employer may have incurred in connection therewith. Should any defective work have been done or material supplied by any Specialist Agencies employed on the works who has been nominated or approved by the Engineer, the Contractor shall be liable to make good in the same manner as if such work or material had been done or supplied by the Contractor and been subject to the provisions of this Clause and**Clause no. 23 (ii)** hereof. The Contractor shall remain liable under the provisions of this Clause notwithstanding the signing of any certificate or the passing of any accounts, by the Engineer. The Contractor will not be responsible for defects arising out of fair wear & tear & damage caused by Employer's personnel during the use of the building after being occupied.

37. **Liquidated Damages for Delay**

If the Contractor fails to complete the works by the period stated in the Appendix or within any authorized extended time under **Clause no. 33** hereof and the Bank's Engineer/ Engineer with due Consultation with Employer certifies in writing that in his opinion the same ought to have beenreasonably completed by the original completion date or authorized extended completion date,as the case may be, the Contractor shall pay the Employer the sum named in the Appendix to Form of Tender as "Liquidated Damages" for the period during which the said works shall soremain incomplete or the Employer may deduct such damages from any monies due to the Contractor.

38. (i) **Default of Contractor**

It the Contractor being an individual or a firm, commits any "Act of insolvency" or shall be adjudged as insolvent or being an incorporated Company shall have an order for compulsory winding up or applies for voluntary winding up or subject to the supervision of the court and of the official Assignee or 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 BANK'S ENGINEER/

Interior Designer that he is able to carry out and fulfill the Contract, and to give security therefore, if so required by the Bank's Engineer/EIC

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

ii) Or shall assign or sub-let the Contract without the consent in writing of the Bank's Engineer/ Employer first obtained.

iii) Or shall charge or encumber this Contract or any payments due or which might become due to the Contract or any payments due or which might become due to the Contractor there under.

iv) Or if the Bank's Engineershall 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 seven days after receiving from the BANK'S ENGINEERwritten notice to proceed, 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 complete with the time agreed upon , or

d) has failed to remove materials from the site or to pull down and replace work for seven days after receiving from the BANK'S ENGINEERwritten notice that the said materials or work were condemned and rejected by the BANK'S ENGINEERunder theses conditions, or

e) has neglected or failed persistently to observe and perform all or any of the acts, matters or things by this Contract to be observed and performed. By the Contractor for seven days after written notice shall have been given to the Contractor requiring the Contractor to observe or perform the same or

f) has to the detriment of good workmanship or in defiance of the Bank's Engineerinstruction to the contrary sublet any part of the Contract.

Then in any of the said cases the Employer may not withstanding any previous waiver, after giving seven days notice in writing to the Contractor, determine the Contract but without thereby affecting the powers of the Interior Designer, or the obligations and liabilities of the Contractor, the whole of which shall continue in force as fully as if Contract has not been determined and as if the works subsequently executed had been executed by or on behalf of the Contractor. And further, the Employer, may enter upon and take possession of the work and all plant, tools, scaffoldings, sheds, machinery, seam and other power utensils and material lying upon the premises or the adjoining lands or roads and use the same as his own property

or may employ the same by means if his own servants and workmencarrying on and completing the works and the Contractor shall not in any wayinterrupt or to do any act, matter or things to prevent or hinder such other contractoror other person or persons employed for completing and finishing or using thematerials and plant for the works. When the works shall be completed or as soon thereafter as convenient, the BANK'S ENGINEER/ Interior Designer 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 thereof by him the employer shall sell the same by public auction and shall give credit to the Contractor for the amount realized after deducting there from the costs of removal and sales by the Employer for the values of the said and the expenses or loss which the Employer shall have been put to in procuring the works to be completed and the amount, it any, owing to the Contractor and the amount which shall be so certified shall thereupon bepaid by the Employer, to the Contractor, or, by the Contractor to the Employer, as the case may be, and the certificate of the Interior Designer / Employer shall be final and conclusive between the parties. On termination of the contract, the contractor shall forthwith remove himself and his workmen from the works site.

(ii) **Default of Employer**

a) If payment of the amount payable by the Employer under the Certificates of the BANK'S ENGINEER/ Interior Designer shall be in arrears and unpaid for 45 (forty five) days after notice in writing requiring payment of the amount shall have been given bythe Contractor to the Employer, or the Employer commits any 'Act of Insolvency', or if the Employer being an individual or firm shall be adjudged insolvent or (being an incorporated company) shall have an order made against it or pass an effective resolution for winding up either compulsorily or subject to the supervision of the court or voluntarily, or if the official assignee of the Employer shall repudiate the contract, or if the official assignee or the liquidator in any such winding up fails within 15 (fifteen) days after notice to him requiring him to do so, to show to the reasonable satisfaction of the Contractor that he is able to carry out and fulfill the Contract and to make all payments due, and to

b) become due hereunder and if required by the Contractor, to give security for the same, or if the works be stopped for 3 (three) months under an order of the Bank's Engineeror the Employer or by any injunction or other orders of any court of law, then and in any of the said cases the Contractor shall be at liberty to determine the Contract by notice in writing to the Employer, through the Bank's Engineer, and he shall be entitled to recover from the employer payment for all works executed and for any loss he may sustain upon any plant or material supplied or purchased or prepared for the purpose of the Contract.

In arriving at the amount of such payment, the net rates or prices quoted for Item rate work contained in the Contractor's original tender shall be followed or where the same may not apply, valuation shall be made in accordance with Clause No. 29 (c) of GCC.

39. (i) **Determination of Contract**

The Employer shall in addition to any other power enabling him to determine the Contract have power to determine the Contract at any time by giving not less than fourteen (14) days notice in writing to the Contractor and on the expiry of such notice the Contractor shall forthwith determine but without prejudice to the claims of either party in respect of any antecedent breach thereof.

(ii) **Compliance with Engineer's Direction on Determination**

If the Contract shall be determined under the provisions of the **Clause no. 39 (i)** the Contractor shall with all reasonable dispatch comply with the directions of the Bank's Engineer/Engineer in respect to :

(a) Cancellation of outstanding commitments

(b) Performance of further work required for the protection of work executed

(c) The removal of Constructional Plant Temporary Works and materials from the Site

(d) Any other matters arising out of the Contract with regard to which the Engineer decides that directions are necessary or expedient.

(iii) **Payment on Determination**

In the event of the Contract being determined under the provisions of this Clause the sum payable to the Contractor shall be such sum as would have been payable under **Clause no. 43** hereof and

(a) The reasonable cost of complying with the Engineer's directions under sub-clause (ii) hereof and

(b) Such reasonable sum as may be agreed between the parties or in default of agreement settled by arbitration in respect of the Contractor's overheads including any sums properly and necessarily incurred as the direct result of such determination.

(iv) The Bank's Engineer/Engineer has a right to ascertain the happening of any contingency, including but not limited to the contingencies listed below, which would vest in the Employer certain powers including, but not limited to, taking possession of the work sofar as it has been performed and to completing the work either by himself or by employing some other Agency, retaining property of the Contractor, such as

materials,plant or money already due to the Contractor:

a) Failure of Contractor to proceed with or complete the works in the time or manner stipulated

b) Contractor's bankruptcy

c) Failure of Contractor to commence the work

d) Failure of Contractor to regularly proceed with the work for a certain fixed period

e) Failure of Contractor to proceed to the satisfaction of the Employer or the Engineer

f) Failure of Contractor to proceed with the work for any reason independent of prevention by Employer

g) If in the Engineer's opinion, the Contractor is not exercising due diligence and proceeding with such dispatch as will enable the works to be duly completed in time

h) Failure of Contractor in complying with the orders and directions given by the Engineer

i) Failure of Contractor in complying with the Specification, stipulations, conditions or Drawings

j) The Contractor being guilty of any default in the fulfillment of the contract

k) The Contractor leaves the work unfinished

l) Failure of Contractor, after due notice, to rectify defective work

m) The Contractor renouncing materials from site and

n) Failure of Contractor to maintain the works

40. **Work by Other Agencies**

The Employer / Engineer reserves the right to use premises and any portions of the site for the execution of any work not included in this contract which it may desire to have carried out by other persons simultaneously, and the Contractor shall allow all reasonable facilities for the execution of such work, but shall not be required to provide any plant or material for the execution of such work except by special arrangement with the Employer. Such work shall be carried out in such 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 occasioned by such work.

41. **Insurance Policies**

<u>On commencement for the work :-</u>

a) The contractor shall take out a suitable C.A.R. Insurance policy covering entire scope of the works under this contract for the value of work as per contract tender conditions and arrange to keep the policy valid till issue of virtual completion certificate/ handing over of the project..

b) The contractor shall take out and submit to the Interior Designer and EMPLOYER, a suitable insurance policy against third party risks. The limit of liability of this insurance shall be limited to Rs.35 Lakh in respect of any one accident or series of accidents arising out of one event or Rs.25 Lakh in respect of any passer-by. The policy shall be kept valid, issue of virtual completion certificate/ handing over of the project..

c) The contractor shall take out and submit to Employer a suitable Insurance Policy against Workmen's compensation / Janata Policy as per requirements. The policy shall be kept valid till issue of virtual completion certificate/ handing over of the project..

d) Necessary PF & ESI contribution of contractor's labourers will have to be paid by contractor as per statutory authority's regulations and EMPLOYER shall be absolved of all the risk.

In Respect of Damage to Person and Property :-

From Commencement to Completion, the Contractor shall be responsible for all injury to persons, animal or things and for all structural and decorative damage to property which may arise from operation or neglect of himself or any subcontractor or of any of his or a sub-contractor's employee whether such injury or damage may arise from carelessness, accident or any other cause whether in any way connected with the carrying out of this contract. This clause shall be held to include interalia any damage to building, whether immediately adjacent or otherwise, any damages to roads, streets, footpaths, bridges, or ways as well as alldamage to the buildings and works forming the subject of this contract by first or other inclemency 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 any award of compensation or damages consequent upon such claim.

The Contractor shall reinstate all damage of every spot 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.

Against third party risks :-

On commencement of the work, the contractor shall take out and submit to the Employers a suitable insurance policy against third party risks. The limits of liability of this insurance shall be as follows:

Rs. 25 Lakhs in respect of any one accident or series of accidents arising out of one event. Contractor shall take out third party insurance for 3 no. of such accidents and repetition of the same after three occurrence including visitors like Local Authority, Vendors etc.

CONTRACTOR'S LIABILITY AND INSURANCE SUMMARY

Sr. No	Nature and Scope of Risk	Value of Insurance	Validity Period of Insurance	Name of the Insurer	Insurance Policy No. and
1.	Loss of damage to works or any part thereof and all materials at site from any cause whatsoever. **CAR Policy**	100 % of Contract Amount	The policy shall be valid till issue of virtual completion certificate.	The policy shall be in the joint names of the Employer / Bank	
2.	Damage, Loss or Injury to any Property of the Employer or Consultant to any person including the Employer or Consultant for his Agents and Servants.	Rs. 35.00 Lakhs per claim upto 3 claims	- DO -	- DO -	
3.	Claims under the Workmen's Compensation Act, 1923	As per Govt. Rules	- DO -	- DO -	
4.	Third party insurance	Rs. 25 Lakhs in respect of any one accident or	- DO -	- DO -	

		series of accidents arising out of one event. Contractor shall take out third party insurance for 3 no. of such accidentsand repetition of the same after three occurrence including visitors like Local Authority, Vendors etc.			

42. (i) **Rate of Progress**

The whole of the materials, plant and labour to be provided by the Contractor and the mode, manner and speed of execution and maintenance of the Works are to be of a kind and conducted in a manner to the satisfaction of the Engineer. Should the rate of progress of the Works or any part thereof be at any time be in the opinion of the Engineer too slow to ensure the completion of the whole of the Works by theprescribed time or extended time for completion, the Engineer shall so notify the Contractor in writing and the Contractor shall thereupon take such steps as considerednecessary by the Engineer to expedite progress so as to complete the works by the prescribed time or extended time for completion. Such communication from theEngineer neither shall relieve the contractor from fulfilling obligations under the contract nor he will be entitled to raise claims arising out of such directions.

(ii) **Work during Night or on Holidays**

Subject to any provision to the contrary contained in the Contract none of the permanent work shall save as herein provided be carried on during the night or on Holidays without the permission in writing of the Engineer, save when the work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the Works in which case the Contractor shall immediately advise the Engineer. Provided always that the provisions of this clause shall not be applicable in the case of any work, which becomes essential to carry out by rotary or double shifts in order to achieve the progress & quality of the part of the works being technically required / continued with the prior approval of the Engineer.

All work at night shall be carried out without unreasonable noise and disturbance and with the approval of the Engineer and in addition that of the local authority, if so applicable. The Contractor shall indemnify the Employer from and against any liability for damages on account of noise or other disturbance created while or in carrying out

the work and from and against all claims, demands, proceedings, costs, charges and expenses whatsoever in regard or in relation to such liability.

43. **Suspension of Work**

The Contractor shall on the written order of the Engineer in Consultation with EIC suspend the progress of the Works or any part thereof for such time or times and in such manner as the Engineer may consider necessary and shall during such suspension properly protect and secure the work so far as is necessary in the opinion of the Engineer. The extra cost including all running wages to be paid on the Site, salaries, depreciation and maintenance of plant, Site on costs & overhead costs of the Contract relatable to the works done or incurred by the

Contractor in giving effect to the Engineer's instructions under this Clause shall, be borne and paid by the Employer. However, the same will not be payable if the such suspension is :

(a) otherwise provided for in the Contract

OR

(b) necessary by reason of inclement weather conditions affecting adversely the safety or quality of the Works.

OR

(c) necessary by reason of some default on the part of the contractor

Provided that the Contractor shall not be entitled to recover any such extra cost unless he gives notice in writing of his intention to claim to the Engineer within 28 days of the Engineer's order. The Engineer shall settle and determine such extra payment and / or extension of time under relevant Clause hereof to be made to the Contractor in respect of such claim as shall in the opinion of the Engineer be fair and reasonable and the Engineer's decision shall be final and binding.

44. **Settlement of Disputes and Differences**

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

i) If the contractor considers that he is entitled to any extra payment or compensation in respect of the works over and above the amounts admitted as payable by the Interior Designer or in case the contractor wants to dispute the validity of

ii) any deductions or recoveries made or proposed to be made from the contract or raise any dispute, the contractor shall forthwith give notice in writing of his claim, or dispute to the **Chief Manager / Asst. General Manager, Bank Of Baroda** and endorse a copy of the same to the Interior Designer, within 30 days from the date Of disallowance thereof or the date of deduction or recovery. the said notice shall give full particulars of the claim, grounds on which it is based and detailed calculations of the amount claimed and the contractor shall not be entitled to raise any claim norshall the Bank be in any way liable in respect of any claim by the contractor unless

notice of such claim shall have been given by the contractor to the **Chief Manager / Asst. General Manager, Bank of Baroda** in the manner and within the time as aforesaid. The contractor shall be deemed to have waived and extinguished all his rights in respect of any claim not notified to the **Chief Manager / Asst. General Manager, Bank of Baroda** in writing in the manner and within the time as aforesaid.

iii) **Chief Manager / Asst. General Manager, Bank of Baroda** shall give his decision in writing on the claims notified by the contractor. The contractor may within 30 days of the receipt of the decision of **Chief Manager / Asst. General Manager, Bank of Baroda** submit his claims to the conciliating authority namely the **GeneralManager, Bank of Baroda** for conciliation along with all details and copies of correspondence exchanged between him and the **Chief Manager / Asst. General Manager, Bank Of Baroda.**

45. **Arbitration**

If the conciliation proceedings are terminated without settlement of the disputes, the contractor shall, within a period of 30 days of termination thereof shall give a notice to the concerned **General Manager, Bank Of Baroda,Baroda Corporate Centre, BKC,Mumbai** of the Bank for appointment of an Arbitrator to adjudicate the notified claims failing which the claims of the contractor shall be deemed to have been considered absolutelybarred and waived.

v) Except where the decision has become final, binding and conclusive in terms of the contract, all disputes or differences arising out of the notified claims of the contractor as aforesaid and all claims of the Bank shall be referred for adjudication through arbitration by the sole Arbitrator appointed by the **General Manager, Bank of Baroda, Corporate Centre, BKC Mumbai.** It will also be no objection to any such appointment that theArbitrator so appointed is a Bank office and that he had to deal with matter to which the contract relates in the course of his duties as Bank officer. If the Arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever another sole Arbitrator shall be appointed in the manner aforesaid by the said **General Manager, Bank of Baroda.** Such person shall be entitled to proceed with the reference from the stage be entitled to proceed with the reference from the stage at which it was left by his Predecessor.

It is a term of this contract that the party invoking orbit ration shall give a list of disputes with amounts claimed in respect of each dispute along with the notice for appointment of arbitrator. It is also a term of this contract that no person other than a person appointed by such **General Manager, Bank of Baroda, Corporate Centre, BKC Mumbai** as aforesaid

should act as Arbitrator. The conciliation and arbitration shall be conducted in accordance with the provisions of the Arbitration & Conciliation Act 1996 or any statutory modification or re - enactment thereof and the rules made there under. It is also a term of the contract thatif any fees are payable to the arbitrator these shall be paid equally by both the parties. However, no fees will be payable to the arbitrator if he is a Bank officer. It is also a term of the contract that the arbitrator shall be deemed to have entered on the reference on the date heissues notice to both the parties calling them to submit their statement of claims and counter statement of claims. The venue of the arbitration shall be such place as may be fixed by the arbitrator in his sole discretion. The fees, if any, of the arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The costof the reference and of the award (including the fees, if any of the arbitrator) shall be in the discretion of the arbitrator who may direct to any by whom and in what manner, such costs orany part thereof, shall be paid and fix or settle the amount of costs to be so paid.

46. **Boreholes & Exploratory Excavation**

Deleted

47. **Fossils, Etc.**

Deleted

48. **Contractor to Search**

Deleted

49. **Interference with Traffic and Adjoining Properties**

All operations necessary for the execution of the Works and for the construction of any Temporary Works shall so far as in compliance with the requirements of the Contract permits be carried on so as not to interfere unnecessarily or improperly with the public convenience or the access to use and occupation of public or private roads and footpaths or to or of properties whether in the possession of the Employer or of any other person and the Contractor shall save harmless and indemnify the Employer in respect of all claims, demands, proceedings, damages, costs, charges and expense whatsoever arising out of or in relation to any such matters in so far as the Contractor is responsible.

50. (i) **Extraordinary Traffic**

Deleted

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(ii) **Special Loads**

Should it be found necessary for the Contractor to move one or more loads of Constructional Plant Machinery or pre-constructed units or parts of units of work over part of a highway or bridge the moving whereof is likely to damage any highway or bridge unless special protection or strengthening is carried out then the Contractor shall adopt proper & adequate measures and shall be responsible for all the costs and consequences thereof.

(iii) **Settlement of Extra Ordinary Traffic Claims**

Deleted

51. (i) **Contractor to Keep Site Clear**

During the progress of the works the Contractor shall keep the site reasonably free from all unnecessary obstruction and shall store or dispose of any constructional plantand surplus materials and clear away and remove from the site any wreckage, rubbish or temporary works which are no longer required.

(ii) **Clearance of Site on Completion**

On the completion of the Works the Contractor shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and works clean and in a workmanlike condition to the full satisfaction of the Engineer / local authorities not later than 30 days from the virtual completion of the works or by such other later date as fixed by the Engineer.

52. **Construction Plant**

(i) **Definition**

For the Purpose of this Clause

(a) The expression "Constructional Plant" shall be deemed to exclude vehicles engaged in transporting any plant, equipment or materials & staff to or from the site.

(b) The expression "Hired Plant" shall mean any Construction equipments, Temporary Works & materials for Temporary Works held by the Contractor under any agreement for hire thereof.

(c) The expression "Hire Purchase Plant" shall mean any Constructional Plant Temporary Works & materials for Temporary Works held by the Contractor under any agreement for hire purchase thereof.

(ii) **Hire Purchase of Plant Exclusively for Works**

Deleted

(iii) **Conditions of Hire of Certain Plant**

Deleted

(iv) **Cost of Hiring Plants for purposes of Clause no. 39**

Deleted

(v) **Contractor's Certificate as to Hiring Provisions**

Deleted

(vi) **Hire Purchase Payments by Employer**

DELETED.

(vii) **Plants Etc. not to be Removed**

Deleted

(viii) **Revesting & Removal of Plant**

Upon removal of any such Constructional plant Temporary Works or materials as have been deemed to have become the property of the Employer under sub-clause (ii) of this Clause with consent of the Employer the property therein shall be deemed to revest in the Contractor and upon completion of the Works the property in the remainder of such Constructional Plant, Temporary Works and Materials as aforesaid shall subject to the provisions of **Clause 39** hereof be deemed to revest in the Contractor who shall remove the same together with Hire Purchase Plant.

(ix) **Disposal of Plant**

Deleted

(x) **Liability for Loss or Injury to Plant**

Deleted

(xi) **Incorporation of Clause in Sub-Contracts**

Sub-contracting or back to back contracting not allowed. The Contractor shall when entering into any sub-contract for the execution of any specialized work incorporate in such sub-contract by reference or otherwise the provisions of this Clause in relation to Constructional Plant, Temporary Works and Materials, Essential Hired Plant and Hire Purchase Plant brought on to the site by the Specialist Agency.

53. **Labour Laws**

53.1 The Contractor shall at all times during the continuance of the Contract, comply fully with all existing Acts, regulations and bylaws including all statutory amendments and re-enactment of State or Central Government and other local authorities and any other enactments, notifications and acts that may be passed in future either by the State or the Central Government or local authority, including Indian Workmen's Compensation Act. Contract Labour (Regulation and Abolition) Act 1970 and Equal Remuneration Act 1976, Factories Act, Minimum Wages Act, Provident Fund Regulations, Employees Provident Fund Act, schemes made under the same Act and also Labour Regulations as revised Health and Sanitary Arrangement for Workmen, Insurance and other benefits and shall keep Employer indemnified in case any action is commenced by competent authorities for contravention by the Contractor. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated henceforth on the part of the Contractor, the Interior Designer / Employer shall have the right to deduct from any money due to the Contractor, his amount of Performance Security or recover from the Contractor personally any sum required or estimated to be required for making good the loss or damage suffered by the Employer, responsibility in connection with the employees of the contractor, who shall, in no case, be treated as the employees of the Employer at anypoint of time.

53.2 Fair Wages:

The Contractor shall pay the labourers engaged by him on the work not less than fair wage which expression shall mean, whether for time of piecework, the respective rates of wages fixed by the local authorities as fair wages for the area payable to the different categories of labourers or those notified under the Minimum Wages Act for corresponding employees of the Employer, whichever may be higher.

53.3 The Contractor shall, notwithstanding the provisions of a contract to the contrary, cause to be paid a fair wage to labourers indirectly engaged on the Works, including any labour engaged by sub/contractors in connection with the said works as if the labourers had been directly employed by him.

53.4 **Notices:**

The Contractor shall before he commences the work, display, and correctly maintain in a clean and legible condition at a conspicuous place on the Site, notices in English and in a language spoken by the majority of the workers, stating therein the rate of wages which have been fixed as fair wages and the hours of work for which such wages are earned and send a copy of such notices to the Interior Designer.

53.5 Record of wages etc.

The contractor shall maintain records of wages and other remuneration paid to his employees in such form as may be convenient and as per the requirements of the BANK'S ENGINEER/ Employer/ Interior Designer and the Conciliation Officer (central), Ministry of Labour Government of India, or such other authorized person appointed by the central or State Government and the same shall include the following particulars of each worker :

a. Name, worker's number and grade;

b. Rate of daily or monthly wage;

c. Nature of work on which employed;

d. Total number of days worked during each wage period;

e. Total, amount payable for the work during each wage period; All deductions made from the wage with details in each case of the ground for which the deduction is made;

f. Wage actually paid for each wage period.

g. The Contractor shall provide a Wage Slip for each worker, employed on the Works.

h. The Wage records and Wage Slips shall be preserved for at least 12 months after the last entry for Inspection of Wage Records.

i. The Contractor shall allow inspection of the aforesaid Wage Records and Wage Slips to the BANK'S ENGINEERand to any of his workers or to his agent at a convenient time andplace after due notice is received, or to the Employer or any other person authorized by him on his behalf.

j. The Employer / Interior Designer or any other person authorized by them on their behalf shall have power to make enquiries with a view to ascertaining and enforcing due and proper observance of the Fair Wages Clause. He shall also have the Power to investigate into any complaint regarding any default made by the Contractor or subcontractor in regard to such provision.

k. No party shall be represented by a legal practitioner in any investigation or inquiry

under this Clause, unless Interior Designer / Employer agree otherwise.

54. Safety Code

The Contractor shall comply with all the precautions as required for the safety of theworkmen by the I.L.O. Convention No. 62 as far as they are applicable to the Contract. The Contractor shall provide all necessary safety appliances, gears like goggles, helmets, masks, etc. to the workmen and the staff.

SCAFFOLDS

i. Suitable scaffolds shall be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except in the case of short duration work which can be done safely from ladders. When a ladder is used, it shall be of rigid construction made either of good quality of wood or steel. The steps shall have a minimum width of 450 mm and a maximum rise of 300 mm. Suitable hand holds of good quality wood or steel shall be provided and the

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

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

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

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

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

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

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

EXCAVATION & TRENCHING

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

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

DEMOLITION

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

b. All open areas adjacent to the work site shall either be closed or suitably protected.

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

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

PERSONAL SAFETY EQUIPMENTS

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

a) Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.

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

c) Those engaged in welding works shall be provided with welder's protective eye sight lids.

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

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

f) The contractor shall not employ men below the age of 18 years and women on the work of painting with products containing lead or any toxic material in any form. Wherever men above the age of 18 are employed on the work of such painting the following precautions should be taken:

g) No paint containing lead or lead products shall be used except in the form of paste or readymade paint. Paints like vinyl and epoxies having toxic fumes should be applied after following all precautions laid down by manufacturers.

h) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.

ii. Overalls shall be supplied by the contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.

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

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

a) These shall be of good mechanical constructions sound material and adequate strength and free from patent defect and shall be kept in good repair and in good working order.

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

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

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

vii. In case of departmental machines, the safe working load shall be notified by the site Engineer / BANK'S ENGINEER. As regards contractor's machines, the contractor shallnotify the safe working load of the machine to the BANK'S ENGINEERwhenever he brings any machinery to site of work and get it verified by the BANK'S ENGINEERconcerned.

viii. Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce to the minimum of the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized, insulated mats, wearing apparel,

such as gloves, sleeves and boots as may be necessary, should be provided. The workers should not wear any rings, watches and carry keys or other materials which are good conductors of electricity.

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

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

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

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

First Aid:

At every workplace, there shall be maintained in a readily accessible place first aid appliances including an adequate supply of sterilized dressings and sterilized cotton wool as prescribed in the Factory Rules of the State in which the work is carried on. The appliances shall be kept in good order and, in large workplaces; they shall be placed under the charge of a responsible person who shall be readily available during working hours.

At large workplace, where hospital facilities are not available within easy distance of the works, First Aid Posts shall be established and be run by a trained compounded. Where large workplaces are remotely situated and far away from regular hospitals, an indoor ward shall be provided with one bed for every 250 employees. Where large work place are situated in cities, towns or in their suburbs and no beds are considered necessary owing to proximity of city or town hospitals, suitable transport shall be provided to facilitate removal of urgent cases to these hospitals. At other workplaces, some conveyance facilities shall be kept readilyavailable to take injured person or persons suddenly taken seriously ill, to the nearest hospital. At large workplace, there shall be provided and maintained an ambulance room containing the prescribed equipment and in the charge of such medical and nursing staff as may be prescribed. For this purpose, the relevant provisions of the Factory Rules of the State

Government of the area, where the work is carried on, may be taken as the prescribed standard.

Accommodation for Labour:

The Contractor shall during the progress of the Work provide, erect and maintain necessary temporary living accommodation and ancillary for labour at his own expenses to the standards and scales as approved by the BANK'S ENGINEER

Drinking Water:

In every workplace, there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of water fit for drinking. Where drinking water is obtained from an intermittent public water supply, each workplace shall be provided with storage where drinking water shall be stored. Every water supply storage shall be at a distance of not less than 15 meters from any latrine, drain or other source of pollution. Wherewater has to be drawn from an existing well, which is within such proximity of latrine, drain or any other source of pollution, well shall be properly chlorinated before water is drawnfrom it for drinking. All such wells shall be entirely closed in and be provided with a trap door which shall be dust-proof and water-proof. A reliable pump shall be fitted to each covered well. The trap door shall be kept locked and opened only for cleaning or inspection which shall be done at least once a month.

Labour rooms/staying facilities-Contractor have to make their own arrangement outside of the premises for staying labour.

Washing and Bathing Places:

Deleted

Latrines and Urinals:

Deleted

Payment of Wages

a. Wages due to every worker shall be paid to him direct. All wages should by paid in current coins or currency or in both.

b. Wages of every worker employed on the Contract shall be paid where the wage period is one week, within THREE days from the end of the Wage period, and in any

other case before the expiry of the 7th day or 10th day from the end of the wage period according as the number of workers does not exceed 1,000 or exceeds 1,000.

c. Minimum wages to be paid to all the workers as per the statutory Govt. norms. The minimum wages of state/central whichever is highest to be paid to all the workers/labour.

NOTE: The term "Working Day" means a day on which the work on which the labour is employed is in progress.

Register of Workmen:

A register of workmen shall be maintained in the Form appended to the regulations and kept at the work site or as near to it as possible and relevant particulars of every workman shall be entered therein within THREE days of his employment.

Employment Card:

The Contractor shall issue an employment card in the Form appended to these regulations to each worker on the day of work or entry into his employment. If a worker already has any such card with him issued by the previous employer, the Contractor shall merely endorse that Employment Card with relevant entries. On termination of employment, the Employment Card shall again be endorsed by the Contractor and returned to the worker.

Register of Wages, etc.:

i) A Register of Wages cum Muster Roll in the Form appended to these regulations shall be maintained and kept at the Work Site or as near to it as possible.

ii) A wage slip in the form appended to these regulations shall be issued to every worker employed by the Contractor at least a day prior to disbursement of wages.

55. Force Majeure

Conditions of Force Majeure

The terms “Force Majeure” as employed herein shall mean act of God, war, revolt, riot, fire, flood and Acts & Regulations of respective Governments of the two parties namely the Employer and the Contractor.

Note : ‘Typhoon’, ‘Cyclones’, ‘Hurricanes’, ‘Tornado’ are covered under act of God.

In the event of either party being rendered unable by force majeure to perform any of obligations required to be performed by them under the Contract, the relative obligation of the party affected by such Force Majeure shall upon notification to the other party be suspended for the period of delay, which is directly caused by such Force Majeure event.

Upon the occurrence of such cause and upon its termination, the party alleging that it has been rendered unable as aforesaid thereby, shall notify the other party in writing within (72) seventy two hours of the alleged beginning and ending thereof giving full particulars and satisfactory evidence in support of its claim.

Time for performance of the relative obligation suspended by the Force Majeure shall then stand extended by the period of delay, which is directly caused by Force Majeure event. The party who has given such notice shall be executed from timely performance of its obligations under the Contract, for so long as the relevant event of Force Majeure continues and to the extent that such parties performance is prevented, hindered or delayed, provided the party or parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its performance of the Contract and so to fulfill its obligations under the Contract.

If works to be executed by the Contractor are suspended by Force Majeure conditions lasting for more than (2) two months, the Employer shall have the option of cancelling or terminating this Contact in whole or part thereof at Employer's discretion. Upon such termination provisions of Clause 39 shall apply.

Delay or non-performance by a party hereto caused by the occurrence of any of Force Majeure shall not:

a) Constitute a default or breach of the Contract,

b) Give rise to any claim for damages or additional cost or expense occasioned thereby : if such delay or non-performance is caused by the occurrence of any event of Force Majeure. Force Majeure conditions shall not be payable under any circumstances.

Guidelines issued by Govt. for COVID-19- Contractor has to strictly follow all the guidelines issued by the local/state/ central or any concern department for COVID-19.

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Section H

SPECIAL CONDITION OFCONTRACT

SPECIAL CONDITIONS OF CONTRACT

1. Scope of Work

BOB hopuse is a residential building A & B wing, Ground + Upper Three Floors. The scope of the work is to carry out Civil, Electrical, Plumbing & allied works as detailed in the Specifications and Bill of Quantities Bank's Residential Flat, BOB House, Bank of Baroda, Vadodara, Gujarat."

No. of Flats: Four Nos.

Area of one flat: 1000 sq.ft. approx..

Location of Site:

The site is located at BOB House, Old Padra Road, Baroda

2. Area for the Contractor's Site Facilities

The area to the extent available, at the discretion of the EIC, from the said plot will be allocated to the contractor for his stores, offices, erection of plants, workshops etc. Any additional area including area for labour camp etc. shall be arranged by the contractor at his own cost. The Employer neither undertakes any responsibility for providing the area more than the above nor will entertain any claim / reimbursement etc. towards arrangement of additional area / land etc. by the contractor.

3. Dimensions and Levels

All dimensions and levels shown on the Drawings shall be verified by the Contractor on the Site and he will be held responsible for the accuracy and maintenance of all the dimensions and the levels.

Figured dimensions are in all cases to be accepted and no dimension shall be scaled. Large-scale details shall take precedence over small-scale drawings. In case of discrepancy the Contractor shall ask for clarification from the Engineer before proceeding with the work.

4. Notice of Operation

The Contractor shall not carry out any important operation without the consent in writing of the Engineer / EIC.

5. Construction Records

The Contractor shall keep and provide to the Engineer full and accurate records of the dimensions & locations of all new work and any other information necessary for the Engineer for records of the works as constructed.

6. Safety of adjacent Structures

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

7. Temporary Works

Before any Temporary Works are commenced the Contractor shall submit at least 7 days in advance to the Engineer for approval, complete drawings of all Temporary Works he may require for the execution of the works. The Contractor shall also submit his calculations relating to strength, if required by the Engineer and shall carry out the modifications that the Engineer may require in accordance with the Conditions of Contract at his own cost. The Contractor shall be solely responsible for the stability and safety of all Temporary Works and unfinished works and for the quality of the permanent works resulting from the arrangement eventually adopted for their execution.

8. Temporary Roads

The Contractor shall be responsible for proper maintenance of this access road and would take all care to see that existing services if any are maintained in working order.

The construction and maintenance of Temporary Roads within the site area shall be the Contractor's responsibility and the Contractor shall take such measure as are necessary and as directed by the Engineer / EIC.

9. Power, Water & Other Facilities

(a) The rate quoted by the Contractor shall include expenditure for providing all the water required for the work and the Contractor shall make his own arrangements for the supply of good quality potable water, including obtaining Municipal connection for his labour as well as for construction purpose, and all charges for water shall be borne by him. If water is not available and should it become necessary for Contractor to bring water from outside by tankers, the Employer shall not be liable to pay any charges in connection therewith.

(b) The rate quoted in the tender shall also include electric consumption charges for power. If no power is available at the site, the Contractor shall have to make his own arrangements to obtain power connections and maintain at his own expenses an efficient service of electric light and power and shall pay for the electricity consumed. If electricity and water provided by bank, recovery @ 2.0% amount of the actual work done at site shall be done.

(c) For water and electricity, the Contractors for other trades directly appointed by the Employer shall be entitled to take connections from the temporary water and electric supply connection obtained by the Contractor at their cost. Such contractors (directly appointed by Employer) shall install a sub-meter for measuring electric / water consumption at their own cost and maintain the wiring / installation in good condition as per the local rules and reimburse the actual consumption charges directly to the Contractor at mutually agreed rates between them. In case of any disagreement, the reimbursement charges shall be decided by the Engineer, whose decision shall be final and with out appeal.

All charges for drainage, water connection and electricity charges for construction purposes shall be borne by the Contractor and charges payable for permanent connections, if any, shall be initially paid by the Contractor and the Employer will reimburse the amount on production of receipts.

(d) The contractor shall make suitable arrangement for a stable and uninterrupted supply of water, power and other facilities for the work and Engineer's and Employer's office. The cost of these facilities towards installation and maintenance shall be borne by the contractor and are deemed to be included in the quoted rates / prices.

(e) The Employer, as well as the Engineer, shall give all possible assistance to the Contractor to obtain the requisite permission from the various Authorities, but the responsibility for obtaining the same in time shall be that of the Contractor.

(f) In case water and electricity are provided by the Employer from their existing source, the charges as decided by the Employer will be deducted from the payment due to contractor.

10. Temporary Services

The Contractor shall provide and maintain all temporary services on or about the site, for the execution of the works and shall remove them on completion at his own cost.

11. (i) Office Accommodation for Contractor, Bank's Engineer/ Employer's Representatives andVisiting Officials

DELETED.

(ii) Telephone & Fax

DELETED

12. Facilities for Contractor's Employees

The Contractor shall make his own arrangement for the housing and welfare of his staff and workmen including adequate drinking water and sanitary facilities. The Contractor shall also make his own arrangements at his own cost for transport where necessary for his staff and workmen to and from the Sites of the works. The necessary drinking water and sanitary facilities for Employer's representative, Bank's Engineer, contractor's staff & labour & visitors at siteshall be provided and maintained by the contractor at no extra cost.

13. Lighting for Works

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

14. Fire Fighting Arrangement

(i) The Contractor shall provide suitable arrangements for fire fighting at his own cost. For this purpose, he shall provide requisite number of Fire-Extinguishers and adequate number of buckets, some of which are to be always kept filled with sand and some with water. These equipment shall be provided at suitable prominent and easily accessible places and shall be properly maintained.

(ii) The Contractor may be subject to periodic fire prevention inspections and any deficiency or unsafe condition shall be corrected by the Contractor at his own cost and to approval of the Engineer and the relevant authorities.
These fire prevention inspections shall include but not limited to the following:

a) Proper handling, storage and disposal of combustible materials, liquids and wastes.

b) Work operations, which can create fire hazards.

c) Access for fire fighting equipment.

d) Type, size, number and location of fire extinguishers or other fire fighting equipment.

e) Inspection and maintenance records for extinguishers.

f) Type, number and location of containers for the removal of surplus materials and rubbish.

g) General housekeeping

16 (i) Site Instruction Book

For the purpose of quick communication between the Engineer / EIC and the Contractor or his Agent or Representative, Site Books shall be maintained at Site in the manner as described below:

Any communication, relating to the works may be conveyed through Site Instruction Books. Such a communication from one party to the other shall be deemed to have been adequately served in terms of the Contract. Each site book shall have machine-numbered pages in triplicate and shall be carefully maintained and preserved by the Contractor and shall be made available to the Engineer / EIC as and when demanded. Any instruction which the Engineer / EIC may like to issue to the Contractor may be recorded by him in the Site Book and two copies thereof taken by the Engineer / EIC for his record. The Contractor or his Agency or Representative may similarly record in the Site Book any communication he may like to send to the Engineer / EIC. Two copies thereof when sent to the Engineer / EIC and receipt obtained thereof, will constitute adequate services of the communication to the Engineer / EIC.

(ii) Site Records

Contractor shall maintain various site records like inventories of materials, challan, approval of material, testing, hindrance etc as per standard practice or as advised by Engineer / EIC.

17. Temporary Fencing, Barricades etc.

The Contractor shall provide and maintain a suitable approved temporary fencing / barricades and gates to adequately enclose all boundaries of the site for the protection of the public and for the proper execution of the Works including all costs incurred for the security of the Works and in accordance with the requirements of the Engineer / Employer and regulations of local authorities / pollution board. These shall be altered, relocated and adapted from time to time as necessary and removed on completion.

18. Site Meetings

Progress and quality evaluation meetings will be held at the site every week or fortnightly. The Contractors senior representative in charge of the project along with his site-in-charge and other staff including staff of approved subcontractors and suppliers as required shall participate in these progress review meetings and ensure all follow up actions. Any additional review meetings shall be held if required, as decided by the Engineer / EIC which also shall be attended by the above referred representatives.

19. Programme of Works

(i) Detailed Programme to be furnished

Within 15 days of receiving letter of Acceptance / Award the Contractor shall prepare and submit a detailed programme of works in the form of a Bar Chart / Mile stone network showing all activities & the order of procedure in which he proposes to carry out the works including labour histogram, cash flow and deployment of equipments. Within 15 days from the date of submission, the Engineer / EIC shall convey to the Contractor his comment / approval on the programme.

The contractor shall be required to submit the PERT / CPM chart for the various activities involved in this work including dependencies etc., and regularly monitor the progress of construction accordingly.

(ii) Programme to be Modified

Subject to the provisions of **Clause no. 19** hereof, if at any time it should appear to the Engineer that the actual progress of the works does not conform to the approved programme referred to in sub-clause (i) of this Clause, the Contractor shall produce a revised & detailed programme showing the modifications to the original programme necessary to ensure the completion of the works within the time for completion as defined in **Clause no. 32 of GCC** hereof.

(iii) Cash Flow

The detailed programmes shall also show the estimated Cash flow required for each month to complete the works.

(iv) Progress Report / Photograph

Two copies of weekly progress reports containing the following shall be submitted by the Contractor to the Employer through the Engineer on or before the 3rd day of the next week.

(a) Weekly detailed progress report showing the progress of individual activities of programme as achieved at site till such period & being suitably marked on the approved network diagram, or as directed by the Engineer, shall be provided by the Contractor indicating the actual state of progress during the course of the contract, together with other details of procurement & delivery schedules of materials / equipments, as required by the Engineer.

(b) Three copies of coloured photographs in showing day to day important progress of work.

(c) Labour report in the form prescribed by the Engineer.

(d) Equipment & machinery report in the form pre scribed by the Engineer.

(e) Supervisory staff report in the form prescribed by the Engineer.

(f) Remedial Measures for covering up delay, if any.

(g) Bottlenecks and hindrances,

Apart from the above the Contractor shall submit daily report indicating regular deployment of his staff and works, equipments, important stages of progress, procurement of construction materials etc. as approved by the Engineer.

20. Procedure for Measurement, Record and Billing:

i. All measurements shall be taken jointly by the Contractor/Bank's Engineer/Engineer. During measurement, Contractor shall provide all assistance with measuring appliances, labour and other necessary for measurement.

ii. Interim Bills shall be submitted by the Contractors based on the measurement taken for Scrutiny and Certification for payment by Bank's Engineer/Engineer/EIC.

iii. Engineer to Scrutinize, Check and record the measurements on the Measurement Sheets / Books (duly approved by Employer and issued to Engineer) and to Certify the bills for payment.

iv. Measurement shall be taken as per methods of measurement spelt out in the Specification / Contract document. In case of any dispute as to the mode of measurement not covered by the Contract to be adopted for any item of work, mode of measurement as per latest Indian Standard Specification / CPWD / Standard Engineering Practices as decided by Engineer shall be followed in order of preference.

v. While preparing the final bills overall cumulative measurement may be taken again. However, detailed checking of previous Interim Bills shall be made and in case there

are any missing items or measurements, the same shall be recorded. Contractor have to submit a copy of purchased material bills as and when required by bank. In case of not submission of bill, the payment for the same shall not be processed.

vi. Incase, the Contractor does not submit the Final Bill within the stipulated period as specified in **Clause no. 31** of General Condition of Contract, the Engineer may take the measurements of his own and certify the Bill which will be binding on the Contractor.

vii. The schedule of payment of Bill shall be as specified in **Clause no. 31** of General Condition of Contract.

21. Disposal of Refuse etc.

i) The Contractor shall cart away from site and POP/debris/deposit where directed by the Engineer all refuse, etc. arising from the Works both as it accumulates, at completion of the Works or at the direction of the Engineer. No extra payment shall be done for the same.

ii) It is the responsibility of the Contractor to obtain a certificate from the local authorities concerned to the effect that all rubbish arising out of Contractor's activities at the construction site or any other offsite activities borrow pits and / or disposal area(s) has been properly disposed off.

This certificate from the authority shall be dated not later than the (last) Certificate of Completion of Works and is to be enclosed with the Payment Certificate in which the Contractor requests for payment of any Retention money due to him.

22. Contractor to verify site Measurements

The Contractor shall check and verify all site measurements whenever requested by other specialists, Contractors or by nominated or other sub-contractors to enable them to prepare their own shop drawings and pass on the information with sufficient promptness, as will not in any way delay the works. A copy of all such information passed on shall be given to the Engineer.

23. Hoarding

Deleted

24. Bar-bending Schedule for reinforcement Work

Deleted

25. Approved Makes / Agencies

The Contractor shall provide all materials from the list of approved makes and also appoint the specialist agency from the approved list as provided in the Tender. The Bank's Engineer/ Employer / Engineer will approve make / agency as selected by the contractors within the approved list after inspection of their samples / mock-ups and their compliance to Technical Specifications / BOQ items and after ascertaining their spare capacities and recent past performances. In case the materials are not in conformity with BOQ & Technical Specification though it is in approved list or for Aesthetic reason, Employer / Bank's Engineermayselect the other approved makes. Contractor have to ensure the availability of the material before commencement of the work. After commencement of the work, non-availability of material shall not be the reason for the delay.

26. As Built Drawings / Documents / Shop Drawing: DELETED

(a) **Drawings Issued to the Contractor by the Engineer:** DELETED

The Engineer will issue three sets of the drawings / soft copies to the Contractor for the items for which some changes have been made from the approved drawings as instructed by the Engineer. The contractor will mark the changes which have been made from the approved drawings and submit the copies of drawings / soft copies to the Engineer for his approval. In case any revision is required or the corrections are not properly marked, the Engineer will point out the discrepancies to the Contractor. The Contractor will have to incorporate these corrections and / or attend to discrepancies either on the copies as above or fresh copies as directed by the Engineer and resubmit to the Engineer for approval along with soft copies. The Engineer will return one copy to the contractor duly approved for his records.

(b) **Shop drawings prepared by the Contractor:**

The contractor shall prepare the shop-drawings as & when required or as directed by EIC. The Contractor will modify the drawing prepared by him wherever any changes are made consequent to site decisions etc. as approved by the Engineer. Three copies along with soft copies shall be submitted of these corrected drawings to the Engineer for his approval.

The Engineer shall return one copy of the same, duly approved, if found satisfactory or advise contractor the changes required or discrepancies, if any. The Contractor shall resubmit the three copies after incorporating all the corrections / changes etc. with soft copies. The Engineer / Bank's Engineerwill return one copy to the contractor duly approvedfor his records.

(c) **Documents:**

Contractor shall submit documents like Maintenance and Operation Manuals, Literatures of various equipment, GST Bill of materials(if required), guarantee etc. in bounded form in triplicate to Engineer on completion of work, which will be construed as a condition for certify Final Bill.

27. Procurement of Materials.

The contractor shall make his own arrangement to procure all materials required for the work. All wastages including shall be the contractors account.

28. (i) Excise & Sales Taxes for Works

The Contractor shall pay and be responsible for payment of all taxes, duties, levies, royalties, fees or charges in respect of the works including but not limited to sales taxes, Excise duties payable in respect of materials, equipment, plant and other things required for the Contract. All of the aforesaid taxes, duties, levies fees and charges shall be to the Contractor's account and Employer shall not be required to pay any additional or extra amount on this account. Variation of taxes, duties, levies, fees etc., if any, till completion of work shall be deemed to be included in the accepted rates and no extra claim on this account will in any case be entertained by the Employer. Only GST will be paid in extra, as applicable.

(ii) New Taxes, Duties & Levies, etc.

If a new Tax or Duty or Levy is imposed under as statute or law during the currency of the contract, the same may be reimbursed by the Employer if so deemed fit on documentary evidence.

29. General Price Variation Adjustment (PVA) for Materials and Labour

Deleted.

30. Non-Assignability

This Contract & Benefits and Obligations thereof shall be strictly personal to the bidder bidding the bid and shall not on any account be assignable or transferable by the Bidder. Also, the Bidder will not be allowed to get the work executed on back to back basis through any other agency except for specialized works.

31. Appointment of Specialist Agencies

The contractor shall appoint specialist Agencies for the following works with due approval

from Engineer / Engineer-in-charge apart from that mentioned in elsewhere of the tender document for specialized works.

i. Skilled Carpenters/ Polishers,
ii. Electrical work (agency having valid license)
iii. BMS work

The specialist agencies so appointed by the contractor should have adequate Technical and Financial capability and have proven record for the relevant works.

The contractor shall submit the relevant documents to the Engineer / Engineer-in-charge for appointing specialist agencies and shall get approval from the Engineer / Engineer-in-charge.

The appointment of specialist agencies shall not relieve contractor from any of their performance obligation as per the contract. The contractor should be fully and solely responsible for the quality and completion of works to be carried out by the specialist agencies.

However, contract can deploy their own In-house facilities only if it is approved by Employer / Engineer after verifying their credential and past performance.

32. Priority of Contract Documents

The several documents forming the Contract are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies, the documents forming the Contract shall be as follows in order of precedence.

1. BOQ & its nomenclature
2. Technical specifications
3. Special conditions of contract
4. Latest IS Codes / CPWD specifications 7.

Decision of Bank's Engineer/Bank

33. Statutory Approvals

Contractor shall obtain all statutory approvals at his own cost before commencement and on completion of work, if required from the GIFT/Local authorities. However, Employer shall pay or reimbursed the all official fees on demand/producing original receipts.

The contractor shall obtain the Occupation Certificate and NOC from local authorities on virtual completion of the work so as to obtain the power, water and sewerage connections

from the respective authorities in order to hand over the building before stipulated completion date.

34. Contractor to co-ordinate with other Contractors:

Contractor has to co-ordinate with other Contractors employed by Employer for other works and for any dispute the same to be brought to the notice of Employer / Engineer.

35. Delegation

The BOB may delegate any of the duties and responsibilities to other people after notifying the Contractor and may cancel any delegation after notifying the Contractor.

36. Basic Rates for Materials

Basic rates of Material while bidding the Tender, the bidders shall quote the rates based on the basic rates mentioned in BOQ:

Basic price means the landed cost of materials at site including transportation, excise duty, sales tax and all other duties levied by Govt. or any public bodies.

1. Materials for which a basic price has been stipulated in the tender, the variation in the actual cost of purchase including transportation, excise duty, sales tax and all other duties levied by Govt. or any public bodies (Excluding GST) from the basic price stipulated above will be considered for adjustment (recoverable or payable as the case) due to incorporation of required quantity of such material in the works over different periods of time as per construction schedule. **No claim against wastage component will be consider for the same**. Rates should be however fair and competitive and verified by market enquiry by the Employer calling quotations from the approved material distributers/manufactures on regular interval and the quantity purchased in every period should be reasonable and advantageous, in case of huge fluctuation in rate for basic rated items, upon receiving instructions from Employer, contractor to initiate bulk procurement for those items to have benefit of rate etc. Contractor is required to submit delivery challan, invoice and payment details in respect of the basic ratedmaterial purchased for verification of Employer.

2. The Contractor shall not in any way be entitled to any sums by way of overhead costs, profits or otherwise whatsoever in respect of such variation. The corresponding adjustment shall be made in the Contractor's bill on production of all necessary documents duly certified by the Interior Designer. Wastage in cement, steel and other materials shall be on the Contractor's account. It is clarified that no adjustment shall be made in respect of items such as steel grills window/ventilator bars, doors, hoop iron or

M.S. rods for partitions wall plates for water tanks, & other manufactured items whatsoever.

3. The employer has the right to instruct the successful bidder to purchase the required materials for which the "Basic Price" has been stipulated from the dealer or supplier as per list of approved makes / Agencies or any other agencies selected by the Employer and at the rate approved by the Employer on verification of market rate from time to time.

4. Contractor has to take prior written approval from bank for make and rate approval before placing order. If fail, than bank will not pay any amount for the respective item.

The Contractor shall make his own arrangements for procurement of cement. As the cement of tested quality is freely available in the market in abundant quantity at competitive prices, the contractor shall take prior approval from Employer with regard to brand of cement other than approved make or brand and the price at which the same shall be procured.

37. Typographic or Clerical Errors:

The Bank's Engineer's clarifications regarding partially omitted particulars or typographical orclerical errors in the Tender documents shall be final and binding on the Contractor.

38. Rate Analysis of Major Items:

Rate Analysis of major items to be submitted by the Bidder before award of work if so required by Employer.

39. Notices:

Notices of the Employer to the Interior Designer or the contractor may be served personally or by being left at or sent by registered post to the known place of abode or business of the party to whom the same is given or in the case of the Contractor by being left on the works. In the case of company or corporation, Notices may be served at or sent by registered post to the registered office of the Company or Corporation. Any notice sent by registered post shall be deemed to be served at the time when, in the ordinary course of post, it would be delivered

40. Soil Test Report:

Deleted

41. Technical Audit

The whole of the work may be technically audited by the Chief Technical Examiner (CTE) of the Central Vigilance Commission, Government of India from time to time. Any defects, improvement or testing etc. conveyed by the Examiner shall be carried out by the contractor at no extra cost, to the satisfaction of the CTE. Any deduction suggested by the CTE either due

to faulty workmanship or not adhering to the specification will be effected.

The Employer shall have a right to cause a technical examination and audit of work and running and final bills of the contractor including all supporting vouchers. Abstract, etc. to be made at the time of the bill. If as a result of this examination or otherwise any sum is found to have been overpaid in respect of any work done by the contractor under the contract the contractor shall be liable to return the amount of over payment and it will be lawful for the employer to recover the same from any sum or sums due to him and in any other manner legally permissible and if it is found that the Contractor was paid less than what was due to him under the contract in respect of any work, executed by him under the contract, the amount of such under payment shall be duly considered / paid by the employer.

Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the Employer and set off against any claim of the Employer for the payment of a sum of money arising out of or under any other contract made by the Contractor with the Employer.

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SECTION - I

PROFORMA & ANNEXURE

PROFORMAS & ANNEXURES

ANNEXURE – A NOTICE OF COMMENCEMENT / COMPLETION OF CONTRACT WORK

ANNEXURE – B MONTHLY PROGRESS REPORT

ANNEXURE – C RECEIPT & CONSUMPTION OF MATERIALS AT SITE

ANNEXURE – D MEASUREMENT BOOK (Interior Decoration WORK)

ANNEXURE – E RUNNING A/C BILL

ANNEXURE – F R. A. BILL CERTIFICATE

ANNEXURE – G PROFORMA OF UNDERTAKING IN CONNECTION WITH PAY MENTS OF ADVANCE ON MATERIALS BROUGHT BY THE CON TRACTORS TO THE SITE

ANNEXURE – H CERTIFICATE OF PAYMENT BY PMC

ANNEXURE – I HINDRANCE REGISTER

ANNEXURE – J EXTENSION OF TIME LIMIT

BANK OF BARODA

PROFORMA & ANNEXURES

ANNEXURE – A

PROFORMA OF NOTICE OF COMMENCEMENT / COMPLETION OF CONTRACT WORK

1. Name and principle employer & address

2. No. and date of certificate of registration

3. I / we hereby intimate that the contract work_____(Name of work) given to _____ (Name and address of the Contractor) having License No. _____ dated_____has commenced / has been completed with effect from _____ (date) / on _____(date).

Signature of the Principle

Employer

The Inspector,

_____

_____

_____

PROFORMA & ANNEXURES

ANNEXURE – B

PROFORMA OF MONTHLY PROGRESS REPORT

Name of work
Progress report for the month
Report No.

Sr. No.	Description	Details of location where works is done	Approximate quantity executed

A. **GENERAL BUILDING WORK**

1. Overall progress
2. Carpentry work, Partitions (half & full), Storage floorwise
3. Carpentry work for Conference Tables, Storages
4. False ceiling, Coordination with other agencies
5. Work station, Loose furniture, Tables at cabins etc.

Sr. No.	Description of work	Date of Commencement	Due date of Completion	Percentage Progress Achieved

PROFORMA & ANNEXURES

ANNEXURE - C

RECEIPT & CONSUMPTION OF MATERIALS AT SITE

Sr. No.	Description	Opening Balance	Receipt during month	Consumption during month	Closing balance	Total quantity received till date

1. Plywood

2. Laminations

3. False ceiling material

4. Teakwood and other material for door, door frames.

5. Door shutters

PROFORMA & ANNEXURES

ANNEXURE – D

MEASUREMENT BOOK (Interior Decoration Work)

Item. No.	Description	Measurements No.			Quantity
		L	B	D/H	

PROFORMA & ANNEXURES

ANNEXURE – E

I - RUNNING A/C BILL MEASUREMENTS

1. Name of Contractor / Agency

2. Name of work

3. Sr. No. of this bill

4. No. and date of previous bill

5. Reference to Agreement No.

6. Date of written order to commence

7. Date of completion as per agreement

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

Upto previous R/A. Bill		Upto date (Cumulative)		Present Bill		Remarks
Qty.	Amount (Rs.)	Qty.	Amount (Rs.)	Qty.	Amount (Rs.)	
6.	7.	8.	9.	10.	11.	12.

Note: 1) if part rate is allowed for any item, it should be indicated with reasons for allow ing such a rate

2) if ado payment is made, it should be mentioned specifically

Net values since
Previous bill

PROFORMA & ANNEXURES

ANNEXURE – F

R.A. BILL CERTIFICATE

The measurements on the basis of which the above entries for the running bill no. : _____ were made have been taken jointly on_____and are recorded at pages_____to _____of Measurement Book No. _____

Signature and date of Contractor	Signature and date of PMC's Representative (seat)

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

Bank's Engineer

P.M.C.
Bank's Engineer

ANNEXURE – G

PROFORMA OF UNDERTAKING IN CONNECTION WITH PAYMENTS OF ADVANCE ON MATERIALS BROUGHT BY THE CONTRACTORS TO THE SITE

The undertaking made this_____day of_____2023 _____between the Bank of Baroda_____and having its _____ office at (hereinafter called the Employer) of the one part and_____(hereinafter called the Contractors of the other part).

The Employer and the Contractors have entered into an Agreement dated ___ hereinafter called as the said agreement and in terms of clause no._____of the conditions in the agreement, the Employer has agreed that the Contractors will be paid an advance of 75 % of the cost of non-perishable building materials brought by the Contractor to the site for consumption in the works at the discretion of the Employer.

The Contractors have applied to the Employer that they be allowed advances on the security of materials absolutely belonging to them and brought by them to the site of work. The Employer has agreed to do so on the terms and hereinafter set out.

Not this Letter of Undertaking witnesses that in consideration of the said agreement and in consideration of the amount paid / payable to the Contractors by the Employer and / or any further advances as may be made to the Contractors as aforesaid, the Contractors hereby agree with the Employer and undertake as under:

i) The amount advanced by the Employer to the Contractors as aforesaid and all or any further sum or sums advanced as aforesaid shall be employed by the Contractors in or towards expediting the execution of the said works and for no other purpose whatsoever.

ii) That the materials which have been offered to and accepted by the Employer as security are absolutely the Contractors own property and free from encumbrances of any kind and the Contractor will not make any application for or receive a further advance on the security of materials which are not absolutely his own property and free from encumbrances of any kind and the Contractors indemnify the Employer against all claims to any materials in respect of which an advance has been made to them as aforesaid.

iii) That the materials on the security of which any further advance or advances may hereafter be made as aforesaid (hereinafter called the said materials) shall be used by the Contractors solely in the execution of the said works in accordance with the directions of _____of the Employer and accordance with the terms of the said agreement.

iv) That the contractors shall take their own cost all the necessary and adequate arrangement for the proper watch, safe custody and protection against all risks of the site of the said works in the contractors custody and on their own responsibility and shall at all times be open to inspection to the Employer's Engineers or any Officer authorized by the Employer. In the event of the materials or any part thereof being stolen, destroyed or damaged, the Contractorswill further replace the same with other materials of like quality or repair and make good the same as required by the Employer.

v) That the said materials shall not on any account be removed from the site of the said works except with the written permission of the_____of Bank of Baroda.

vi) That the advances shall be repayable in full when or before the Contractors receive payment from the Employer of the price payable to them for the said works under the terms and the provisions of the said agreement provided that if any intermediate payments are made to the Contractors on account of work done, then on occasion of each such payment, the Employer will be at liberty to make a recovery from the Contractors bill for such payment by deducting there from the value of the said materials then actually used in the construction and in respect of which recovery has not been made previously, the value for this purpose being determined in respect of each description of materials at the rates at which the amount of the advances made under these presents were calculated.

vii) That if the Contractors shall at any time make any default in the performances or observance in any respect of any of the terms and provisions of the said agreement or of these presents, the total amount of advance or advances that may still be owing to the Employer, shall immediately on the happening of such default be repayable by the Contractors to the Employer together with interest thereon at 12% per annum from the date or respective dates of such advance or advances to the date of repayment and with all costs, charges, damages and expenses incurred by the Employer in or for the recovery thereof or the enforcement of this security or otherwise by reason of the default of the Contractors and the Contractors hereby covenant and agree with the Employer to repay and pay the same respectively to him accordingly.

viii) That the Contractors hereby charge all the said materials with the repayment to the Employer of the sum or sums advanced as aforesaid and all costs, charges, damages and expenses payable under these presents PROVIDED ALWAYS and it is hereby agreed and declared that notwithstanding anything in the said agreement and without prejudice to the powers contained therein if and whenever the covenant for payment and repayment hereinabove contained shall become enforceable and the money owing shall not be paid in accordance therewith, the Employer may at any time thereafter adopt all or any of the following courses as he may deem best:

ix) Seize and utilize the said materials or any part thereof in the completion of the said works on behalf of the Contractors in accordance with the provisions in that behalf contained in the said agreement debiting the Contractors with the actual cost of effecting such completion and the amount due in respect of advances under these presents and crediting the Contractors with the value of work done as if he had carried it out in accordance with the said agreement and at the rates thereby provided. If the balance is against the Contractors, they are bound to pay the same to the Employer on demand.

x) Remove and sell by public auction the seized materials or any part thereof and out of the moneys arising from the sale, retain all the sums aforesaid repayable or payable to the Employer under these presents and pay over the surplus (if any) to the Contractor.

xi) Deduct all or any part of the money owing out of the Security Deposits or any sum due to the Contractor under the said agreement.

xii) That except in the event of such default on the part of the Contractors as aforesaid, no interest shall be payable on the said advance.

xiii) That in the event on any conflict between the provisions of these presents and the said agreement, the provisions of these presents shah prevail and in the event of any dispute or difference arising over the construction of effect of these presents the settlement of which has not been herein before expressly provided for the same shall be referred to the Officer in charge, Premises Department , whose decision shall be final and no appeal shall lie against his decision before any court, arbitrator or authority.

xiv) The provision of this Undertaking shall be deemed to be supplemental to the said agreement.

IN WITNESS WHEREOF the Contractors have set their hands to these presents the day and year first hereinabove written.

Signed, sealed and delivered by the said Contractors in the presence of Witness:

Signature

Name

Address

ANNEXURE – H

PROFORMA OF CERTIFICATE OF PAYMENT BY PMC

Certificate No. Interim	**Dated**	
Client:	Project No.	Building Work / Interior Work
	Particulars:	
Contractor:	Contract / Letter No.	Dated:
	Contract's Bill No.	Dated:

This is to certify that the amount given below (*) is due to your contractors for the work done by them and / or against materials delivered at site and/or for advance towards contract on the above referred project.

Advance against contract:

Less: Advance adjusted to date

Balance Advance

Advance against material delivered at site

Amount of work done to date

Total

Less: Retention on work done

Less: Previously certified upto

Present Certificate (*)

Rupees _____

The cost of cement or any other material supplied by you or payments made by you directly if any, and not covered herein above, should be adjusted before making the payment of the certified amount (*)

Necessary Deduction U/S 194C of the Income Tax 1961 and sales tax may be made before paying the above certified amount.

By a copy of this letter, we are intimating the contractors to call on you for the necessary payment.
Remarks, if any

the details of insurance policy are enclosed .

Enclosures: Bill

Signature of P.M.C.

ANNEXURE – I

PROFORMA OF HINDRANCE REGISTER

Name of the work :

Date of state of work:

Name of Contractor :

Period of Completion:

Agreement No. :

Date of completion:

Sr. No.	Nature of Hindrance	Date of Occurrence of Hindrance	Date of which Hindrance was removed	Period of Hindrance	Signature of PMC	Remarks
1	2	3	4	5	6	7

PMC – Project Management Consultant

PROFORMA & ANNEXURES

ANNEXURE – J

APPLICATION OF PROFORMA FOR EXTENSION OF TIME LIMIT

1. Name of Contractor
2. Name of the work as given in the Agreement
3. Agreement No.
4. Estimated Tender Amount.
5. Date of Commencement of work as per Agreement.
6. Period allowed for Completion of work as per Agreement.
7. Date of Completion Stipulated in Agreement.
8. Period for which Extension of Time has been given previously:

   a) 1st Extension vide Bank's Engineers / Bank letter no. dtd, month, days

   b) 2nd Extension vide Bank's Engineers / Bank letter no. dtd, month, days

   c) 3rd Extension vide Bank's Engineers / Bank letter no. dtd, month, days

   d) 4th Extension vide Bank's Engineers / Bank letter no. dtd, month, days

9. Total Extension previously given.

   a) Reasons for which extensions have been given (copies of the previous application should be attached)

10. Period for which extension is applied for :

11. Hindrances on account of which extension is applied for with dates on Hindrances occurred and the period for which these are likely to last :

    a) Serial No.

    b) Nature Of Hindrance:

    c) Date of Occurrence:

    d) Period for which is likely to last :

    e) Period for which Extension required for this particulars Hindrance:

    f) Overlapping period if any , with to item (e) above

    g) Net extension applied for :

    h) Remarks if any

12. Extension of time required for extra work

13. Details of extra work and amount involved :

    a) Total value of extra work :

    b) Proportionate period of extension time on estimated amount put tender

14. Total extension time required for 11 & 12 :

Submitted to the Bank's Engineers / Bank

Signature of contractor
Date:

SECTION - J

GENERAL TECHNICAL SPECIFICATION

Tender for Civil, Electrical, plumbing & allied works at Bank's Residential Flat, BOB House Appartment, Bank of Baroda, Vadodara, Gujarat.".."

INTERIOR & CIVIL ITEM SPECIFICATION

SUMMARY PAGE

I. INTERIOR & CIVIL WORK

A. Item Specifications

Section – 1	AAC Block Masonry Work
Section – 2	Plaster Work
Section – 3	Gypsum Plaster
Section – 4	Color Work
Section – 5	White PU (Polyurethane)
Section – 6	Texture Work
Section – 7	Kitchen & Toilet Platform
Section – 8	Vitrified Tiles
Section – 9	Skirting Work
Section – 10	Composite Marble Flooring
Section – 11	Composite Marble Skirting
Section – 12	Vitrified Tiles (600X600)
Section – 15	Carpet Tile
Section – 16	Door Work

Section - 17	Gypsum Board Ceiling
Section – 18	Armstrong Channeled Woodworks Ceiling
Section – 19	Ultima (BEVELLED TEGULAR)
Section – 20	DUNE (Beveled regular)
Section – 21	ARMSTRONG SOUNDSCAPESSHAPES
Section - 22	ARMSTRONG METALWORKSBAFFLE CEILING
Section – 23	ARMSTRONG CELLIO OPEN CELL
Section – 24	10mm thick Fix Glass with Profile Fitting -ALEXA MR 28 (DORMA)
Section – 25	Glass Door With Patch Fitting

Section – 26	Chair for Workstation & Discussion
Section – 27	Chair for Cafe table
Section - 28	Podiums
Section – 29	Full Height Storage
Section – 30	Low Height Storage (up to 1200mm height)
Section – 31	Low Height Storage (up to 750mm height)
Section – 32	Glass Shelves
Section – 33	C.P. towel ring
Section – 34	C.P. Toilet paper holder
Section – 35	Mirrors in Toilet
Section – 36	Pantry (Shutters under platform)
Section – 37	Pantry (Overhead unit)

बैंक ऑफ़ बड़ौदा
Bank of Baroda

INTERIOR & CIVIL ITEM SPECIFICATIONS

1.0 AAC Block Masonry Work

Providing and constructing AAC Block masonry work with minimum compressive strength of 50 Kg per Sq.cm. in cement mortar 1:5 (1 cement : 5 coarse sand) for superstructure at all levels including racking out of joints, scaffolding, making provision for opening in walls for switches, water lines, watering, curing etc. complete as directed by the Bank's Engineer/Engineer in charge. Item to also include, all accessories, men material for a lift up to 10th floor in the building for materials, pre- application preparation cleaning after the finish etc. complete.

1) Material

Autoclaved aerated concrete is a lightweight, load-bearing, high-insulating, durable building product which is produced in a wide range of sizes and strengths.AAC offers incredible opportunities to increase building Quality and at the same time reduce coast at the construction side. AAC is produced out of a mix of Quartz sand /or pulverized fly ash (PFA), lime, cement, gypsum, water and aluminum and is hardened by steam -curing in autoclaves. As a result of its excellent properties, AAC is use in many building construction, for example in residential homes, commercial and industrial buildings, schools, hospital, hotels and many other application. The construction material AAC contains 60% to 85% air by volume.

2) Workmanship:

Scaffolding:

Wooden bullies, bamboos, planks, trestles and other scaffolding shall be sound. These shall be properly examined before erection and use. Stage scaffolding shallbe provided for ceiling plaster which shall be independent of the walls.

Preparation of back ground:

The surface shall be cleaned of all dust, loose mortar droppings, traces of algae, efflorescence and other foreign matter by water or by brushing. Smooth surface shall be toughened by wire brushing if it is not hard and by hacking if it is hard. In case of concrete surface, if a chemical retarded has been applied to the form work,the surface shall be roughened by wire brushing and all the resulting dust and loose particles cleaned off and care shall be taken that none of the readers if left onthe surface. Trimming of projections on brick/concrete surfaces where necessary shall be carried out to get an even surface.

Raking of joints in case of masonry where necessary shall be allowed to dry out for sufficient period before carrying out the plaster work.

The work shall not be soaked but only damped evenly before applying the plaster. If the surface becomes dry, such area shall be moistened again.

For internal plaster, the plastering operations may be-started wherever the building frame and cladding work are ready and the temporary supports of the ceiling resting on the wall of the floor have been removed. Ceiling plaster shall be completed before starting plaster to walls.

Application of plaster:

The plaster about 15x15 cms. Shall be first applied horizontally and vertically at not more than 2 meters intervals over the entire surface to serve as gauge. The surfaces of these gauges shall be truly in plane of the finished plastered surface. The mortar shall then be applied in uniform surface slightly more than the specifiedthickness, then brought to a true surface by working a wooden straight edge reaching across the gauges with small upward and sideways movements at a time.Finally, the surface shall be finished off true with a trowel or wooden float accordingas a smooth or a smooth or a sandy granular texture is required Excessive troweling or overworking the float shall be avoided. All corners, arises, angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Hounding or chamfering, corners, arises junctions etc. shall be carried out with proper templates to be size required.

Cement plaster shall be used within half an hour after addition of water and mortar or plaster which is partially set shall be rejected and removed forthwith from the site.

In suspending the work at the end of the day, the plaster shall be left out clean to the line both horizontally and vertically, when recommencing the plaster, the edgesof the old work shall be scraped clean and wetted with cement putty before plasteris applied to the adjacent areas to enable the two to properly join together. Plastering work shall be closed at the end of the day on the body of the wall and nearer than 15 cm. to any corners or arises. It shall not be closed on the body of features such as plaster bands and cornices not at the corners or arises. Horizontaljoints in plaster work shall not also occur on parapet tops and copings as these invariably lead to leakage. No portion of the surface shall be left out initially to be packed up later on.

Each coat shall be kept damp continuously till the next coat is applied or for a minimum period of 7 days. Moistening shall commence as soon as plaster is hardened sufficiently. Soaking of walls shall be avoided and only as much water as can be readily absorbed shall be used, excessive evaporation on the sunny or windward side of building in hot air or dry weather shall be prevented by hanging matting or gunny bags on the outside of the plaster and keeping them wet.

The plastering work shall be in single coat on rough side of block wall for interior plastering up to floor two level, finished even and smooth in C.M. 1:4.

3) Mode of measurement:

The rate shall be for a unit of one cubic meter. No extra will be payable towards wastage due to material pattern.

2.0 Plaster Work

Providing 15mm thick Cement Plaster in single coat on brick/concrete wall for interior plastering at various floor level as below, finished even and smooth including application of rough backing coat of cement mortar 1:4 with trowel finish as directed etc. complete.

1) Material

The cement mortar of proportion 1:4 (1 cement: 4 sand)

2) Workmanship :

Scaffolding:

Wooden bullies, bamboos, planks, trestles and other scaffolding shall be sound. These shall be properly examined before erection and use. Stage scaffolding shallbe provided for ceiling plaster which shall be independent of the walls.

Preparation of back ground :

The surface shall be cleaned of all dust, loose mortar droppings, traces of algae, efflorescence and other foreign matter by water or by brushing. Smooth surface shall be toughened by wire brushing if it is not hard and by hacking if it is hard. In case of concrete surface, if a chemical retarded has been applied to the form work,the surface shall be roughened by wire brushing and all the resulting dust and loose particles cleaned off and care shall be taken that none of the readers if left on the surface. Trimming of projections on brick/concrete surfaces where necessary shall be carried out to get an even surface.

Raking of joints in case of masonry where necessary shall be allowed to dry out for sufficient period before carrying out the plaster work.

The work shall not be soaked but only damped evenly before applying the plaster. If the surface becomes dry, such area shall be moistened again.

For internal plaster, the plastering operations may be-started wherever the building frame and cladding work are ready and the temporary supports of the ceiling resting on the wall of the floor have been removed. Ceiling plaster shall be completed before starting plaster to walls.

Application of plaster :

The plaster about 15x15 cms. shall be first applied horizontally and vertically at not more than 2 meters intervals over the entire surface to serve as gauge. The surfaces of these gauges shall be truly in plane of the finished plastered surface. The mortar shall then be applied in uniform surface slightly more than the specifiedthickness, then brought to a true surface by working a wooden straight edge reaching across the gauges with small upward and sideways movements at a time. Finally, the surface shall be finished off true with a trowel or wooden float according as a smooth or a smooth or a sandy granular texture is required Excessive troweling or overworking the float shall be avoided. All corners, arises, angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Hounding or chamfering, corners, arises junctions etc. shall be carried out with proper templates to be size required.

Cement plaster shall be used within half an hour after addition of water and mortar or plaster which is partially set shall be rejected and removed forthwith from the site.

In suspending the work at the end of the day, the plaster shall be left out clean to the line both horizontally and vertically, when recommencing the plaster, the edgesof the old work shall be scraped clean and wetted with cement putty before plasteris applied to the adjacent areas to enable the two to properly join together. Plastering work shall be closed at the end of the day on the body of the wall and nearer than 15 cm. to any corners or arises. It shall not be closed on the body of features such as plaster bands and cornices not at the corners or arises. Horizontal joints in plaster work shall not also occur on parapet tops and copings as these invariably lead to leakage. No portion of the surface shall be left out initially to be packed up later on.

Each coat shall be kept damp continuously till the next coat is applied or for a minimum period of 7 days. Moistening shall commence as soon as plaster is hardened sufficiently. Soaking of walls shall be avoided and only as much water as can be readily absorbed shall be used, excessive evaporation on the sunny or windward side of building in hot air or dry weather shall be prevented by hanging matting or gunny bags on the outside of the plaster and keeping them wet.

The plastering work shall be in single coat on rough side of block wall for interior plastering up to floor two level, finished even and smooth in C.M. 1:4.

3) Mode of measurement

The rate shall include the cost of all materials, labour and scaffolding etc. involved in the operations described under workmanship.

All plastering shall be measured in square meters unless otherwise specified. Length breadth or height shall be measured correct to a centimeter.
Thickness of the plaster shall be exclusive of the thickness of the key i.e. groovesor open joints in brick work, stone work etc. or space between laths. Thickness of plaster shall be average thickness with minimum 15 mm at any point on this surface.

The measurement of wall plastering shall be taken between the walls or partition (dimensions before plastering being taken) for length and from the top of floor or skirting to ceiling for height. Depth of cover of cornices if any shall be deducted.

Soffits of stairs shall be measured as plastering on ceilings, following soffits shall be measured separately.

For jambs, soffits, sills etc. for openings not exceeding 0.5 sq. met each in area for ends of joints beams, posts, girders, steps etc. not exceeding 0.5 sq.mt each in area and for openings exceeding 0.5. sq.mt and not exceeding 3.00 sq.mt. in eacharea deductions and additions shall be made in the following manners.

(a) No deductions shall be made for ends of joints, beams, posts etc. and openings not exceeding 0.5 sq. MT each and no addition shall be made for reveals, jambs, soffits, sils etc. of these openings, for finish to plaster around endsof joints, beams posts etc.

(b) Deduction for openings exceeding 0.5 sq. mt but not exceeding 3 sq.mt. each shall be made as follows and no addition shall be made for ravels, jambs, soffits, sills etc. of these openings, (i) When both faces of all wall are plastered with same plaster, deduction shall be made for one face only, (ii) When two faces of wall are plastered with different types of plasters or if one face is plastered and the other pointed, deductions shall be made from the plaster or pointing on the side of frame for door, window etc. on which width of reveals is less than that on the other side but no deductions shall be made on the other side. Where width of reveals on both faces of all is equal, deductions of 50% of area of opening on each face shall be made from areas of plaster and / or pointing as the case may be.
For openings having door frames equal to or projecting beyond the thickness of wall, full deduction for opening shall be made from each plastered face of the wall.

In case of openings of area above 3 sq. mt. each, deduction shall be made for openings but jambs, soffits sand sills shall be measured.

The rate shall be for a unit of One sq. meter.

3.0 Providing Avg. 12 mm thk. gypro expert (Saint gobain) Gypsum Plaster,of approved make, to be applied in 2 varying coats to achieve desired total thickness, with all necessary nominal curing and drying complete, to correct line, level and plumb, finished smooth. Item to be inclusive of all accessories, fixing implements, tools and tackle, men material and lift up to 27 floor, cleaned complete with all necessary edge masking with approved min. 8mm wide masking tape. Item to be completed in all respects as per drawings & instructions from Project- in-charge/Bank's Engineer.

1) Material

Gypsum Plaster (1): It shall be formed by enclosing and bonding together a core of set gypsum plaster by two sheets of heavy paper. It shall offer high standard of safety, thermal efficiency and aesthetics. It shall be light in weight, shall offer good fire resistance and shall render faster construction. It shall be suitably used in areas subjected to continuously damp or wet conditions, except bathrooms, where gypboard partitions shall be properly protected by tiles or other impervious materials. It shall be a non-resonant material, rendering sound insulation. It shall be strong, durable and dimensionally stable. It shall offer a smooth surface which can be painted, tiled or wall papered. It shall block the passage of heat and shall retard the spread of fire. It shall hide up to 60 dB of sound, when erected in the proper manner.

2) Workmanship

It shall be suitably used in areas subjected to continuously damp or wet conditions, except bathrooms, where Gypboard partitions shall be properly protected by tiles or other impervious materials. It shall be a non-resonant Material, rendering sound insulation. It shall be strong, durable and dimensionally stable. It shall offer a smooth surface which can be painted, tiled or wall papered.

3) Mode of measurement

Gypsum plaster be measure in sqm. Dimensions is computed in square meter, rounded to two places of decimal. No extra will be payable towards wastage due to material pattern.

3.0 Colour Work

Royale Emulsion paint

Providing & applying three finish coats of 100% water-proof Royale Emulsion paint of Asian Paints or equivalent brand (low VOC) approved by Bank's Engineer/EIC of require shade including two coats of acrylic wall Putty making surfaces even on walls and ceilings, applied evenly to give uniform finish in color patterns and even shade, including curing, preparation of surface and a coat of matching priming coat of white cement to give an even shade after thoroughly brushing the surface to remove all dirt and dust and remains of loose powdered, complete. Incase of areas having excessive dampness using Damp Block to limit further dampness. When the underlying surface exhibits chalkiness, in spite of thorough surface cleaning, use Asian Paints Exterior Sealer.

1) Material

100% water-proof Royale Emulsion paint of Asian Paints or equivalent brand approved by Bank's Engineer.

In case of areas having excessive dampness using Asian Paints Damp Block to limit

further dampness. When the underlying surface exhibits chalkiness, in spite of thorough surface cleaning, use Asian Paints Exterior Sealer.

2) Workmanship

Three finish coats of 100% water-proof Royale Emulsion paint of Asian Paints or equivalent brand approved by Bank's Engineerof require shade including two coats of acrylic wall Putty making surfaces even on walls and ceilings,

Applied evenly to give uniform finish in color patterns and even shade, including curing, preparation of surface and a Coat of matching priming coat of white cementto give an even shade after thoroughly brushing the surface to Remover all dirt anddust and remains of loose powdered, complete

3) Mode of measurement

Item will be measure in sqm. Dimensions is computed in square meter,rounded to two places of decimal. No extra will be payable towards wastage due to material pattern.

5.0 WHITE PU

Providing & applying Polyurethane Paint (PU) n approved shade selected by Bank's Engineeron wooden, Plywood, and MDF surfaces. It is a single pack clear wood finishing system comprising of basecoat and topcoat that can be applied anda clear, flexible coating that has unique non-yellowing property. PU can be thinned with potable water and can be applied by spraying or roller and can be used for all kind of wood, veneer, plywood and medium density fiber board (MDF). Apply coating as follow: first coat spraying or brushing and sand with emery paper 320 or 400 and wipe clean. Second coat spraying or brushing and sand with emery paper 320 or 400 and wipe clean. After first & second coat PU matt/glossy spraying and emery paper 320 or 400 and wipe clean.

1) Material

Polyurethane Paint (PU) n approved shade selected by Bank's Engineeron wooden, Plywood, and MDF surfaces. It is a single pack clear wood finishing system comprising of basecoat and topcoat that can be applied and a clear, flexible coating that has unique non-yellowing property.

2) **Workmanship**

First coat spraying or brushing and sand with emery paper 320 or 400 and wipe clean. Second coat spraying or brushing and sand with emery paper 320 or 400 and wipe clean. After first & second coat PU matt/glossy spraying and emery paper 320 or 400 and wipe clean.

3) Mode of measurement

Item will be measure in sqm. Dimensions is computed in square meter, rounded to two places of decimal. No extra will be payable towards wastage due to material pattern.

6.0 Texture Work

Providing & applying Interior Texture of Asian Paints - Royal Play Archi (Or as Approved) Concrete including cost of emulsion paint in approved shade (two coats) laid on 2 mm. th. texture material pattern, quality and manufacturer by Bank's Engineerincl. priming coat (One coats) of white cement to give an even shade after thoroughly brushing the surface to remove all dirt and dust and remains of loose powdered materials etc. compete & as per detail & directed by Bank's Engineer& Engineer in-charge. The work should be carried out by authorized applicator of Asian Paints.

1) Material

Interior Texture of Asian Paints - Roayle Play Archi+ (OR as approved) Concrete including cost of emulsion paint in approved shade

2) Workmanship

(Two coats) laid on 2 mm. th. texture material pattern, quality and manufacturer by Bank's Engineerincl. priming coat (One coats) of white cement to give an even shadeafter thoroughly brushing the surface to remove all dirt and dust and remains of loose powdered materials etc. compete & as per detail & directed by Bank's Engineer& Engineer in-charge

3) Mode of measurement

Item will be measure in sqm. Dimensions is computed in square meter, rounded to two places of decimal. No extra will be payable towards wastage due to material pattern

7.0 Kitchen & Toilet Platform

Providing & laying avg 20 mm thick (+/-2mm) pre-polished artificial engineered quartzite marble sandwich platform for counter top basins 600 & Kitchen sink of avg 700 mm wide, with quartzite supports of avg 20 mm thick for vertical support and kadappa/Kota of avg 25 mm thick below Quartzite marble with necessary approved sealant as required as per the detail drawing etc., including avg. 32mm fascia patties of Engineered Quartzite marble and rounding or polishing the exposed edges as per drawing, cutting for basin & kitchen sink opening, sealing all crevices with silicon sealant, etc. complete. Item to be completed in all respects as per drawings & instructions from Project- in-charge/Bank's Engineer.

1) Material

20 mm thick (+/-2mm) pre-polished artificial engineered quartzite marble sandwichplatform for counter top basins 600 & Kitchen sink of age 700 mm wide, withquartzite supports of age 20 mm thick for vertical support and kadappa/Kota of avg 25 mm thick below Quartzite marble with necessary approved sealant as requiredas per the detail drawing etc.

32 mm fascia pattis of Engineered Quartzite marble and rounding or polishing the exposed edges as per drawing.

2) Workmanship

The Kitchen & toilet platform of size as directed shall be constructed on 70 Cm width and 80cm height. The vertical support shall be of polished kota stone sandwich type upto full depth in cement mortar (1:3).20 mm thick (+/-2mm) pre-polished artificial engineered quartzite stone shall be provided in a single piece upto 1.5 mt. in length & specified light. The same shall be sandwich with bottom PKS slab. The horizontal & vertical sandwich partition shall be provided with quartz stone single piece facia. All exposed edges of stones shall be machine cutand rounded of smoothly.

3) **Mode of measurement**

The work of cooking platform shall be measured for finished work. The rate includes cost of all labour and materials etc. required for satisfactory completion of this item as described above.

The rate shall be for a unit of per Sq. meter. (Only plan area shall be considered)

8.0 Vitrified Tile

Providing & laying Vitrified tile (Glossy/Mat) flooring as per approved shade/patterns with tiles of sizes 1200 mm x 600 mm/800 mm x 800 mm/other approved size with avg.13 mm (+/- 1mm) thk. Tiles as per approved brand of 1st quality set in with approved tile adhesives as per the detailed instructions of the tile adhesive manufactures. Joints shall be properly grouted with grouts of reputed brand .The rate shall be inclusive of cutting of raceways junction box conduits etc. Complete as per standard specification. The item shall also include cleaning, making mock-up for approval ofBank's Engineer/Engineer in charge, all accessories, tools, labour, and protecting finishedinstallation with POP layer till handover, with all cleaning complete etc. No extra will be payable towards wastage due to material pattern. Item to be completed in all respects as per drawings & instructions from Project- in-charge/Bank's Engineer. Make: Somany /johnson/Kajaria/AGL. Basic Price of Vitrified tiles Rs 1300 per sq.mt.

1) Material

Vitrified tile (Glossy/Mat) flooring as per approved shade/patterns with tiles of sizes 1200 mm x 600 mm/800 mm x 800 mm/other approved size with avg.13 mm (+/-

1mm) thk. tile flooring over 20mm (average) base of cement mortar 1:6 (1 Cement : 6 Coarse sand)

2) Workmanship

tile flooring over 20mm (average) base of cement mortar 1:6 (1 Cement : 6 Coarse sand) on new surface or fixing on existing flooring by adhesive material including of flooring and jointed with color cement slurry including finished with flush pointing and cleaning the surface etc.

3) **Mode of measurement**

Dimensions are computed in square meter, rounded to two places of decimal. No extra will be payable towards wastage due to material pattern.

9.0 Skirting

P & L Skirting of size 1200 MM X 75 MM on wall / column in complete line & level. The job includes joint finishing with the help of white cement, cement color, with joint filler of approved make, cleaning etc. complete. The skirtings are to be fixed to match the joints of the flooring, joined with suggested color cement slurry in joints. Proper fixing level should be maintained. Full pieces have to be fixed except where small pieces are unavoidable. Actual on site laid quantity will be considered for the measurement purpose. The item includes cutting / hacking in wall / plaster, surface preparation, fixing the skirting with rich cement mortar, putting 1/2"x1/2" groove between skirting & plaster, finishing etc. comp. & removalof debries

1) Material

Vitrified tile (Glossy/Mat) as per approved shade/patterns with tiles of Skirting of size 600 mm x 75 mm /1200 MM X 75 MM on wall / column in complete line & level.

2) Workmanship

The job includes joint finishing with the help of white cement, cement color, with joint filler of approved make, cleaning etc. complete. The skirtings are to be fixed to match the joints of the flooring, joined with suggested color cement slurry in joints. Proper fixing level should be maintained. Full pieces have to be fixed except where small pieces are unavoidable. Actual on site laid quantity will be considered for the measurement purpose. The item includes cutting / hacking in wall / plaster, surface preparation, fixing the skirting with rich cement mortar, putting 1/2"x1/2" groove between skirting & plaster, finishing etc. comp. & removal of debries.

3) Mode of measurement

Item will be measure in SQ.MT. (L x H). It will not be measured in RMT. No extra will be payable towards wastage due to material pattern.

10.0 Composite Marble

Providing and fixing avg. 20 mm (+/- 2mm) thk. Pre-polished Composite Marble flooring (silica) in reception & waiting area installed size 3025x1225/approved equivalent size of Approved Make, shade & code laid as per Design Drawing, blemish less and clear without any spots or marks, laid on CM Bed Mortar 1:3 with thickness of 20 mm as approved with mortar overlay ofWhite cement, levelled, aligned as per flooring layout drawing, fixed complete.Item to include getting dry mock-up approved from the Bank's Engineers. Item to includeall Tools & Tackle, lift for all men, materials & implements to maskingneighbouring installations, cleaning complete with protective tarpaulin cover onfinished installation till handover. No extra will be payable towards wastage due tomaterial pattern. Please note payment will be in SQM of finished floor/dado area only.

1) Material

20 mm (+/- 2mm) thk. Pre-polished Composite Marble flooring (silica) in reception & waiting area installed size 3023x1225/approved equivalent size of ApprovedMake, shade & code laid as per Design Drawing, blemish less and clear withoutany spots or marks, laid on CM Bed Mortar 1:3 with thickness of 20 mm asapproved with mortar overlay of White cement, levelled, aligned as per flooringlayout drawing, fixed complete

2) Workmanship

Pre-polished Composite Marble flooring (silica) laid on CM Bed Mortar 1:3 with thickness of 20 mm as approved with mortar overlay of White cement, leveled, aligned as per flooring layout drawing, fixed complete. Item to include getting dry mock-up approved from the Bank's Engineers. Item to include all Tools & Tackle, lift for all men, materials & implements to masking neighboring installations, cleaning complete with protective tarpaulin cover on finished installation till handover.

3) Mode of measurement

Dimensions are computed in square meter, rounded to two places of decimal. No extra will be payable towards wastage due to material pattern.

11.0 Providing and fixing avg. 20 mm (+/- 2mm) thk. Pre-polished Composite Marble Skirting including installed size avg. 3025X1225/approved equivalent size of Approved Make, shade & code laid as per Design Drawing, blemish less and clear without any spots or marks, laid on CM Bed Mortar 1:3 with thickness of 20 mm as approved with mortar overlay of White cement, leveled, aligned as per flooring layout drawing, fixed complete. Item to include getting dry mock-up approved from the Bank's Engineers/Engineer in charge. Item to include all Tools

& Tackle, lift for all men, materials & implements to 19th floor, masking neighboring installations, cleaning complete, with protective tarpaulin cover over finished installation till handover. No extra will be payable towards wastage due to materialpattern. Please note payment will be in Running Meter of finished skirting area only. Item to be completed in all respects as per drawings & instructions from Project- in-charge/Bank's Engineer.

1) Material

20 mm (+/- 2mm) thk. Pre-polished Composite Marble Skirting including installed size avg. 1500 x 1500/approved equivalent size of Approved Make, shade & code laid as per Design Drawing,

2) Workmanship

Pre-polished Composite Marble Skirting laid on CM Bed Mortar 1:3 with thickness of 20 mm as approved with mortar overlay of White cement, leveled, aligned as per flooring layout drawing, fixed complete. Item to include getting dry mock-up approved from the Bank's Engineers/Engineer in charge. Item to include all Tools & Tackle, lift for all men, materials & implements to 19th floor, masking neighboring installations, cleaning complete, with protective tarpaulin cover over finished installation till handover.

3) Mode of measurement

Item will be measure in SQ.MT. (L x H). It will not be measured in RMT. . No extra will be payable towards wastage due to material pattern.

Providing & laying Vitrified tile (Glossy/Mat) flooring as per approved shade/patterns with tiles of sizes 600 x 600 mm/other approved size with avg.10 mm (+/- 1mm) thk. Tiles as per approved brand of 1st quality double charged set in with approved tile adhesives/cement pest with mortar as per the detailed instructions of the tile adhesive manufactures. Joints shall be properly grouted with grouts of reputed brand .The rate shall be inclusive of cutting of raceways junction box conduits etc. Complete as per standard specification. The item shall also include cleaning, making mock-up for approval of Bank's Engineer/Engineerin charge, all accessories, tools, labour, and protecting finished installation with POP layer till handover, with all cleaning complete etc. No extra will be payable towardswastage due to material pattern. Item to be completed in all respects as per drawings & instructions from Project- in-charge/Bank's Engineer. Make: Somany / Johnson/ kajaria/AGL . Basic Price of Vitrified tiles = Rs 550 per smt. Inclusive of all taxes & freight

1) Material

Vitrified tile (Glossy/Mat) flooring as per approved shade/patterns with tiles of sizes

600 mm x 600 mm/other approved size with avg.10 mm (+/- 1mm) thk. tile flooringover 20mm (average) base of cement mortar 1:6 (1 Cement : 6 Coarse sand).

2) Workmanship

tile flooring over 20mm (average) base of cement mortar 1:6 (1 Cement : 6 Coarse sand) on new surface or fixing on existing flooring by adhesive material including of flooring and jointed with color cement slurry including finished with flush pointing and cleaning the surface etc.

3) **Mode of measurement**

Dimensions are computed in square meter, rounded to two places of decimal. No extra will be payable towards wastage due to material pattern.

14.0 Providing and fixing wooden 75mm X 20mm thick skirting of Armstrong make including one side moulding finish same as per flooring patterns etc.

1) Material

Wooden 75mm X 20mm thick skirting of Armstrong make including one side molding finish.75mmmm X 20mm thk. "T- molding, End molding, stair nose molding etc. 8 mm th. armor and fevicol, SR - Rubber Adhesive.fixing on exacting floor. Remove & preliminary clear all dirt and dust, necessary apply adhesive tools etc.

2) Workmanship

Fixing wooden 75mm X 20mm thick skirting of Armstrong make including one side moulding fixing on wall. Remove & preliminary clear all dirt and dust, necessary applies adhesive tools etc.

3) Mode of measurement

Item will be measure in rmt. No extra will be payable towards wastage due to material pattern.

16.0 Door Work

Providing and fixing 35mm thick flush door shutters in single/Double leaf with teakwood leaping of factory made solid core in continuous gapless section with butt joints tightly factory bonded with phenol formaldehyde adhesive of brand as approved with anti-termite treated FIRESAFE IS: 5509
Century Plywood finished with 4 mm thick veneer of approved colour /shade on both sides . The door frame of 75 x 100 TW type to be fixed and integrated into Gyp-partition/Al. partition/local partition support frame by approvedscrews min. 90 mm long (TW Frame-Al. Box stud joint). The TW frame top rail (at lintel level) to have avg. 100 mm horn projection on either side to anchor firmly onthe local partition as per the drawing inclusive of all walling holdfasts & horns, fixing

implements, accessories installed finished etc. complete. Item to be completed in all respects as per drawings & instructions from Project- in- charge/Bank's Engineer. Hardware to include Double bearing 3 Nos of butt hinges of stainless steel having 4" x 3" x 3mm size, Mortize lock/dead lock, 20mm square forend prepared for euro profile cylinder including strike plate. and EPC 60mm Lengthboth side key operation & Escutcheons in SS Finish-1 No,Pull Handle back to back with adjustable fixing for glass, wood and metal doors in satin stainless steel. The pull handles should have supporting washer with raised beveling on theouter surface. Length =300mm, 22mm dia, - 1 No, Concealed cam action door closer slide channel arm with standard spindle, including cushioned

limit stay lever finish. Non-handed version-1 No, Floor stop half dome with45mm dia with fixing accessories, in satin stainless steel and all the hardware should be ofapproved brand by Bank's Engineerand Bank).

1) Material

42mm thick flush door shutters in single/Double leaf with teakwood leaping of factory made solid core in continuous gapless section with butt joints tightly factory bonded with phenol formaldehyde adhesive of brand as approved with anti- termite treated FIRESAFE IS: 5509 Century Plywood finished with 4 mm thick veneer of approved colour /shade on both sides . The door frame of 75 x 100 TWtype to be fixed and integrated into Gyp-partition/Al. partition/local partition support

frame by approved screws min. 90 mm long (TW Frame-Al. Box stud joint).Hardware to include Double bearing 3 Nos of butt hinges of stainless steel having 4" x 3" x 3mm size, Mortize lock/dead lock, 20mm square for end prepared for euro profile cylinder including strike plate. and EPC 60mm Length both side key operation & Escutcheons in SS Finish-1 No,Pull Handle back to back with adjustable fixing for glass, wood and metal doors in satin stainless steel. The pull handles should have supporting washer with raised beveling on the outer surface. Length =300mm, 22mm dia, - 1 No, Concealed cam action door closer slide channel arm with standard spindle, including cushioned limit stay lever finish. Non-handed version-1 No,Floor stop half dome with 45mm dia with fixing accessories,in satin stainless steel.

2) Workmanship

42mm thick flush door shutters in single/Double leaf with teakwood leaping of factory made solid core in continuous gapless section with butt joints tightly factory bonded with phenol formaldehyde adhesive of brand as approved with anti- termite treated FIRESAFE IS: 5509 Century Plywood finished with 4 mm thick veneer of approved colour /shade on both sides . The door frame of 75 x 100 TW type to be fixed and integrated into Gyp-partition/Al. partition/local partition supportframe by approved screws min. 90 mm long (TW Frame-Al. Box stud joint). The TW frame top rail (at lintel level) to have avg. 100 mm horn projection on either side to anchor firmly on the local partition as per the drawing inclusive of all wallingholdfasts &

horns, fixing implements, accessories installed finished etc. complete. Item to be completed in all respects as per drawings & instructions from Project- in-charge/Bank's Engineer. Hardware to include Double bearing 3 Nos of butt hinges of stainless steel having 4" x 3" x 3mm size, Mortize lock/dead lock, 20mm square forend prepared for euro profile cylinder including strike plate. and EPC 60mm Lengthboth side key operation & Escutcheons in SS Finish-1 No,Pull Handle back to backwith adjustable fixing for glass, wood and metal doors in satin stainless steel. The

pull handles should have supporting washer with raised beveling on the outer surface. Length =300mm, 22mm dia, - 1 No, Concealed cam action door closer slide channel arm with standard spindle, including cushioned limit stay lever finish.Non-handed version-1 No,Floor stop half dome with 45mm dia with fixing accessories, in satin stainless steel. All members of the frames shall be exactly atright angles. The right angle shall be checked from inside surface of the respectivemembers.

1 All members of frames shall straight without any wrap or bow and shall have smooth surface well planed on the three exposed at right angles to each other. The surface touching the wall may not be planed unless it is required in order to straighten up the member or to obtain the overall size within the tolerances specified.

2 Frame shall have dovetail joints. When clerestory windows are included, it shall be provided by having full length one piece post for door or windows and clerestory

window extending the frame on top at the head to the required extent. Horns shall not be provided in the head of the frame. When no sills are provided, the vertical posts of the frame in the ground floor shall be embedded in the sill masonry for 10cm. on upper floors, the vertical posts shall be fixed in the floor or masonry by forming notches 10mm.deep. Slight adjustment of spacing as necessary shall be done to have the hold fasts in the joints of masonry curd. The frame shall be erected in position and held plumb with strong support from both sides and built in masonry as it is being built. The transom shall be through tenoned into the mortisesof the jamb post to the full width of the jamb post and the thickness of the tenonshall be not less than 15mm.

3 The tenons shall be closely fitting into the mortise and suitably pinned with wood dowels not less than 10mm.diameter. The depth of rebates for housing the shutter shall be as shown in the detailed drawing or as directed.

4 The contact surface of tenon and mortice shall be treated before putting together with an adhesive of approved make.

3) Mode of measurement

The doors shall be measured in sqmt. Rate shall include providing and fixing of door frame complete with melamine polish etc. Rate shall be inclusive of all major/minor civil & repair work required to be carried out in order to execute the aforesaid item

to the satisfaction of the consultant/ EIC. Rate includes all material and labour to complete the item as per instruction of Engineer in-charge.

17.0 Gypsum Board Ceiling

Providing & fixing seamless ceiling with gypboard of avg 12.5mm thk.fixed to the underside of the suspended grid formed of GI perimeter channel of avg. size 20x27x30mm fixed along the wall by TW Rawl plugs and Metal (Galvanized steel expansion) anchor bolts. The GI intermediate channel of avg. size 45x15x0.90 mm shall be fixed to the suspended strap hanger /GI ceiling angle at intervals not more than 1220mm. The suspended GI ceiling angle / strap hanger is to be connected with GI soffit cleat of size Avg 37x27x25x1.6mm and it should be fixed on the roof slab/beam by using metal expansion fasteners (Wt.Type) of 12.5mm dia to a length of 35mm with
6mm dia.bolt / screw at top ends .The GI ceiling section of avg. size 80x26x0.5mm is to be provided across the intermediate channel at intervals notmore than 600mm centres at bottom and the same shall be fixed by GI connectionclips 2.64mm dia at the intersection points. The ends of ceiling section channel byadopting an overlap length of minimum 150mm connected with intermediatechannel shall be fixed to perimeter channel in insertion. Work to include makingand finishing of recesses for lighting fixture, preparing the board to take paint finish , providing cutting for trap door of required size for service access, Al. powder coated HVAC grills as per approval by Bank's EngineerConsultant, necessary coves, recesses as per design drawing, including cutting for access doors, sealing the joints with Air Drying Joining Compound or equivalent sealing materials, with flushbonded/ screwed securing of the hatch using a clip-lock mechanism that isintegrated in the frame and concealed. Correct installation procedure, trap door cutting and necessary cutting in False ceiling strictly with unit template and finishing, necessary scaffolding, cleaning etc. complete. The work has to be completed as per drgs and instructions by EIC/Bank's Engineer. Only plan area shall be measured for payment.

1) Material

12.5mm thk.fixed to the underside of the suspended grid formed of GI perimeter channel of avg. size 20x27x30mm fixed along the wall by TW Rawl plugs and Metal (Galvanised steel expansion) anchor bolts. The GI intermediate channel of avg. size 45x15x0.90 mm shall be fixed to the suspended strap hanger /GI ceiling angle at intervals not more than 1220mm. The suspended GI ceiling angle / strap hanger is to be connected with GI soffit cleat of size Avg. 37x27x25x1.6mm and it should be fixed on the roof slab/beam by using metal expansion fasteners (Wt.Type) of 12.5mm dia to a length of 35mm with 6mm dia.bolt / screw at top ends.

2) Workmanship

Fixing seamless ceiling with gypboard of avg 12.5mm thk.fixed to the underside of the suspended grid formed of GI perimeter channel of avg. size 20x27x30mm fixed

along the wall by TW Rawl plugs and Metal (Galvanized steel expansion) anchor bolts. The GI intermediate channel of avg. size 45x15x0.90 mm shall be fixed to the suspended strap hanger /GI ceiling angle at intervals not more than 1220mm. The suspended GI ceiling angle / strap hanger is to be connected with GI soffit cleat of size Avg. 37x27x25x1.6mm and it should be fixed on the roof slab/beam by using metal expansion fasteners (Wt. Type) of 12.5mm dia to a length of 35mm with 6mm dia.bolt / screw at top ends .The GI ceiling section of avg. size 80x26x0.5mm is to be provided across the intermediate channel at intervals not more than 600mm centres at bottom and the same shall be fixed by GI connection clips 2.64mm dia at the intersection points. The ends of ceiling section channel by adopting an overlap length of minimum 150mm connected with intermediate channel shall be fixed to perimeter channel in insertion. Work to include making and finishing of recesses for lighting fixture, preparing the board to take paint finish , providing cutting for trap door of required size for service access, Al. powder coated HVAC grills as per approval by Bank's EngineerConsultant, necessary coves, recesses as per design drawing, including cutting for access doors, sealing the joints with Air Drying Joining Compound or equivalent sealing materials, with flush bonded/ screwed securing of the hatch using a clip-lock mechanism that is integrated in the frame and concealed. correct installation procedure, trap door cutting and necessary cutting in False ceiling strictly with unit template and finishing, necessary scaffolding, cleaning etc. complete.

3) Mode of measurement

Item will be measure in Smt. No extra will be payable towards wastage due to material pattern.

18.0 Armstrong Channeled Woodworks Ceiling

Providing and Fixing Armstrong Woodworks panels of width 600 x 600 x 12 mmthickness of, made of a 830 Kg/M3 high density fiber board substrate with alaminate (US Maple, Royal Cherry, Maple, Dark Walnut, Pure White, Papyrus Grey, Aluminum Grey) finish and a melamine balancing layer on the reverse side.The panels shall provide a minimum sag resistance of RH90 and a fire rating classof 1 as per Part 7 of BS 476. The edges of the panels shall be "tongue-and- grooved" to receive special clips for installation. The back of the perforated panel shall have sound absorbing non-woven acoustical fleece having NRC of 0.55. Thepanels shall be mounted on as per Armstrong installation instructions and approved by the Bank's Engineer/ Engineer-in-Charge. The panel shall be laid on Armstrong 24 MM IMPERIAL grid with 38mm web height and
24mm wide T - section flanges color white having rotary stitching on all T sections with and a load carrying capacity of minimum 15.5 Kgs/M. Main Runners with C3 coupling & Cross Tees to have Hardened XL2 clip. The T Sections have a Galvanizing of 90 grams per M2 with pullout strength of 100kg. Suspension system for Armstrong grid to be of Armstrong makes. The

installation method is as mentioned below:

1) Material

Armstrong Channelled Woodworks perforated panels of width 128mm, thickness of 15mm and length 2440 mm, made of a 820 Kg/M3 high density fibre board substrate with a laminate (US Maple, Royal Cherry, Maple, Dark Walnut, Pure White, Papyrus Grey, Aluminum Grey) finish and a melamine balancing layer on the reverse side. The boards shall have a special G14 perforation pattern where the visible surface has a "Helmholtz" fluted perforation of 2mm width and 14mm of visible panel each.

2) Workmanship

To comprise main runner (3698 x 141mm) spaced at 600mm centers securely fixed to the structural soffit using Armstrong suspension system (specifications below) at 600mm maximum center. Flush fitting 600mm (634*206mm) long cross tees to be interlocked between main runners at 1200mm center to form 1200 x 600mm module. Perimeter trim to be Armstrong wall angles of size 3000x22x22mm, secured to walls at 450 mm maximum centers.

3) Mode of measurement

Item will be measure in Smt. (L x W). No extra will be payable towards wastage due to material pattern.

19.0 Ultima (BEVELLEDTEGULAR)

Providing & Fixing of Armstrong Mineral Fibre Acoustical Suspended Ceiling System with Ultima(Beveled Tegular) Edge Tiles With Armstrong 15mm Exposed Grid. The tiles should have Humidity Resistance (RH) of 99%,NRC 0.7, Light Reflectance ≥88%, Thermal Conductivity k = 0.052 - 0.057w/m K, Colour White, Fire Performance UK Class 0 / Class 1 (BS 476 pt - 6&7) in module size of 600 x 600 x 16mm with Durabrite scrim on the face of thetile, suitable for Green Building application, with Recycled content of
62%. The tile shall be laid on Armstrong Suprafine 32 with 15 mm wide T - section flanges colour white having rotary stitching on all T sections i.e. the MainRunner, 1200 mm & 600 mm Cross Tees with a web height of 32mm and aload carrying capacity of 7.57 Kgs/M2 & pull out strength of minimum
100 kgs..The T Sections have a Galvanizing of 90 grams per M2 and need to be installed with Suspension system of Armstrong make.

1) Material

Armstrong Mineral Fiber Acoustical Suspended Ceiling System with Ultima (Beveled Tegular) Edge Tiles With Armstrong 15mm Exposed Grid. The tiles should have Humidity Resistance (RH) of 99%,NRC 0.7, Light Reflectance ≥88%, Thermal Conductivity k = 0.052 - 0.057 w/m K, Colour White, Fire

Performance UK Class 0 / Class 1 (BS 476 pt - 6 &7) in module size of 600 x 1200 x 19mm with Durabrite scrim on the face of the tile, suitable for Green Building application, with Recycled content of 62%.Armstrong Suprafine 32 with 15 mm wide T - section flanges colour white having rotary stitching on all T sections i.e. the Main Runner, 1200 mm & 600 mm Cross Tees with a web height of 32mm and a load carrying capacity of 7.57 Kgs/M2 & pull out strength of minimum 100 kgs.

2) Workmanship

Fixing of Armstrong Mineral Fibre Acoustical Suspended Ceiling System with Ultima(Beveled Tegular) Edge Tiles With Armstrong 15mm Exposed Grid. The tiles should have Humidity Resistance (RH) of 99%,NRC 0.7, Light Reflectance ≥88%, Thermal Conductivity k = 0.052 - 0.057 w/m K, Colour White, Fire Performance UK Class 0 / Class 1 (BS 476 pt - 6 &7) in module size of 600 x 1200 x 19mm with Durabrite scrim on the face of the tile, suitable for Green Building application, with Recycled content of 62%. The tile shall be laid on Armstrong Suprafine 32 with 15 mm wide T - section flanges colour white having rotary stitching on all T sections i.e. the Main Runner, 1200 mm & 600 mm Cross Tees with a web height of 32mm and a load carrying capacity of 7.57 Kgs/M2 & pull out strength of minimum 100 kgs..The T Sections have a Galvanizing of 90 grams per M2 and need to be installed with Suspension system of Armstrong make.

3) Mode of measurement

Item will be measure in Smt. (L x W). No extra will be payable towards wastage due to material pattern.

20.0 DUNE (Beveled Tegular)

Providing and fixing Panel Dune Suspended Ceiling (Beveled Tegular) of size 600x600x16mm having RH 99 with NRC 0.5 shall be used as per the layout designed. Installation and Suspension system details are as below:

1) Material

Panel Dune Suspended Ceiling (Beveled Tegular) of size 1200x150x16mmhaving RH 99 with NRC 0.5 shall be used as per the layout designed.

2) Workmanship

To comprise main runner spaced at 1200mm centres securely fixed to the structural soffit using Armstrong suspension system (specifications below) at 1200mm maximum centre. The First/Last Armstrong suspension system at the end of each main runner should not be greater than 450mm from the adjacent wall. Flush fitting 1200mm long cross tees to be interlocked between main runners

at 600mm centre to form 1200 x 600 mm module. Cross Tee of 1200mm shall be connected to Main Runners for form Technical Zone of 1200x150mm as per the Layout. Perimeter trim to be Armstrong wall angles of size 3000x19x19mm, secured to walls at 450 mm maximum centers.

ARMSTRONG SUSPENSION SYSTEM accessories manufactured and supplied by Armstrong World Industries consisting of M5 Anchor Fasteners with hole for suspending Hanger Wire. A pre Straightened Hanger wire of dia – 2.5 mm of 1.8 m length thickness of 80gsm and a tensile strength of 344-413 MPa, along with Adjustable hook clips of 0.8mm thick, galvanized spring steel for 2.68 mm with a minimum pull strength of 110 kg. The adjustable clip also consists of a 3.5 mm aquiline wire to be used with the main runner.

3) Mode of measurement

Item will be measure in Smt. (L x W). No extra will be payable towards wastage due to material pattern

48.0 Low Height Storage

Providing and fixing Storage cabinet 380mm deep and 750 mm high length as/deign as shown in details with all sides, shelves to be 18-19 mm thk. BWR ply with 12mm BWR ply to be fixed at the back finished with 0.8mm laminate. The shutters to be 18-19mm BWR ply, with 1mm laminate. All internal surfaces to have 0.8m laminate but the top surface finished with 12mm Acrylic Soild Surface thermoformed at edges in front side 25mm thk. All edges of sides, shelves and shutters to have 2mm PVC Edge binding tape as per details, complete including S.S. long handles, self closinghinges, locks, etc. complete to the satisfaction of Bank's Engineer/Bank's Engg. (Only front elevation to be considered for area calculation

1) Materials

Low height Storage of size as per BOQ made of treated FIRESAFE IS: 5509 century/Archid/green Ply covered with 4mm thick natural veneer sheet on front side of unit finish with PU polish as approved by Bank's Engineer.

All internal face the storage should be finished with laminate sheet.

All edge lipping of water based PU polished.

2) Workmanship

All edges of sides, shelves and shutters to have 2mm PVC Edge binding tape as per details, complete including S.S. long handles, self closing hinges, locks, etc. completeto the satisfaction of Bank's Engineer/Bank's Engg. (Only front elevation to be considered forarea calculation

3) Mode of measurement

Item will be measure in Smt.(W x H). No extra will be payable towards wastage due

to material pattern.

49.0 Storage Unit for Passage

Providing and fixing Storage cabinet 380mm deep and 1200 mm high as shown in details with all sides, shelves to be 18-19 mm thk. BWR ply with 12mm BWR ply to be fixed at the back with 1 mm laminate. The shutters to be 18-19mm BWR ply,finished with 1.0 mm laminate. All internal surfaces to have 0.8m laminate and sides to be finished with1mm laminate .All edges of sides, shelves and shutters to have 2mm PVC Edge binding tape as per details, complete including S.S. long handles, self closing hinges, locks, etc. Only front elevation to be considered for area calculation.

1) Materials

Modular storage unit for passage of 380 mm deep with details as per tech specs. The cupboard shall be made out of preliaminated particle wood having 4 nosof full adjustable shelves. The wood shall be approved by Bank's Engineeror EIC.

2) Workmanship

Modular storage unit for passage of 380 mm deep with details as per tech specs. shall be approved by Bank's Engineeror EIC. The top to be made out of 25mm the FIRESAFE IS: 5509 century Plywood sheet and verticals to be made out of 18mm the FIRESAFE IS: 5509 century Plywood sheet. The cupboard shutters shall be made of MDF and honeycomb covered with decorative and backinglaminate. 2mm the lipping shall be provided in all edges matching with the laminateof table top. The exposed and internal surfaces to be provided with 1 mm the laminate of approved pattern. The shutters shall be provided with self- closing hinges and 3 way locking (min. 0.20m long). The handles shall be made out of aluminum and to be ergonomically sound.

3) Mode of measurement

Item will be measure in Smt. (W x H). No extra will be payable towards wastage due to material pattern.

50.0 Glass Shelves

Providing and fixing 12 mm thick toughened glass shelves with all edges machine polished to diamond finish with pre-drilled fixing holes, mounted to wall/partition through SS 316 grade D-Clips/brackets avg. 50 mm wide along wall support of approved make and shape/fabrication. D-clip fixed to wall by avg. 50 mmthreaded screws driven through wooden/PVC rawl plugs as approved. Item to be inclusive of all accessories, fixing implements, tools and tackle, finished installed cleaned complete. Item to be completed in all respects as per drawings & instructions from Project- in- charge/Bank's Engineer.

1) Materials

12 mm thick toughened glass shelves with all edges machine polished to diamond finish with pre-drilled fixing holes, mounted to wall/partition through SS 316 grade D-Clips/brackets avg. 50 mm wide along wall support of approved make and

shape/fabrication.

2) Workmanship

12 mm thick toughened glass shelves with all edges machine polished to diamond finish with pre-drilled fixing holes, mounted to wall/partition through SS 316 grade D-Clips/brackets avg. 50 mm wide along wall support of approved make and shape/fabrication. D-clip fixed to wall by avg. 50 mm threaded screws driventhrough wooden/PVC rawl plugs as approved. Item to be inclusive of all accessories, fixing implements, tools and tackle, finished installed cleaned complete. Item to be completed in all respects as per drawings & instructions from Project- in-charge/Bank's Engineer.

3) Mode of measurement

The rate includes cost of all labour, materials, tool and plant etc. required for satisfactory completion of this item as specified in workmanship. Item will be measure in Smt. (L x W) No extra will be payable towards wastage due to material pattern.

65.0 C.P. towel ring

Providing & fixing 15 mm dia C.P. towel ring for wash hand basin of approved make etc. complete.as approved by Bank's Engineer/Engineer-in-charge, Item to include screw, roll plug and all fixing accessories, installed complete. Item to be completed in all respects as per drawings & instructions from Project- in- charge/Bank's Engineer.

1) Materials

15 mm dia C.P. towel ring for wash hand basin of approved make etc. complete.as approved by Bank's Engineer/Engineer-in-charge.

2) Workmanship

15 mm dia C.P. towel ring for wash hand basin of approved make etc. complete.as approved by Bank's Engineer/Engineer-in-charge, Item to include all fixing accessories, installed complete. Item to be completed in all respects as per drawings & instructions from Project- in- charge/Bank's Engineer.

3) Mode of measurement

The rate includes cost of all labour, materials, tool and plant etc. required for satisfactory completion of this item as specified in workmanship. The rate shall be for a unit of One number. No extra will be payable towards wastage due to material pattern.

66.0 C.P.Toilet paper holder

Providing & fixing C.P.Toilet paper holder of approved make continental range as per instructions of engineer in charge etc. complete as approved by Bank's Engineer/Engineer- in- charge. Item to include screws, roll plug and all fixing accessories, installed complete. Item to be completed in all respects as per drawings & instructions from Project- in-charge/Bank's Engineer**.**

1) Material

C.P.Toilet paper holder of approved make continental range as per instructions of engineer in charge etc. complete as approved by Bank's Engineer/Engineer-in- charge.

2) Workmanship

C.P.Toilet paper holder of approved make continental range as per instructions of engineer in charge etc. complete as approved by Bank's Engineer/Engineer-in-charge. Item to include all fixing accessories, installed complete. Item to be completed in all respects as per drawings & instructions from Project- in-charge/Bank's Engineer.

3) Mode of measurement

The rate includes cost of all labour, materials, tool and plant etc. required for satisfactory completion of this item as specified in workmanship. The rate shall be for a unit of One number. No extra will be payable towards wastage due to material pattern.

67.0 Mirrors in Toilet

Providing and Fixing Mirrors in toilet, homogenous piece 5 mm thick faultless Float glass mirrors of approved source glass. Mounted with approved 316 grd. SS Studs on 12mm thick FIRESAFE IS: 5509 century Plywood sheet backing of Ply or equip., entire assembly mounted over specified Dado to locations as per drawing and approval. Ply board edges to be sealed with min.
4 mm thick TW lipping AT treated and clear matt PU finished; and glass edges to be avg. 2.5 mm beveled & grinded finished smooth. Exposed SS mounting studs on face of glass to be of brushed steel/Butler finish. Item to include all fixing hardware & accessories as approved, and a single unit mock-up for approval of the Bank's Engineers.Item to be mounted on cleaned finished complete to correct line, finished item suitably protected till handover. Item to be completed in all respects as per drawings & instructions from Project- in- charge/Bank's Engineer.

1) Materials

Mirrors in toilet, homogenous piece 5 mm thick faultless Float glass mirrors of approved source glass. Mounted with approved 316 grd. SS Studs on 12mm thick

FIRESAFE IS: 5509 century Plywood sheet backing of Ply or equip., entire assembly mounted over specified Dado to locations as per drawing and approval. Ply board edges to be sealed with min. 4 mm thick TW lipping AT treated and clearmatt PU finished.

2) Workmanship

Mirrors in toilet, homogenous piece 5 mm thick faultless Float glass mirrors of approved source glass. Mounted with approved 316 grd. SS Studs on 12mm thick FIRESAFE IS: 5509 century Plywood sheet backing of Ply or equip., entire assembly mounted over specified Dado to locations as per drawing and approval. Ply board edges to be sealed with min. 4 mm thick TW lipping AT treated and clearmatt PU finished; and glass edges to be avg. 2.5 mm beveled & grinded finished smooth. Exposed SS mounting studs on face of glass to be of brushed steel/Butler finish. Item to include all fixing hardware & accessories as approved, and a single unit mock-up for approval of the Bank's Engineers. Item to be mounted on cleaned finished complete to correct line, finished item suitably protected till handover.

1. All members of the plywood/ horizontal surfaces, frames shall be exactly at right angles. The right angle shall be checked from inside surface of the respective members.
2. All members/ plywood surfaces of frames/ shutters shall be straight line without any wrap or bow and shall have smooth surface well planned/ or cut in right direction with right angles.
3. 5mm thick Mirror of first quality and approved make shall be fixed on 2mm thick FIRESAFE IS: 5509 century Plywood sheet backing of Ply or equip with first quality hardware.
4. All open edges of plywood to cladded with first quality sycamore wooden beading of required sizes.

damaging adjoining surfaces/ members and without having any stains, spots or dirt.

Mirrors in toilet, homogenous piece 5 mm thick faultless Float glass mirrors of approved source glass. Mounted with approved 316 grd. SS Studs on 12mm thick FIRESAFE IS: 5509 century Plywood sheet backing of Ply or equip., entire assembly mounted over specified Dado to locations as per drawing and approval. Ply board edges to be sealed with min. 4 mm thick TW lipping AT treated and clearmatt PU finished; and glass edges to be avg. 2.5 mm beveled & grinded finished smooth. Exposed SS mounting studs on face of glass to be of brushed steel/Butler finish. Item to include all fixing hardware & accessories as approved, and a single unit mock-up for approval of the Bank's Engineers. Item to be mounted on cleaned finished complete to correct line, finished item suitably protected till handover.

3) Mode of measurement

Item will be measure in Smt. (W x H). No extra will be payable towards wastage due to material pattern. all finished work including all required hardware. Rate includes all material and labour to complete the item as per instruction of Engineer in-charge.

68.0 Pantry (Shutters under platform)

Providing and fixing storage cabinet (below platfrom) in pantry The Front frame and shutters inculding partition to be 18-19mm BWR ply, with 1.0 mm laminate. All edges of shutters to have 2mm PVC Edge binding tape as per details, complete including S.S. long handles, self closing hinges, locks, etc. complete to the satisfaction of Bank's Engineer/Bank's Engg. Only front elevation to be considered for area calculation

1) Materials

. Providing and fixing storage cabinet (below platfrom) in pantry The Front frame and shutters inculding partition to be 18-19mm BWR ply, with 1.0 mm laminate. All edges of shutters to have 2mm PVC Edge binding tape as per details, complete including S.S. long handles, self closing hinges, locks, etc. complete to the satisfaction of Bank's Engineer/Bank's Engg. Only front elevation to be considered for area calculation

2) Workmanship

Providing and fixing storage cabinet (below platfrom) in pantry The Front frame and shutters inculding partition to be 18-19mm BWR ply, with 1.0 mm laminate. All edges of shutters to have 2mm PVC Edge binding tape as per details, complete including S.S. long handles, self closing hinges, locks, etc. complete to the satisfaction of Bank's Engineer/Bank's Engg. Only front elevation to be considered for area calculation

3) Mode of measurement

Item will be measure in Smt. (W x H) . No extra will be payable towards wastage due to material pattern. all finished work including all required hardware. Rate includes all material and labour to complete the item as per instruction of Engineer in-charge. (Measurement will be counted from front shutter's height & width, no extra will be given for ss basket & shelves).

69.0 Pantry (Over head unit)

Providing and fixing over head storage cabinet 380mm deep and 750/900mm high length as/deign as shown in details with all sides, shelves to be 18-19 mm thk. BWR ply with 12mm BWR ply to be fixed at the back with 0.8mm laminate. The shutters to be 18-19mm BWR ply, with 1.0 mm thk laminate/High gloss laminate. All internal surfaces to be finished with white Paint. All edges of sides, shelves and shutters to have 2mm PVC Edge binding

tape as per details, complete including S.S. long handles, self closing hinges, locks, etc. complete to the satisfaction of Bank's Engineer/Bank's Engg. Only front elevation to be consideredfor area calculation.

1) Materials

Providing and fixing over head storage cabinet 380mm deep and 750/900mm high length as/deign as shown in details with all sides, shelves to be 18-19 mm thk. BWR ply with 12mm BWR ply to be fixed at the back with 0.8mm laminate. The shutters to be 18-19mm BWR ply, with 1.0 mm thk laminate/High gloss laminate. All internal surfaces to be finished with white Paint. All edges of sides, shelves and shutters to have 2mm PVC Edge binding tape as per details, complete including S.S. long handles, self closing hinges, locks, etc. complete to the satisfaction of Bank's Engineer
/Bank's Engg. Only front elevation to be considered for area

2) Workmanship

Providing and fixing over head storage cabinet 380mm deep and 750/900mm high length as/deign as shown in details with all sides, shelves to be 18-19 mm thk. BWR ply with 12mm BWR ply to be fixed at the back with 0.8mm laminate. The shutters to be 18-19mm BWR ply, with 1.0 mm thk laminate/High gloss laminate. All internal surfaces to be finished with white Paint. All edges of sides, shelves and shutters to have 2mm PVC Edge binding tape as per details, complete including S.S. long handles, self closing hinges, locks, etc. complete to the satisfaction of Bank's Engineer
/Bank's Engg. Only front elevation to be considered for area

3) Mode of measurement

Item will be measure in Smt. (W x H) (frontface). No extra will be payable towards wastage due to material pattern. all finished work including all required hardware. Rate includes all material and labour to complete the item as per instruction of Engineer in-charge.

बैंक ऑफ़ बड़ौदा
Bank of Baroda

SPECIFICATION FOR PLUMBING WORK

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SECTION 1: GENERAL SPECIFICATIONS

1.0 SCOPE OF WORK

1.1 Work under this contract shall consist of furnishing all labour, materials, equipment and appliances necessary and required to completely furnish all the plumbing and other specialized services as described hereinafter and as specified in the schedule of quantities.

1.2 Over & above Clause 1.1, the plumbing installation may include but not limited tothe following:

a) Sanitary & CP Fixtures with all accessories.
b) Water Treatment plant
c) Internal & External Water supply & Distribution
d) Internal & External Sewerage Collection & Disposal system
e) Sewage Treatment plant
f) Electro-mechanical equipment/accessories required for Plumbing Installation
g) All hardware, supports, hangers required for complete installation
h) Civil work related to Plumbing Installation
i) Instruments, meters, gauges, required for the installation
j) The scope of work also includes all minor details of construction which are obviously and fairly intended and which may not have been referred to in these documents but are essential for the entire completion in accordancewith standard Engineering practice.

2.0 SPECIFICATIONS

The detailed specifications given hereinafter are for the items of works described in the schedule of quantities attached herein, and shall be guidance for proper execution of work to the required standards. It may also be noted that the specifications are of generalized nature and these shall be read in conjunction with the description of item in schedule of quantities and drawings.

2.1 Work under this contract shall be carried out strictly in accordance with specifications attached with the tender.

2.2 Item not covered under these specifications due to any ambiguity or misprints, or additional works, the work shall be carried out as per specifications of the latest applicable standards with latest amendments as applicable in the contract or as directed by Engineer in Charge.

2.3 Works not covered under Para 2.1 and 2.2 shall be carried out as per relevant Indian standards specifications or codes of practice.

2.4 Unless specifically otherwise mentioned, all the applicable codes and standards published by the Indian Standard Institution and all other standards which may be published by them before the date of receipt of tenders, shall govern in all respects of design, workmanship, quality and properties of materials and methods of testing, method of measurements etc.

2.5 Wherever any reference to any Indian Standard Specification occurs in the documents relating to this contract, the same shall be inclusive of allamendments issued there to or revisions thereof, if any, up to the date of receipt of tenders. In case there is no I.S.I. specification for the particular work, such work shall be carried out in accordance with the instructions in all respects and requirements of the Engineer-in-Charge.

2.6 For the items not covered under any of the specifications stated above, the work shall be executed as per manufacturers specifications/ General good engineering practice/ or as per direction of Engineer in charge and shall be carried out in a manner complying in all respects with the requirement of relevant byelaws of municipal corporation/ Development Authority etc. under the jurisdiction of which the work is to be carried out.

2.7 In case of any difference or discrepancy between specifications & the description of Schedule of Quantities, Schedule of Quantities shall take precedence. In caseof any difference or discrepancy between specification and drawings, thedrawings shall take precedence. In case any difference or discrepancy between the specifications for civil works and specification for Public Health Engineering works, specifications for civil works shall take precedence.

2.8 In case of any dispute arising out of the interpretation of any tender condition, the decision of Engineer-In-Charge shall be final and binding on the contractor.

2.9 Detail specification for Sanitary & CP fittings like model/ makes shall be selectedby Bank's Engineer/ Owner and the same shall be binding for execution.

2.10 All electrical installation shall comply with the requirements of relevant Indian Standards, Indian Electricity rules & Indian Electricity Act amended up to date & local bye laws.

3.0 CONTRACTOR'S RATES

3.1 Rates quoted in this tender shall be inclusive of cost of materials, labour, supervision, erection, tools, plant, scaffolding, service connections, transport to site, taxes, octroi and levies, breakage, wastage, excavation, refilling, bedding, encasing, transportation of lifts/leads and all such expenses as may be necessary and required to completely do all the items of work and put them in a working condition.

3.2 Rates quoted are for all heights and depths required for this work.

3.3 All rates quoted must be for complete items inclusive of all such accessories, fixtures and fixing arrangements, nuts, bolts, hangers as are a standard part ofthe particular item except where specially mentioned otherwise.

3.4 All rates quoted are inclusive of cutting holes and chases in walls and floors and making good the same with cement mortar/ concrete of appropriate mix and strength as directed by Bank's Engineer/ Engineer in Charge.

3.5 Rates quoted shall be inclusive of cost incurred in testing, commissioning of

works and materials.

3.6 Rates quoted shall be inclusive of any rework to be carried in the system installation due to the instructions given by Statutory/ Approval authority.

3.7 For all the items/ equipments supplied free of cost by the Owner, the contractor's rate shall take care of transportation to the site, storage at site, installation,testing & commissioning of those items/equipments.

3.8 All rates quoted by the contractor under this contract shall including bailing or pumping out of all the water which may accumulate during the progress of work either through seepage, springs, rain or any other cause.

3.9 All rates quoted by the contractor shall include all miscellaneous civil work related to Plumbing work like excavation, refilling, timbering, bedding, encasing, etc. required as per actual site condition.

3.10 All water and electricity charges for testing and commissioning of the system shall be borne by the contractor.

3.11 In case of discrepancy/ calculation error between rate & amount quoted by the contractor, the quoted rate shall be considered as final to derive the amount.

4.0 DRAWINGS: DELETED

4.1 Plumbing drawings are diagrammatic but shall be followed as closely as actual construction permits. Any deviations made shall be in conformity with the Bank's Engineerural and other services drawings.

4.2 Bank's Engineerural drawings shall take precedence over plumbing or other services drawings as to all dimensions.

4.3 Contractor shall verify all dimensions at site and bring to the notice of the Bank's Engineer/ Engineer in Charges all discrepancies or deviations noticed. Bank's Engineer/ Engineer in Charges decision shall be final.

4.4 Civil related details like tanks, basement channel, and plant room, sump, etc. to be read in conjunction with structure drawings. In case of any discrepancies, Contractor shall co-ordinate with other agencies & execute as per the best practices.

4.5 Large size details and manufacturers dimensions for materials to be incorporated shall take precedence over small-scale drawings.

4.6 Any drawings supplied with the tender shall be returned in good conditions along with the tender.

4.7 Any drawings issued by the Bank's Engineer/ Engineer In Charges for the works are the property of the Bank's Engineer/ Engineer In Charges and shall not be lent, reproduced or used on any works other than intended without the written permission of the Bank's Engineer/ Engineer In Charges.

5.0 EXECUTION OF WORK

5.1 The contractor must get acquainted with the proposed site for the works and study specifications and conditions carefully before execution.

5.2 On award of the work, contractor shall submit a program of construction in the form of a pert chart or bar chart for approval of the Bank's Engineer/ Engineer in Charge. All dates and time schedule agreed upon shall be strictly adhered to, within the stipulated time of completion/ commissioning along with the specified phasing, if any.

5.3 The work shall be executed as per program approved by the Bank's Engineer/ Engineerin Charge. If part of site is not available for any reason or there is some unavoidable delay in supply of materials stipulated by the owner/ or due to any other issue not pertaining to the contractor, the contractor shall draw attention to the owner & as per the mutual agreement, the programme of construction shall be modified accordingly and the contractor shall have no claim for any extras or compensation on this account. Here Owner means the authorized person/ agency representing Owner/Client.

5.4 The contractor shall cooperate with all trades and agencies working on the site. The contractor shall ensure that all inserts, pipe lines embedded in structural members, sleeves, cutouts, etc. are placed in position in coordination with civil work as and when required. All holes, sleeves, cutouts shall be filled with best quality sealant to make leak proof joint. Location & size of core cutting of the floorslabs in case of suspended plumbing shall be co-ordinate with civil contractor.
However, core cutting work is to be carried out by Civil Contractor or any otheragency.

5.5 The contractor shall take instructions from the Engineer In charge regarding collection and stacking of material in any place with lockable arrangement. For damage/ theft of any material, Contractor shall be hold responsible. No Excavated earth or Building material shall be stacked on areas where otherbuildings, roads, services, compound walls, etc. are to be constructed.

5.6 The contractor shall maintain in perfect condition all works executed till the completion of the entire work allotted to him. Where Phased delivery is contemplated, this provision shall apply to each phase.

5.7 The installation of the sanitary fixtures and fittings shall be as per the shop drawings approved by the Bank's Engineer/ Engineer in Charge/ Consultant. The fixtures in the trial assembly can be re-used for final installation without any additional payments for fixing or dismantling of the fixtures.

5.8 All gaps between wall/ floor and sanitary vessels shall be filled with sanitary grade sealant. CP Brass or SS screws shall be used for fixing sanitary fixtures and accessories in toilet, bath, and pantry and kitchen area.

5.9 While carrying out pipeline work, in case the contractor encounters any

Interference with other services, such as cable, conduits, etc. he shall take sufficient precautions in order to prevent any damage to them. If any damage occurs it shall be rectified to its original condition at his own cost to the satisfaction of Engineer-In-Charge.

5.10 The contractor carrying out the construction work shall take effective measures to carefully open out all existing channels, culverts, bridges, pipelines, conduits, water courses, sewer, drains, electrical cables, transmission lines and their supports and all works buried or otherwise where such services have to be interfered with the purpose of the construction of the works. He shall provide and arrange all necessary temporary supports and diversions if necessary across/ under/ even through along sides of the trenches and all other parts of construction work for all such channels, culverts, bridges, pipe lines, conduit

5.11 The contractor shall arrange to carry out all works with least interference practicable with public footpath and vehicular traffic and with existing waste water or storm water drainage arrangements and provide all necessary road barriers, fences, notices, lights, gangways, access crossings, diversions for traffic, temporary drains, dewatering channels, chutes pumping or water lifting arrangements and all other facilities for the proper execution of the works to the approval and satisfaction in all respects of the Engineer-in-Charge. Any work carried out by the contractor in this connection shall be deemed as temporary works incidental to the construction work.

5.12 For any free issue items by Owner, the contractor shall maintain the same properly & install as per good engineering practice.

5.13 No structural member shall be chased or cut without the written permission of the Bank's Engineer/ Engineer in Charge/ Engineer in charge.

5.14 The work shall be executed in a manner complying in all respects with requirements of relevant bye-laws of the municipal corporation/ Development Authority/ Applicable Statutory Authority the jurisdiction of which the work is to be executed or as directed by the Engineer-In-Charge.

5.15 All plumbing services shall be handed over to Engineer-In-Charge complete in all respects. Incomplete work will not be taken over. Any loss or damage to these services due to any reasons by anybody whatsoever before handing over will beat contractors risk and cost, Any damage to any structural, finishing work done during the testing or rectification shall be made good by the contractor at his own cost and risk.

6.0 MATERIALS & WORKMANSHIP

6.1 All materials used in the works shall conform to the list of approved vendor in tender specifications. The approved samples shall be maintained at site till the completion of work.

6.2 As far as possible materials bearing I.S. certification marks shall be used with the approval of the Bank's Engineer/ Engineer in Charge/ Engineer in charge.

6.3 Unless otherwise specified and expressly approved in writing by the Bank's Engineer/ Engineer in Charge, materials of makes and specifications mentioned with tender
shall be used. In case of any items, list of approved vendor is not given; the contractor shall submit his recommendation to Engineer in charge with proper technical back up justifying the selection.

6.4 Workmanship and general finish shall be of first class quality and in accordance with best workshop practice. All similar items of the Plant and their component parts shall be completely interchangeable.

6.5 Spare parts shall be manufactured from the same materials as the originals and shall fit all similar items.

6.6 Machining fits on renewable parts shall be accurate and to specified tolerancesso that replacements made to may be readily installed.

6.7 All equipment shall operate without excessive vibration and with minimum noise.

6.8 All revolving parts shall be truly balanced both statically and dynamically so that when running at normal speeds at any load up to the maximum there shall be no vibration due to lack of balance.

6.9 All parts which can be worn or damaged by dust shall be totally enclosed in dust proof housings

6.10 All materials selected in the work shall be most suitable for duty concerned, free from imperfections, selected for long life and minimum maintenance.

6.11 All necessary accessories required for satisfactory and safe operation of the Plant shall be supplied by the Contractor unless it is specifically excluded from his scope.

6.12 All valves shall be closing on clockwise rotation of the hand wheel. The effort required to close/ open under all operating conditions shall be limited to 7 kg. The direction of opening/ closing shall be cast on the hand wheel.

6.13 All flanges shall be drilled in accordance with requirements of IS: 1538. Allflanges shall be full or spot faces on the back side. The flange thickness shall be uniform throughout. Flange outside periphery shall be concentric with the bore. Flanges shall be finished smooth on periphery also Castings and fabricated materials shall be finished smooth all over.

7.0 INSPECTION AND TESTING OF MATERIALS

7.1 Contractor shall be required, if requested, to produce manufacturers test certificate for the particular batch of materials supplied to him. The tests carried out shall be as per the relevant Indian standards.

7.2 Testing charges including incidental charge and cost of sample for testing shall be borne by the contractors for all mandatory tests.

7.3 Testing charges for optional tests shall be paid by the Dept. However, the incidental charges and cost of sample for testing shall be borne by the contractor.

7.4 In case of non-I.S. materials, it shall be the responsibility of the contractor to establish the conformity of material with relevant I.S. specification by carrying out necessary tests. Testing charges including incidental charge and cost of sample for testing shall be borne by the contractors for such tests.

7.5 The materials should pass all tests and tolerance in dimensional, chemical, physical properties should be within the limit as stipulated in relevant I.S. for acceptance. Such materials will be accepted as standard.

7.6 Payments shall be restricted to standard unit mass, or as specified in the schedule, without making any cost adjustment towards mass or any other properties provided the material pass all the tests and tolerance are within the specified limit.

7.7 For examination and testing of materials and works at the site contractor shall provide all testing and gauging equipment necessary but not limited to the followings:

7.8 a) Theodolite b) Dumpy level c) Steel tapes d) Weighing machine e) Plumb bobs, spirit levels, Hammers f) Micrometers g) Thermometers, Stoves h) Hydraulic test machine i) Smoke test machine.

7.9 All such equipment shall be tested for calibration at any approved laboratory, if required by the Bank's Engineer/ Engineer in Charge.

7.10 All testing equipment shall be preferably located in special room meant for the purpose.

8.0 MOCK UP

8.1 The contractor shall install all pipes, fixtures, clamps and accessories and fixing devices in mock-up shaft and room so constructed as directed by Bank's Engineer/ Engineer in Charge without any cost. The materials used in the mock-up may be reused in the works if found undamaged.

8.2 The contractor shall have to assemble at least one set of each type of sanitary fixtures and CP fittings in order to determine precisely the required supply and disposal connections. Relevant instructions from manufacturers shall be followed as applicable. This trial assembly shall be developed to determine the location of puncture holes, holding devices etc. which will be required for final installation of all sanitary fixtures and fittings. The above assembly shall be subject to final approval by the Bank's Engineer/ Engineer in Charge/ Engineer In charge.

8.3 Any tiles or finished surfaces or floors damaged by the contractor while doing his work shall be made good with new tiles or other finishing material. No payment shall be admissible for such repairs. The Bank's Engineer/ Engineer in Charge may, at his discretion get the damaged work repairs to the contractor.

9.0 MATERIALS SUPPLYING BY OWNER

9.1 The contractor shall verify that all materials supplied by the Owner conform to the specifications of the relevant item in the tender. Any discrepancy found shall be brought to the notice of the Bank's Engineer/Engineer in charge.

9.2 If any materials issued to the contractor, free of cost, are damaged or pilfered, the cost of the same shall be recovered from the contractor on the basis of actual cost to owner which shall include all freight and transportation, excise duty, sales tax, octroi, import duty etc.

10.0 REFERENCE POINTS

10.1 Contractor shall provide permanent bench marks, flag tops and other reference points for the proper execution of work and these shall be preserved till the end of the work.

10.2 All such reference points shall be in relation to the levels and locations given in the Bank's Engineer/ Engineer in Charge and plumbing drawings.

11.0 REFERENCE DRAWINGS: DELETED

11.1 The contractor shall maintain one set of all construction drawings issued to him as reference drawings. These shall not be used on site.

11.2 All corrections, deviations and changes made on the site shall be shown on these reference drawings for final incorporation in the completion (as built) drawings. All changes to be made shall be initialed by the Engineer in charge.

11.3 One complete set of construction drawings shall be made available to the execution engineer & shall be maintained in good condition throughout the execution activities.

12.0 SHOP DRAWINGS

12.1 The contractor shall submit to the Bank's Engineer/ Engineer In Charge four copies of the shop drawings.

12.2 Shop drawings shall be submitted under following conditions:

a) Showing any changes in layout in the plumbing drawings.
b) Foundation details, Nozzle Orientation, Equipment layout and piping, wiring diagram.
c) Manufacturer's or contractor's fabrication drawings for any materials or equipment supplied by him.

12.3 The contractor shall submit four copies catalogues, manufacturers drawings, technical data sheet, equipment characteristic data or performance charts as required by the Bank's Engineer/ Engineer In Charge.

13.0 SITE CLEARANCE AND CLEANUP

13.1 The contractor shall, from time to time clear away all debris and excess materials

accumulated at the site.

13.2 After the fixtures, equipment and appliances have been installed and commissioned, contractor shall clean-up the same and remove all plaster, paints stains, stickers and other foreign matter of discoloration leaving the same in a ready to use condition.

13.3 On completion of all works, contractor shall demolish all stores, remove all surplus materials and leave the site in a broom clean condition, failing which the same shall be done at contractors risk and cost.

14.0 TESTING

14.1 Piping and drainage works shall be tested as specified under the relevant clausesof the specifications.

14.2 Tests shall be performed in the presence of the Engineer In Charge. The engineer in charge shall issue a certificate for approved testing of all systems duly signed & stamped.

14.3 All materials and equipment found defective shall be replaced and whole work tested to meet the requirements of the specifications.

14.4 Contractor shall perform all such tests as may be necessary and required by the local authorities to meet Municipal or other bye-laws in force.

14.5 Contractor shall provide all labour, equipment and materials for the performance of the test.

14.6 After completion of work and during the maintenance liability period of contract, the work shall be subjected to "Post construction and testing". In case, if the materials incorporated in the work are found to be inferior, though the sample collected from the materials might have been passed at the time of execution, it shall be the responsibility of the contractor to replace the same without any costto the Owner failing which the Owner may rectify the same at the risk and cost of the contractor or the Owner may accept the same as substandard, and cost be adjusted from the outstanding security deposit as per the terms and condition of the contract for the work.

15.0 LICENSE AND PERMITS

15.1 Contractor must hold a valid plumbing license issued by the Municipal authority or other competent authority under whose jurisdiction the work falls.

15.2 Contractor must keep constant liaison with the Municipal authority and obtain approval of all drainage and water supply works carried out by him.

15.3 Contractor shall obtain, from the municipal authority, completion certificate with respect to his work as required for occupation of the building.

15.4 All inspection fees or submission fees paid by the contractor shall be reimbursed by the Owner on production of valid official receipts

16.0 HANDING OVER DOCUMENTS

16.1 On completion of work, contractor shall submit one complete set of as built drawings in editable soft copy and two hard prints of 'as built' drawings to the Engineer in Charge. These drawings shall have the following information:

a) Run of all piping & diameters on all floors, terrace and vertical stacks.
b) Ground and invert levels of all drainage pipes together with location of all manhole and connections up to outfall.
c) Run of all water supply lines with diameters, locations, of control valves, access panels inside the utilities.
d) Location of all mechanical equipment with layout and piping connections &location of electrical panel for the same.
e) Location & capacity of Underground / Overhead tanks
f) Location of water & sewage treatment plant with layout
g) Location of rain water harvesting structures with detail drawings

16.2 Contractor shall provide four sets of catalogues, performance data and list of spare parts together with the name and address of the manufacturer for allelectrical and mechanical equipment provided by him.

16.3 All 'warranty cards' given by the manufacturers shall be handed over to the Bank's Engineer/ Engineer in Charge.

16.4 Contractor shall provide Operation and Maintenance manual of all major Electro-mechanical equipment.

16.5 All test certificates of materials & testing at manufacturer works shall be submitted in one set of hard copy.

16.6 All site performance test certificates approved by Engineer in charge shall be submitted in one set of hard copy.

17.0 APPLICABLE CODES AND STANDARDS:

17.1 Plumbing system design shall conform to plumbing design codes like National Building code– 2005, Part 9, Section 1, CPHEEO Manual, Handbook on Water supply & Drainage- SP 35, Public Health Engineering Handbook, Uniform Plumbing Code for India.

17.2 All equipment, supply, erection, testing and commissioning shall comply with the requirements of Indian Standards and code of practice given below as amended up to the date of submission of Tender. All equipment and material being supplied shall meet the requirements of BIS and other relevant standard and codes.

18.0 LIST OF INDIAN STANDARDS FOR PLUMBING

18.1 The following IS codes shall be referred in execution of PH Engineering works.

IS CODE	SUBJECT
27 - 1992	Specifications for Pig Lead
269- 1989	Specifications for 33 grade Ordinary Portland Cement
407- 1981	Brass tubes for General purposes
456- 2000	Code of practice for Plain & Reinforced concrete.
458- 2003	Specifications for Concrete Pipes.
554- 1999	Dimensions for pipe thread where pressure tight joints are required.
636- 1988	Firefighting hose ,rubber lined or fabric reinforced rubber lined woven –jacketed
638- 1979	Sheet rubber jointing & rubber insertion jointing
651- 1992	Specifications for Salt glazed stoneware pipes & fittings.
771 (Pt. I &VII)	Glazed Fire Clay Sanitary Appliances.
771- 1979 (Pt. I)	General requirements
771- 1985 (Pt. II)	Specific requirements of kitchen & laboratory sinks
771- 1979 (Pt. III/ Sec 1)	Specific requirements of urinals (section 1- Slab urinals)
771- 1985 (Pt. III/ Sec2)	Specific requirements of urinals (section 2- Stall urinals)
771- 1979 (Pt. IV)	Specific requirements of postmortem slabs.
771- 1979 (Pt. V)	Specific requirements of shower trays
771- 1979 (Pt. VI)	Specific requirements of bed pan sinks
771- 1981 (Pt. VII)	Specific requirements of slop sinks
774- 1984	Flushing cistern for water closet and urinals.
775- 1970	Cast iron brackets and supports for wash basin and sink.
778- 1984	Specifications for copper alloy gate & Globe check valves for water works
779- 1994	Water meters (domestic type)
781- 1984	Specifications for cast copper alloy screw down bib taps & stop cocks for water services
782- 1978	Specification for Caulking lead.
783- 1985	Code of practice for laying concrete pipes.
784- 2001	Pre-stressed concrete pipes.
884- 1985	Fire aid hose reel for firefighting (for fixed installation)
901 - 1988	Specification for couplings, double males & double female, instantaneous pattern for Fire Fighting
902 - 1992	Specification for suction hose couplings for Fire Fighting purposes.
903 - 1993	Couplings for fire hose delivery, branch pipe, nozzles Specification
904 - 1983	Specification for 2 way and 3 way suction collecting heads for Fire Fighting purposes.
905 - 1980	Specification for delivery breechings, dividing and collecting instant tenuous pattern for Fire Fighting

IS CODE	SUBJECT
906 - 1988	Specification for revolving branch pipe for Fire Fighting
907 - 1984	Specification for suction strainer, cylindrical type for Fire Fighting purposes.
908- 1975	Fire Hydrants, Stand post type
909- 1992	Specifications for underground fire hydrants, sluice valve Type
940 - 1989	Portable Fire Extinguisher, water Type (Gas Cartridge) - Specification
941- 1985	Specification for Blower and Exhauster for Fire Fighting.
1172- 1993	Code of basic requirements for water supply, drainage and Sanitation
1200-1979 (Pt. 16)	Method of measurements for Laying of water and sewer lines including appurtenant items.
1200-1981 (Pt. 19)	Method of measurements for Water supply, plumbing and drains.
1230	Specifications for CI Rain Water pipes
1239- 2004 (Pt. I)	Specifications for Mild steel tubes
1239- 1992 (Pt. II)	Specifications for Mild steel Tubular & other wrought steel pipe fittings
1300- 1994	Phenol molding material specification
1536- 2001	Specifications for Centrifugally cast iron (spun) pressure pipes for water, gas and sewage
1537- 1976	Specifications for Vertically cast iron pressure pipes for water, gas and sewage
1538- 1993	Cast iron fittings for pressure pipes for water, gas and Sewage
1700- 1973	Drinking fountains
1701- 1960	Combination valve , mixing valves
1703- 2000	Ball valve (horizontal plunger type) including floats for water supply.
1711- 1984	Self-closing taps.
1726- 1991	Cast iron manhole covers and Frames.
1729- 2002	Cast /ductile iron drainage pipes & fittings for over ground NP pipeline S/S series.
1742- 1983	Code of practice for building drainage
1795- 1982	Pillar taps for water supply purposes
1879	Malleable Cast Iron Pipe Fittings
1978- 1982	Specification for line pipe (M S Seamless)
1979- 1985	Specification for high test line pipe
2065- 1983	Code of practice for water supply in buildings.
2097 - 1983	Specification for foam making branch pipe.
2104- 1981	Water meter boxes (domestic type)
2171 – 1999	Specification for portable fire extinguisher, dry powder (Cartridge Type)
2190- 1992	Code of practice for selection ,installation & maintenance of portable first-aid fire extinguishers

2267- 1995	Polystyrene molding and extension materials – specification
2326- 1987	Automatic flushing cistern for urinals
IS CODE	**SUBJECT**
2373	Specification for Water Meter (Bulk type)
2379- 1990	Color code for identification of pipe lines.
2401- 1973	Code of practice for selection, installation & maintenance of domestic water meters
2470 (Pt. I to II)	Code of practice for installation of septic tanks
2470- 1985 (Pt. I)	Design criteria & construction
2470- 1985 (Pt. II)	Secondary Treatment & disposal of septic tank effluent
2527- 1984	Code of practice for fixing rain water gutters and down pipes for roof drainage.
2546 - 1974	Specification for galvanized Mild Steel Fire bucket.
2548- 1996(Pt. I)	Plastic water closet seats and covers.
2548- 1996(Pt. II)	Plastic water closet seats and covers.
2556 (Pt. 1 to XV)	Specification for Vitreous (Vitreous China) sanitary appliances.
2556- 1994 (Pt.1)	General requirements
2556- 1994 (Pt.2)	Specific requirements of wash down water-closets
2556- 2004 (Pt.3)	Specific requirements of squatting pans
2556- 2004 (Pt. 4)	Specific requirements of wash basins
2556- 1994 (Pt.5)	Specific requirements of laboratory sinks
2556- 1995(Pt.6)	Specific requirements of urinals & partition plate
2556- 1995 (Pt.7)	Specific requirements of accessories for sanitary Appliances
2556- 1995 (Pt.8)	Specific requirements of pedestal close coupled & wash down and siphon water closets
2556- 2004 (Pt.9)	Specific requirements of pedestal type bidets
2643- 1999	Type Threads where pressure tight joints are not mase on the threads dimension, tolerances and designation
2692- 1989	Specification for Ferrules for water services.
2800- 1991 (Pt. I)	Construction of tube well
2800- 1979 (Pt. II)	Testing of tube well
2878 - 2004	Fire Extinguisher, Carbon Dioxide Type (Portable and Trolley Mounted) – Specification.
2951 (Pt. I to II)	Recommendation for estimate of flow of liquids in closed conduits.
2951- 1965 (Pt. I)	Head loss in straight pipes due to frictional resistance
2951- 1965 (Pt. II)	Head loss in valves & fittings.
3006- 1979	Specification for Chemically resistant glazed S.W. pipes and Fitting
3076- 1985	Low density polyethylene pipes for potable water supply
3114- 1994	Code of practice for laying of Cast Iron pipes.
3311- 1979	Waste plug & its accessories for sinks & wash basins.
3328- 1993	Quality tolerances for water for swimming pools

3389- 1994	Urea formaldehyde molding materials
3486- 1966	Specification for Cast iron spigot and socket drain pipes
3489- 1985	Specifications for enameled steel bath tubs
3589- 2001	Specifications for steel pipes for water & sewage (168.3 to 2540 mm outside dia.)
3597- 1998	Method of test for concrete pipes.
IS CODE	**SUBJECT**
3844- 1989	Code of practice for installation and maintenance of internal fire hydrants Hose reels in premises.
3950- 1979	Specification for Surface boxes for sluice valve.
3989- 1984	Centrifugally cast (spun) iron spigot and socket soil, waste and ventilating pipes, fittings & accessories.
4038- 1986	Foot valves for water works purposes.
4111 (Pt. I to V)	Code of practice for ancillary structures in sewage system.
4111- 1986 (Pt. I)	Manholes
4111- 1985 (Pt. II)	Flushing tanks
4111- 1985 (Pt. III)	Inverted siphon
4111- 1968 (Pt. IV)	Pumping stations & pumping mains (rising mains)
4111- 1993 (Pt. V)	Tidal out-falls
4120- 1967	Tubs and baths.
4127- 1983	Code of practice of laying of glazed stone ware pipes.
4308 - 2003	Dry Chemical Powder for Fighting B & C class Fires– Specification.
4350- 1967	Specification for concrete porous pipes for under drainage.
4733- 1972	Methods of sampling & test for sewage effluents
4736- 1986	Specification for hot –dip zinc coating on mild stele tubes.
4854 (Pt. I to III)	Glossary terms for valves and their parts
4854- 1969 (Pt. I)	Screw down stop, check & gate valves & their parts
4854- 1968 (Pt. II)	Plug valves & cocks & their parts
4854- 1974 (Pt. III)	Butterfly valves
4927- 1992	Unlined flax canvass hose for fire fighting
4947 - 1985	Specification for gas cartridge for use in Fire extinguishers.
4984- 1995	Specifications for HDPE pipes for water supply
4985- 2000	Specifications for un plasticized PVC pipes for potable water supplies
5290- 1993	Specifications for Landing valves.
5312 (Pt. I)	Swing check type reflux (non return) valves
5312- 1984 (Pt. I)	Reflux (non return) valves – single door pattern
5329- 1983	Code of Practice for sanitary pipe work above ground for Building
5330- 1984	Criteria for design for anchor blocks for pen-stocks with expansions joints.
5382- 1985	Specifications for rubber sealing rings for water, gas & sewer mains
5455- 1969	Cast iron steps for manholes
5600- 2002	Specifications for Sewage and drainage pumps

5611- 1987	Code of Practice for waste stabilization ponds (Facultative type)
5714- 1981	Specifications for Hydrant stand-pipe for fire fighting
5822- 1994	Code of Practice for laying of welded steel pipes for water Supply
5961- 1970	Specifications for CI grating for drainage purposes
IS CODE	**SUBJECT**
6234 - 2003	Portable fire Extinguisher water Type (Stored Pressure) – Specification.
6279- 1971	Equipment for grit removal
6280- 1971	Sewage screens
6295- 1986	COP for water supply & drainage in high altitude & / or sub-zero region
6392- 1971	Steel pipe flanges
6411- 1985	Specifications for gel coated glass fiber reinforced polyester resin bath tubs
6418- 1971	Cast Iron & malleable flanges for general engineering Purpose
6494- 1988	COP for water proofing of underground water tanks & swimming pools
6587- 1987	Specifications for Spun hemp yarn
7181- 1986	Horizontally Cast Iron Double Flanged pipe for water, gas & sewage.
7231- 1994	Specifications for Plastic Flushing Cisterns for water closet & urinals
7558- 1974	Code of Practice for domestic hot water installations
7634 (Pt. I to III)	Code of Practice for Plastic pipe work for potable water Supplies
7634- 1975 (Pt. I)	Choice of materials & general recommendations
7634- 1975 (Pt. II)	Laying & jointing polyethylene (PE) pipes
7634- 2003 (Pt. III)	Laying & jointing un plasticized PVC pipes
7740- 1985	Code of Practice for road gullies
7834 (Pt. I to VIII)	Injection molded PVC socket fittings with solvent cement joints for water supplies
7834 - 1987(Pt. I)	General requirements
7834- 1987 (Pt. II)	Specific requirements for 45 0 elbows
7834- 1987 (Pt. III)	Specific requirements for 90 0 elbows
7834- 1987 (Pt. IV)	Specific requirements for 90 0 tees
7834- 1987(Pt. V)	Specific requirements for 45 0 tees
7834- 1987 (Pt. VI)	Specific requirements for sockets
7834- 1987(Pt. VII)	Specific requirements for unions
7834- 1987 (Pt. VIII)	Specific requirements for caps
8008 (Pt. I to VII)	Injection molded HDPE fittings for potable water supplies
8008- 2003 (Pt. I)	General requirements for fittings
8008- 1976 (Pt. II)	Specific requirements for 90 0 bends
8008- 2003 (Pt. III)	Specific requirements for 90 0 tees

8008- 2003 (Pt. IV)	Specific requirements for reducers
8008- 2003 (Pt. V)	Specific requirements for ferrule reducers
8008- 2003 (Pt. VI)	Specific requirements for pipe ends
8008- 2003 (Pt. VII)	Specific requirements for sandwich flanges
8090- 1976	Coupling, branch pipe, nozzle used in hose reel tubing for fire fighting
8329- 2000	Centrifugally cast (spun) ductile iron pressure pipes & fittings for water, gas & sewage
8413 (Pt. I)	Requirements for biological treatment equipment
IS CODE	**SUBJECT**
8718- 1978	Specifications for vitreous enameled steel kitchen sinks
8727- 1978	Specifications for vitreous enameled steel wash basin
8835- 1978	Guideline for planning and design of surface drains.
8931- 1993	Specifications for copper alloys Fancy single taps, combination tap assembly & stop valves for water services
9140- 1996	Method of sampling of vitreous & fire clay sanitary Appliances
9338- 1984	Specifications for Cast Iron screw down stop valves and stop & check valves for water works purposes
9739- 1981	Specifications for Pressure reducing valves for Domestic water supply system.
9758- 1981	Flush valves and Fittings for water closets and urinals
9762- 1994	Specifications for polyethylene floats for float valves
9763- 2000	Specifications for Plastic Bib taps, pillar taps, angle valves and stop valves for hot & cold water service.
10221- 1982	Code of practice for coating and wrapping of underground M.S. steel pipeline,
10500- 1991	Specification of Drinking water
11189- 1985	Method of tube well development
11606 - 1986	Method for sampling of cast iron pipes and fittings.
11632 - 1986	Rehabilitation of Tube well
12183- 1987 (Pt. I)	Code of practice for Plumbing in multi-storied buildings (for water supply)
12231 - 1987	UPVC pipes for section & delivery lines of agricultural pumps–Specification.
12235 - 1986	Method of test for UPVC pipe for potable water supply
12288 - 1987	Code of practice for use and laying of Ductile Iron pipes.
12469 - 1988	Specifications for pumps
12592- 2002	Precast concrete frame & cover (SFRC frame & cover)
12701-1996	Specifications for rotational molded polyethylene water storage tanks
12709 - 1994	Glass fiber reinforce plastic(GRP) pipes, joints & fittings for use for potable water supply – Specification.
12818 - 1992	Spn. for UPVC ribbed screen casing & plain casing pipes for bore / tube well
12820 - 1989	Dimensional Req. of Rubber Gaskets for Mechanical Joints

	& push in joints for use with Cast Iron Pipes & fittings for carrying water, Gas & sewage.
13095 - 1991	Butterfly valves for general purposes
13114 - 1991	Spn. for forged brass gate, globe & check valves for water works purposes
13382-2004	Cast Iron specials for mechanical & push-on flexible joints for pressure pipelines for water, gas & sewage
13592- 1992	Specifications for PVC soil, waste & rain water (SWR) including ventilation pipes
13593 - 1992	UPVC pipes fittings for use with section and delivery lines for Agricultural pumps – Specification.
IS CODE	**SUBJECT**
13916 – 1994	Code of practice for installation of GRP piping system.
13983-1994	Specifications for stainless steel kitchen sinks & drain boards for domestic purpose
14333-1996	Specification for HDPE pipes for sewerage system.
14402-1996	GRP pipes, joints & fittings – Specification.
14735-1999	UPVC injection molded fittings for UPVC – SWR pipes – Specifications.
IS CODE	SUBJECT
14845- 2000	Resilient seated cast iron air relief valves for water works purposes – Spn
14846- 2000	Specifications for sluice valve for water works purposes (50 to 1200 mm size)
15265 – 2003	Specifications for flexible PVC pipes or polymer reinforcement thermo plastic hoses for suction and delivery lines for Agricultural pumps.
15328 – 2003	UPVC non pressure pipes for use in underground drainage and sewerage system – Specifications.
15450- 2004	Polyethylene/Aluminum/Polyethylene composite pressure pipes for hot and cold water supplies – Specifications.

1.0 SANITARY & CP FIXTURES

1.1 GENERAL REQUIREMENTS

1. Sanitary fixtures shall be of the best quality confirming to specification and subject to the approval of the Bank's Engineer/Consultants. Wherever particular makes are mentioned, the choice of selection shall remain with the Owner/Bank's Engineer.

2. All Appliances, fixtures and fittings shall be provided with all such accessories as are required to complete the item in working condition whether specifically mentioned or not in the Schedule of Quantities, specifications, and drawings. Accessories shall include proper fixing arrangement, brackets, nuts, bolts, screws and required connection pieces.

3. Fixing screws shall be half round head chromium plated brass screws with C.P. washers where necessary.

4. Porcelain sanitary ware shall be glazed vitreous china of first quality free from warps, cracks and glazing defects confirming to I.S. 2556.

5. Chromium plated fittings shall be cast brass chromium plated of the best quality approved by the Owner/ Bank's Engineers. Fixture Finishes like mirror/ mat/ or any other shall be as directed by Bank's Engineer.

6. All materials shall be rust proof; materials in direct/ indirect contact shall be compatible to prevent electrolytic or chemical (bimetallic) corrosion.

7. Sanitary appliances, subject to the type of appliance and specific requirements, shall be fixed in accordance with the relevant standards/ best practices by skilled labours.

8. All Appliances, fittings and fixtures shall be fixed in a neat workmanlike manner true to level and heights shown on the drawings and in accordance with the manufacturer's recommendations. Care shall be taken to fix all inlet and outlet pipes at correct positions. Faulty locations shall be made good and any damage to the finished floor, Filing Plaster, Paint, insulation or terrace shall be made good by the Contractor at his own cost.

9. CP Wall flanges shall be provided on walls, floors, etc. wherever supply/

discharge pipes pierce through them. These flanges/ fittings shall be large enough to cover punctures properly.

10. In case of free supply of sanitary wares & CP fittings by Client, the contractor shall be responsible for transportation of those items to the site, storage & proper handling till execution ends, installation/ fixing of these materials with required hardware, testing & commissioning.

11. Contractor shall, during the entire period of installation and afterwards protect the appliances by providing suitable cover or any other protection so as to absolutely prevent any damage to the appliances until handing over. (The original protective wrapping shall be left in position for as long as possible).

12. The appliance shall be fixed in a manner such that it will facilitate subsequent removal if necessary.

13. All appliances shall be securely fixed. Manufacturers' brackets and fixing methods shall be used wherever possible. Compatible rust- proofed fixings shall be used. Fixing shall be done in a manner that minimizes noise transmission.

14. Pipe connections shall be made with demountable unions. Pipe work shall not be fixed in a manner that it supports or partially supports an appliance.

15. Appliances shall be fixed so that water falls to the outlet.

16. Appliances shall be fixed true to level firmly fixed to anchor or supportsprovided by the manufacturer and additional anchors or supports where necessary.

17. Fixtures shall be generally installed at following heights or as directed by Bank's Engineer/ Engineer in charge.

Water Closet rimBidet rim	:	390 mm to top of bowl
	:	390 mm to top of bowl
Urinal	:	650 mm to top of bowl rim
Wash basin/ Sink rim	:	750-800 mm to top of bowl

18. Joints/ gaps between all sanitary appliances/fixtures & the floor/wall shall be caulked with an approved quality sealant, having antifungal properties, colour & shade to match that of the appliances/fixture & floor/wall to the extent possible.

19. Care shall be taken in fixing all approved CP fixtures & accessories so as not to leave any tool marks or damage on the finish. All fixtures shall be tightened with fixed spanner.

20. All fixtures shall be thoroughly tested after connecting the drainage & water supply system. All fixtures shall be thoroughly finished & any leakage in piping/ valves/ waste fittings shall be corrected to the complete satisfaction of Engineer in charge.
21. Upon completion of work, all labels, stickers, plaster, etc. shall be removed from the fixtures & all fixtures shall be cleaned with soap & water so as to present a neat & clean toilet.

1.2 EUROPEAN W.C.

1.2.1 SCOPE

1.2.1.1 The item pertains for providing white or color glazed vitreous chinaware European water closet with seat and cover of size and color as specified in the schedule or as directed by Bank's Engineerincluding all accessories & fixing, testing & commissioning.

1.2.2 MATERIAL

1.2.2.1 European W.C. shall be wash down type single or double siphonic type, floor or wall mounted set with integral 'P' or 'S' Trap set & shall conform to IS 2556 (Part I & II). The trap shall have minimum water seal of 50 mm.

1.2.2.2 The closet shall be of one piece construction and shall have minimum two hole of 6.5 mm diameter for fixing closet to floor. Closet shall have integral flushing rims of self draining type.

1.2.2.3 Each WC shall be provided with 110 mm (OD) Pan Connector connecting ceramic outlet of WC to soil pipe.

1.2.2.4 Each European W.C. set shall be provided with a solid plastic seat with cover in conformity to IS: 2548 Part I & II & of colour given in the schedule of quantities. They shall be made of molded from PP heavy duty material which shall be tough and hard with high resistance to solvents and shall be free from blisters and other surface defects & shall have rubber buffers and chromium plated hinges.

1.2.2.5 Each Anglo Indian W.C. shall be flushed with concealed/ exposed flushing cistern or an exposed or concealed type manual flush valve or sensor faucet as specifiedin bill of quantities. Material of cistern shall be Porcelain/ HDPE or as specified in schedule of quantities. Valves shall be of chromium plated brass. The flushing system shall be provided with all inlet/ outlet & overflow connections.

1.2.2.6 Optionally, European W.C. shall be with coupled cistern directly mounted on WCwith single or dual flow discharge as mentioned in schedule of quantities

1.2.3 FIXING

1.2.3.1 The water closet pan shall be placed in position as shown in the drawing. If the pan

trap is damaged during handling or fixing, it shall be replaced by the contractor at his own cost.

1.2.3.2 WC shall be fixed to floor using SS or non ferrous screws. Wall hung W.C. shall be supported by C.I. floor mounted chair with 75 mm. long 6.5 mm. diameter counter sunk bolts and nuts embedded in the wall concrete using rubber or fiber washers so as not to allow any lateral displacement. The pan, soil pipe shall be jointed in 1:1 Cement Mortar with hemp yarn caulked.

1.2.3.3 Joints between W.C. and flush pipe shall be made with a putty or white lead and linseed oil and caulked well or with an approved rubber joint.

1.2.3.4 The gap between W.C. and floor shall be finished with white/matching cement and sand as directed.

1.2.3.5 Seat and cover shall be fixed to the Pan by two corrosion resistance hinge with 65 mm shank and threaded to within 25 mm from of flange. Seat shall be fixed in level by providing the washers of rubber with non ferrous or stainless steel washer to bolt. Plastic seat shall be so fixed that it remains absolutely stationary in vertical position without falling down on the W.C.

1.2.3.6 Each WC shall be fixed with concealed/ exposed/ coupled flushing cistern/ manual flush valve/ sensor faucet with required brackets, hardware & accessories.

1.2.4 RATES

1.2.4.1 European type water closet with an integral `P` or `S` trap & plastic seat cover, etc.

1.2.4.2 Flushing Cistern/ Flush Valve with fixing brackets (only if called in BOQ).

1.2.4.3 Cast Iron Chair/ Bracket, Screws, Hardware.

1.2.4.4 Jointing & fixing material.

1.2.4.5 Cutting slab/ beam etc. wherever required. And making all damages good to original condition after completion of work.

1.2.4.6 Painting all the metallic parts with two coats of flat oil paint over a coat of primer.

1.2.4.7 Testing the entire system and rectification of defect if any.

1.2.4.8 All necessary labor, material and use of tools.

1.2.5 MODE OF MEASUREMENT

1.2.5.1 The measurement shall be for each unit of W.C. fixed.

1.2.6 MODE OF PAYMENT

1.2.6.1 The contract rate shall be for each unit of W.C. fixed.

1.4 FLUSHING CISTERN

1.4.1 SCOPE

1.4.1.1 The item pertains for providing Plastic/ Porcelain/ CI flushing cistern of size, flow and color as specified in the schedule or as directed by Bank's Engineerincluding all accessories & fixing, testing & commissioning for water closets & urinals.

1.4.1.2 The flushing cisterns shall be automatic or manually operated high level or low level, single/ twin flush flow, exposed/ concealed as specified in schedule of quantities.

1.4.2 MATERIAL & FIXING

1.4.2.1 The materials for manufacturing various components of the flushing cisterns shall conform to the requirements given below:

Sr.	Component	Material	Conforming to
1	Cisterns	High Density Polyethylene (HDPE) OR Polystyrene, high impact OR Polypropylene 1 OR Acrylonitrile butadiene styrene (ABS) OR Glass Fiber reinforced plastic (GRP)	IS: 7328 IS: 2267 - - -
2	Flush Pipe	Steel tube, seamless or welded, medium or light, completely protectedinside and outside by hot-dip galvanizing, electroplating or vitreousenameling OR Lead pipe OR Copper alloy tube OR High density polyethylene pipe OR Unplasticized PVC plumbing pipe	IS: 1239 (Part 1) IS: 404 (Part 1) IS: 407 IS: 2501
3	Cover	Same material as that of the body	-
4	Chain	Hot-dip galvanized steel wires Or Inter-locked non-ferrous metal Or Any other corrosion resistant material	-
5	Overflow Pipe	High density polyethylene Or Unplasticized PVC Or Any othercorrosion-resistant material	IS 4984; IS 4985

6	Siphon/Valve	High density polyethylene Or Polystyrene, high impact Or Polypropylene Or Acrylonitrile-butadiene-styrene Or Glass fiber reinforced plastic (GRP)	IS 7328; IS 2267
7	Operating Mechanism/L	Non-ferrous metal or any other corrosion-resistant material	-

	ever		
8	Float Valve	As specified in IS: 1703 Or IS: 12234 Or IS: 13049	-
9	Polyethylene float for float valve	As specified in IS: 9762	-
10	Coupling nutand lock-nut	Non-ferrous metal, Or Hot-dip galvanized steel Or Hot-dip galvanized malleable iron Or Any other non-corrosive metal Or Injection-molded HDPE/Polyacetal	-

Note: Where the requirements for the material are not specified, it shall be as directed by the Engineer in Charge.

1.4.2.2 When there is no clearance anywhere in it which would permit a 1.6 mm diameter wire to pass through. The outlet of each siphon or stand pipe or flush valve shall be securely connected to the cistern by means of a lock nut. In the case of plastic siphon, it shall be provided with suitable means of ensuring and maintaining watertight and airtight joint to the cistern.

1.4.2.3 The cistern shall be provided with a removable cover which shall fit closely and shall be secured against displacement. In designs, where the operating mechanism is attached to the cover, the cover may be made in two sections, the section supporting the mechanism being securely fixed or booked to the body.

1.4.2.4 Concealed cistern shall be in HDPE construction with front & top access panel. The installation shall have integral isolation valve & internal overflow warning. It shall have push fit inlet & flush pipe. Cistern shall be provided with fixing bracket& all accessories.

1.4.2.5 The flush pipe (except plastic flush pipe) shall have an internal diameter of 32 + 1 mm for high level cistern and 38 + 1 mm for low level cistern. The steel flush pipe shall be not less than 1 mm thick whereas the lead flush pipe shall have a minimum thickness of 3.5 mm. For high density polyethylene pipes, the outside diameter of the pipes shall be 40 mm. For unplasticized PVC plumbing pipes the outside

diameter of the pipe shall be 40 mm for high level cisterns, and 50 mm for low level cisterns. In the case of high level flushing cisterns, a pipe clip fitted witha rubber buffer shall be fixed to the flush pipe to prevent damage either to the pipe or to the seat when the seat is raised. No flush pipe is required for coupled cisterns.

1.4.2.6 A high level cistern is intended to operate with minimum height of 125 cm and a low level cistern with a maximum height of 30 cm between the top of the pan and the underside of the cistern.

1.4.2.7 The thickness of the body including cover at any point shall not be less than 2 mm for GRP, and not less than 3 mm for other plastic materials. The cistern shall be free from manufacturing faults and other defects affecting its utility. All working parts shall be designed so as to operate smoothly and efficiently.

1.4.2.8 The cistern shall be mosquito-proof. It shall be deemed to be mosquito proof only
Note: The minimum thickness specified is for normal conditions of service. Where highly corrosive atmospheres are expected, greater thicknesses are required tobe provided as per nomenclature of the item.

1.4.2.9 Flush Pipe Connection to Cistern:

a) The flush pipe shall be securely connected to cistern outlet and made airtight by means of a coupling nut. The nuts made of injection-molded HDPE/ Polyacetal may be used only if the end pipe is also made of plastic. The nominal internal diameter of the cistern outset shall be not less than 32 mm and 38 mm for high-level and low-level cisterns respectively.

b) The screw thread for connection to the flush pipe shall not be less than size 1½ of IS 2643 (Part 3). In the case of polyethylene and unplasticized PVC flush pipes, the upper end of the flush pipe shall be provided with suitable means of ensuring and maintaining a watertight and airtight joint to the flushing cistern. When ordered for use with a flush pipe, the outlet connection may be supplied with coupling nut made of copper based alloy or other non-corrodible material and a plain tail piece having a minimum length of 60 mm. The centre of the outlet hole shall be generally central to the length of the cistern. The length of the outlet shall be 37±2 mm in case of interchangeable siphon; however, where integral siphon is provided, the outlet length shall be 20±2 mm.
Note: The length of the cistern outlet shall be the dimension from the bottom surface of the cistern to the end of the outlet after the cistern with siphon/ stand pipe has been duly fitted with all washers, lock-nuts, etc.

1.4.2.10 Inlet and Overflow Holes

a) The cistern shall be provided with inlet and overflow holes, situated one at each end, which shall be capable of accommodating overflow pipe of not less than 20 mm nominal bore and a 15 mm size float valve. The holes shall be cleanly

molded or drilled and the adjacent surfaces shall be smooth.

1.4.2.11 Float Valve

a) The float valve shall be 15 mm nominal size and shall conform to IS 1703 or IS 12234 or IS 13049.

1.4.2.12 Operating Mechanism Lever

a) The operating mechanism/lever shall not project beyond the side of the cistern for a distance greater than 350 mm measured from the centre of the cistern to the end of the lever arm. The lever arm shall be provided with a suitable hole near the end through which a split rings or S-hook can be inserted. A string (chain) shall be attached to the ring or hook. When S-hookis employed, it shall be effectively closed after assembly to prevent accidental disconnection.

b) In the case of low-level cisterns, where the mechanism is handle operated, the handle, whether situated on the front (Face Plate) or at the end of the cistern, shall be within the projection limit. Particular attention shall be givento the case of operation of the handle.

c) String (Chain)
The string (chain) shall be of such strength as to sustain a dead load of 500 N without any apparent or permanent deformation.
The string (chain) shall terminate in a suitable handle or pull made of a molding in any heat resisting and non-absorbent plastic or any other equally suitable material. The finish shall be smooth and all burrs which are liable to cause injury to the hand when gripped shall be removed.

d) Optionally, pneumatically operated flush push buttons/ plates/ Electronic sensors are to be provided for operation of cistern

1.4.2.13 Overflow Pipe

a) The overflow pipe shall be of not less than 20 mm nominal bore and shall incorporate a non-corrodible mosquito-proof device secured in a manner which will permit it to be readily cleaned or renewed when necessary. No provision shall be made whereby the overflow from the cistern shall discharge directly into the water-closet or soil pipe without being detected.

b) The invert of the overflow pipe in the case of high-level and low level cisterns and the top edge of the overflow pipe in the case of coupled cistern shall be 19 mm (Min) above the working water level. In case of overflow due to anyreason, water should drain out through the overflow pipe and not through thesiphon pipe.

1.4.2.14 Finish

The surface of the cistern including cover shall be free from blisters and de-lamination and reasonably free from flow lines, streaking or colour variations. The

cistern and cover shall be opaque to light.

1.4.3 Operational and Performance Requirements

1.4.3.1 Flushing Arrangement

The cistern under working conditions and with the float valve in closed positionshall operate on a single operation of the operating mechanism/lever without calling for a sudden jerk in pulling. If a valve is used instead of siphon for flushing purposes, the valve shall be completely leak proof.

1.4.3.2 Working Water Level

The working water-level shall be a minimum of 6.5 cm. below the effective top edge of the cistern and shall be legibly and permanently marked on the inside of the cistern. Effective top edge shall be taken on edge after top of the body without considering bead.

1.4.3.3 Freedom from Self Siphonage

The siphon system shall be capable of being rapidly brought into action when the water is at the working water level, but shall not self siphon or leak into the flush pipe when the water is up to 1 cm above the invert of the overflow pipe.

1.4.3.4 Reduced Water Level

The discharge shall operate satisfactorily when the cistern is filled to a level up to 1 cm. below the working water level.

1.4.3.5 Discharge Capacity

When tested in accordance with IS 7231, cistern of 5 liters and 10 liters capacities, when required to give a full flush, shall respectively discharge 5 liters and 10 liters with variation of ± 0.5 liters. Dual-flush cistern of 10 liters capacity shall discharge alternatively a short flush of 5 ± 0.5 liters. Dual flush cistern of 6/3 or 4/2.6 liters capacity shall discharge 6 ± 0.5 liters or 4 ± 0.5 liters and alternatively a half flush of 3 ± 0.5 or 2.6 ± 0.5 liters.

1.4.3.6 Discharge Rate

When tested in accordance with IS 7231, the discharge rate shall be 10 ± 0.5 liters within 6 seconds and 5 ± 0.5 liters within 3 seconds for cistern of capacities 10 liters and 5 liters and 6 ± 0.5 liters within 6 second and 3 ± 0.5 liters within 3 second for cistern of 6/3 liters capacity respectively. The cistern shall be so designed that there is no appreciable variation in the force of the flush during the discharge of the required quantity of water. For coupled cisterns, this test shall not be applicable.

1.4.4 Special Requirements

1.4.4.1 Distortion Resistance Test

The cisterns, complete with its fittings, shall be installed and filled with water to the marked water line and observed for any distortion. The cistern shall not budge

more than 6 mm and the cover shall not be dislodged.

1.4.4.2 Dead Load Test

When the flushing mechanism incorporates chain pull or hand operated lever, the cistern, complete with its fittings, when installed and filled with water to the marked water line and tested by the application of a dead load of 230 N applied 6 mm from the end of the operating lever arm for 30 seconds, shall not distort to such an extent that any part becomes detached. In the case of other operating mechanism, the dead load applied shall be a mass equivalent to the operating force required to overcome the normal hydrostatic head; Thirty seconds after the load is removed, the function and appearance of the cistern shall not be impaired.

1.4.4.3 Front Thrust Test

The front thrust test shall be applied only to cisterns intended for low level use. The cistern complete with its fittings, when installed and filled with water to the marked water line and tested by the method described in IS 7231, shall not distort to such an extent as to be inoperable or unsightly when the load isremoved.

1.4.4.4 Impact Test

The cistern, complete with its fittings, when installed and filled as described in IS 7231 shall show no defect after one impact. Repeat the test but with the cistern empty. The cistern shall show no defect after the further impact.

1.4.5 RATES

1.4.5.1 Concealed/ Exposed high/ low level cistern with flush pipe.
1.4.5.2 Operating mechanism like lever/ chain/ pneumatic push buttons/ push plates/ electronic sensor.
1.4.5.3 Fixing Brackets, Accessories & Hardware.
1.4.5.4 Jointing & fixing material.
1.4.5.5 Cutting hole/ cutout in wall wherever required and making all damage good to original condition after completion of work.
1.4.5.6 Painting all the metallic parts with two coats of flat oil paint over a coat of primer.
1.4.5.7 Testing the entire system and rectification of defects if any.
1.4.5.8 All necessary materials, labor and use of tools.

1.4.6 MODE OF MEASUREMENT

1.4.6.1 The measurement shall be for each unit of Flushing Cistern fixed.

1.4.7 MODE OF PAYMENT

1.4.7.1 The contract rate shall be for each unit of Flushing Cistern fixed.

1.5 LAVATORY BASIN

1.5.1 SCOPE

1.5.1.1 The item pertains to for providing flat back/ angle back/ over or under counter type, with or without pedestal colored or white glazed vitreous china/ glass of best quality, size, shape and type specified in the Schedule of Quantities or asdirected by Bank's Engineerincluding all accessories & fixing, testing & commissioning.

1.5.2 MATERICAL

1.5.2.1 Wash basin shall conform to IS 2556 (Part IV) and I.S. 771-1979 & shall be of one piece construction.

1.5.2.2 Wash basin shall be provided with single tap/ double tap holes of size 28 mm square or 30 mm rounded.

1.5.2.3 Half/ full Pedestal shall be of same glazing as that of wash basin.

1.5.2.4 Each basin shall be provided with 32mm diameter C.P. waste coupling with overflow, pop-up waste or rubber plug and chain as given in the schedule of quantities, 32mm diameter C.P. Brass bottle trap with C.P. pipe to wall, flexible to angle cock and flange.

1.5.2.5 Waste Coupling shall confirm to IS 3311, and as specified in the item and of approved make. Waste fittings shall be of with thickness of coating not less than service Grade No.2 of IS 4827 which is capable of receiving polish and will not easily scale off. The fitting shall conform in all respect to IS 2963 and shall sound, free from laps below, holes and fittings and other manufacturing defect. External and internal surface shall be clean and smooth. They shall be neatly dressed. The waste fitting for wash basin shall be of nominal size of 32 mm.

1.5.2.6 The bottle trap shall be as specified in the item and of approved make. The bottle-trap shall be provided with a CP brass extension piece to the wall flange on one hand and on the other with a rubber adopter for waste connection.

1.5.2.7 Bottle trap shall be of thickness of coating not less than service grade No. 2 of IS 4827 which is capable of receiving polish and will not easily scale off. The fitting shall conform in all respect of IS 2963 and shall be sound, free from laps below, holes and fittings and other manufacturing defects. External and internal surface shall be clean and smooth. They shall be neatly dressed and be truly machined so that nut smoothly moves on the body. The Bottle trap for wash basin shall beof nominal size of 32 mm.

1.5.2.8 PVC water inlet connection shall conform to IS specifications and shall be of standard pattern with flexible hose of minimum 450 mm long with CP brass check nut at both the end and shall be able to withstand the testing pressure of 1 Mpa (10 kg/sq. cm.)

1.5.2.9 Each basin shall be provided with manual taps/ mixing (mono or thermostatic type)

fitting/ sensor tap as specified in the schedule of quantities.

1.5.3 FIXING

1.5.3.1 Wash basin shall be wall bracket mounted or half/ full pedestal mounted or over/ under counter mounted as specified in schedule of quantities or as directed by Bank's Engineer.

1.5.3.2 Wash basin shall be securely fixed to wall with R.S. or C.I. brackets and clips embedded in cement concrete (1:2:4) block of 100 x 75 x 150 mm.

1.5.3.3 The MS angle shall be provided with two coats of red oxide primer and two coats of synthetic enamel paint of make, brand and colour as approved by the Bank's Engineer/ Consultants.

1.5.3.4 In case of Counter mounted, Oval/ Round shape wash basins are required to be installed in RCC platform/ counter with stone topping either fully sunk in stone top or flush on stone topping.

1.5.3.5 The wall plaster on seat shall be cut to rest over the top edge of basin so as notto leave any gap for water seepage through between wall plaster and skirting of basin. The gap between wall & basin shall be finished with matching white cement.

1.5.4 RATES

1.5.4.1 Wash basin with/ without pedestal.
1.5.4.2 Brackets, Accessories & Hardware.
1.5.4.3 CP Waste Coupling, Bottle trap, flexible pipe.
1.5.4.4 Angle cock, Taps/ Sensor faucet, Mixer (if called in BOQ).
1.5.4.5 Jointing & fixing material.
1.5.4.6 Cutting hole/ wall wherever required and making all damage good to original condition after completion of work.
1.5.4.7 Painting all the metallic parts with two coats of flat oil paint over a coat of primer.
1.5.4.8 Testing the entire system and rectification of defects if any.
1.5.4.9 All necessary materials, labor and use of tools.

1.5.5 MODE OF MEASUREMENT

1.5.5.1 The measurement shall be for each unit of Wash basin fixed.

1.5.6 MODE OF PAYMENT

1.5.6.1 The contract rate shall be for each unit of Wash basin fixed.

1.6 <u>FLUSH VALVE</u>

1.6.1 SCOPE

1.6.1.1 The item pertains to provide chromium plated brass flush valve or brass exposed/ concealed type flush valve with lever/ push button or plate/ sensor operated with necessary accessories including fixing, testing & Commissioning for Urinals & Water Closets.

1.6.2 MATERIAL

1.6.2.1 The Flush valve shall be nominal diameter as specified in the schedule of quantities.

1.6.2.2 It shall be of C.P. brass approved and heavy quality, and shall conform to I.S. 9758.

1.6.2.3 The flush valve shall have working pressure of 0.15 to 0.5 Mpa. The valve shall be tested to a Hydraulic pressure of 2 Mpa for 2 minutes.

1.6.2.4 Flush valve shall have either single flow discharge or twin flow discharge per flush as specified in schedule of quantities

1.6.3 FIXING

1.6.3.1 Flush value shall be fixed to the pipe line as indicated in the drawing with necessary special as required or as ordered by Engineer in charge.

1.6.3.2 Jointing shall be done with white zinc, spun yarn/ Teflon tape etc.

1.6.3.3 A few turns of fine hemp yarn dipped in linseed oil/ Teflon tape shall be taken over the threaded ends to obtain complete water tightness. Leaky joint shall be remade to make it leak proof.

1.6.3.4 Flush valve shall be fixed either exposed or concealed in shaft/ wall with manual lever/ push button/ plate operation or with infrared sensor.

1.6.4 RATE

1.6.4.1 Flush Valve of size, type & operation as mentioned in schedule of quantities.
1.6.4.2 Accessories & Hardware, wall flanges.
1.6.4.3 Jointing & fixing material.
1.6.4.4 Cutting hole– cutout in floor/ wall wherever required and making all damage good to original condition after completion of work.
1.6.4.5 Painting all the metallic parts with two coats of flat oil paint over a coat of primer.
1.6.4.6 Testing the entire system and rectification of defects if any.
1.6.4.7 All necessary materials, labor and use of tools.

1.6.5 MODE OF MEASUREMENT

1.6.5.1 The measurement shall be for each unit of flush valve fixed.

1.6.6 MODE OF PAYMENT

1.6.6.1 The contract rate shall be for each unit of flush valve fixed.

1.7 HEALTH FAUCET

1.7.1 SCOPE

1.7.1.1 The item pertains for providing chromium plated Health Faucet as specified in the schedule or as directed by Bank's Engineerincluding all accessories & fixing, testing & commissioning.

1.7.2 MATERIAL

1.7.2.1 The health faucet shall be brass chromium plated or plastic or as specified in schedule of quantities. The chromium plating shall be of grade 'B' type conforming to I.S. 1068-2958.

1.7.2.2 Health faucet shall be provided with 1 mtr long flexible PVC tube and CP brass wall hook etc.

1.7.3 FIXING

1.7.3.1 The health faucet Hook & health faucet shall be fixed in position as per drawings or as directed by Bank's Engineer/ EIC.

1.7.3.2 The height shall be approx 45cm from floor level if not mentioned in the drawing.

1.7.3.3 The one end of 1.0 meter long pipe shall be connected to faucet & other end to the angle cock.

1.7.4 RATE

1.7.4.1 Health Faucet & flexible PVC hose/ tube.
1.7.4.2 Accessories, Hardware, mounting hook.
1.7.4.3 Jointing & fixing material.
1.7.4.4 Cutting/ drilling hole– cutout in wall wherever required and making all damagegood to original condition after completion of work.
1.7.4.5 Painting all the metallic parts with two coats of flat oil paint over a coat of primer.
1.7.4.6 Testing the entire system and rectification of defects if any.
1.7.4.7 All necessary materials, labor and use of tools.

1.7.5 MODE OF MEASUREMENT

1.7.5.1 The measurement shall be for each unit of Health Faucet fixed.

1.7.6 MODE OF PAYMENT

1.7.6.1 The contract rate shall be for each unit of Health Faucet fixed.

1.8 PILLAR TAP

1.8.1 SCOPE

1.8.1.1 The item pertains to provide chromium plated brass pillar tap of type, lever(spatula) operated or Pressmatic type as specified including fixing, testing &commissioning.

1.8.2 MATERIAL

1.8.2.1 The pillar tap shall be 15 mm nominal size or as specified in the schedule.

1.8.2.2 Fancy type pillar tap shall be of C.P. brass approved quality and shall conform to I.S. 8931. Non fancy pillar tap shall be chromium plated-brass and shall conform to IS 1795.

1.8.2.3 Casting of Pillar tap shall be sound and free from laps, blow hole and pitting.

1.8.2.4 External and internal surface shall be clean, smooth and free from sand and be neatly dressed.

1.8.2.5 All the parts fitted to pillar tap shall be axial, parallel and cylindrical with surfaces smoothly finished.

1.8.2.6 The minimum of finish weight of Pillar tap shall not be less than 650 grams (body weight 250 Gms, washer plate loose valve 150 Gms and back nut 40 Gms.

1.8.2.7 Thickness of C.P coating shall not be less than service grade no.2 of IS 4827 and plating should be capable of taking high polish which shall not easily tarnish or scale.

1.8.3 FIXING

1.8.3.1 Pillar tap shall be fixed to the pipe line as indicated in the drawing with necessary special as required or as ordered by Engineer-in-charge.

1.8.3.2 Jointing shall be done with white zinc, spun yarn/Teflon tape etc. A few turns of fine hemp yarn dipped in linseed oil/ Teflon tape shall be taken over the threaded ends to obtain complete water tightness.

1.8.3.3 Pillar tap shall withstand and internally applied hydraulic pressure of 2 Mpa (20 kg/sq.cm) for period of 2 minutes during which period, it shall neither leak nor sweat. Leaky joint shall be remade to make it leak proof without any extra cost

from the contractor.

1.8.4 RATE

1.8.4.1 Pillar Tap.

1.8.4.2 Wall flanges, Hardware & Accessories.
1.8.4.3 Jointing & Fixing material.
1.8.4.4 Cutting/ drilling hole– cutout in floor/ wall wherever required and making all damage good to original condition after completion of work.
1.8.4.5 Painting all the metallic parts with two coats of flat oil paint over a coat of primer.
1.8.4.6 Testing the system and rectification of defects if any.
1.8.4.7 All necessary materials, labor and use of tools.

1.8.5 MODE OF MEASUREMENT

1.8.5.1 The measurement shall be for each unit of pillar tap fixed.

1.8.6 MODE OF PAYMENT

1.8.6.1 The contract rate shall be for each unit of pillar tap fixed.

1.9 <u>BIB TAP/ STOP COCK/ ANGLE COCK</u>

1.9.1 SCOPE

1.9.1.1 The item pertains for providing chromium plated Bib Tap/ Stop cock/ AngularStop cock/ Angle Valve type (i.e. Pressmatic or threaded)& size as specified inthe schedule or as directed by Bank's Engineerincluding all accessories & fixing, testing & commissioning.

1.9.2 MATERIAL

1.9.2.1 It shall be 15 mm. dia. brass screw down type with chromium plating, and shall conform to I.S. 781-1977. The taps shall be quarter or full threaded. The bib cock shall be best Indian make and quality as specified in item and approved by Bank's Engineer/ Engineer In Charge.

1.9.2.2 A bib cock (stop tab) is a draw off tap with a horizontal inlet and free outlet and stop cock (stop tap) is a valve with a suitable means of connections for insertion in a pipeline for controlling or stopping the flow. They shall be of specified size and shall be of screw down type. The closing device should work by means of shuts against water pressure on a non-metallic washer, which shuts againstwater pressure on a seating at right angles to the exit of the threaded spindle, which operates it. The handle shall be either crutch or butterfly type securely seated pattern. The cocks (taps) shall open in anti-clockwise direction.

1.9.2.3 Brass bib taps and stop cocks and angle stop cocks shall conform to IS 781, they

shall be polished bright. The minimum finished weight of different sizes

1.9.2.4 of bib tap weight of 15 mm size bib tap and stop cock shall be as per table given below. They shall be sound and free from taps, blow hole and fitting. Internal & External surface shall be clean, smooth and free from sand and neatly dressed. Taps shall be nickel chromium plated and thickness of coating shall not be less than service grade No.2 of IS 4827 and plating shall be capable of taking high polish which shall not be easily tarnished.

1.9.2.5 Minimum finished mass of Bib Taps and Stop Valves as per IS: 781:1984 (Reaffirmed 2001).

Size	MINIMUM FINISHED MASS			
	Bib Taps	Stop valves		
		Internally threaded	Externally threaded	Mixed threaded
MM	KG	KG	KG	KG
8.0	0.250	0.220	0.250	0.235
10.0	0.330	0.330	0.350	0.325
15.0	0.400	0.330	0.400	0.365
20.0	0.750	0.675	0.750	0.710
25.0	1.250	1.180	1.300	1.250
32.0	-	1.680	1.800	1.750
40.0	-	2.090	2.250	2.170
50.0	-	3.700	3.850	3.750

1.9.3 FIXING

1.9.3.1 The body of stop cock of 15mm diameter with adjustable flange shall be as specified above shall be fixed on water supply line keeping the arrow in the direction of flow as per drawing or as directed.

1.9.3.2 Transition male/ female adapter with shall be used on either side for PVC pipes.

1.9.3.3 The threaded portion shall be smeared with white or red lead and around with a few turns of fine spun yarn/ Teflon tape round the screwed end of the cock.

1.9.3.4 On completion the of tiling work ,the outer part of stop cock shall be fixed to the brass body

1.9.3.5 Every tap complete with its component shall with stand an internally applied hydraulic pressure of 2 Mpa (20 kg/sq.cm) maintained for a period of 2 minutes during the period it shall neither leak nor sweat. Leaky joint shall be remade to make it leak proof without any extra cost from contractor.

1.9.4 RATES

1.9.4.1 Bib Tap/ Angle Valve/ Stop cock as specified in Schedule of Quantities.
1.9.4.2 Wall flanges & Hardware.
1.9.4.3 Jointing & fixing material.
1.9.4.4 Cutting/ drilling hole– cutout in floor/ wall wherever required and making all damage good to original condition after completion of work.
1.9.4.5 Painting all the metallic parts with two coats of flat oil paint over a coat of primer.
1.9.4.6 Testing the entire system and rectification of defects if any.
1.9.4.7 All necessary materials, labor and use of tools.

1.9.5 MODE OF MEASUREMENT

1.9.5.1 The measurement shall be for each unit of Bib tap/Stop Cock/Angle Valve fixed.

1.9.6 MODE OF PAYMENT

1.9.6.1 The contract rate shall be for each unit of Bib tap/Stop Cock/Angle Valve fixed.

1.10 WASTE COUPLING

1.10.1 SCOPE

1.10.1.1 The item pertains to provide chromium plated brass waste coupling including fixing, testing & commissioning.

1.10.2 MATERIAL

1.10.2.1 Waste Coupling shall confirm to IS 3311.

1.10.2.2 Waste fittings shall be of CP with thickness of CP coating not less than service Grade No.2 of IS 4827 which is capable of receiving polish and will not easily scale off.

1.10.2.3 The fitting shall conform in all respect to IS 2963 and shall sound, free from laps below, holes and other manufacturing defects. External and internal surface shall be clean and smooth. They shall be neatly dressed.

1.10.2.4 The waste fitting for wash basin shall be of nominal size of 32 mm and for sink shall be nominal size 40/50 mm unless otherwise specified.

1.10.3 FIXING

1.10.3.1 Waste coupling shall be fixed to wash basin, sink or urinal as ordered with necessary specials. Jointing shall be done with white zinc, yarn etc. A few turns of fine hemp yarn dipped in the linseed oil shall be taken over the threaded endsto obtain complete water tightness. Leaky joint shall be remade to make it leak

proof.

1.10.4 RATE

1.10.4.1 Waste coupling with necessary specials.
1.10.4.2 Jointing & fixing material.
1.10.4.3 Necessary civil work and making good to original condition after completion ofwork.
1.10.4.4 Testing the system and rectification of defects if any.
1.10.4.5 All necessary labor, material and the use of tools.

1.10.5 MODE OF MEASUREMENT

1.10.5.1 The measurement shall be for each unit of waste coupling fixed.

1.10.6 MODE OF PAYMENT

1.10.6.1 The contract rate shall be for each unit of waste coupling fixed.

1.11 BOTTLE TRAP

1.11.1 SCOPE

1.11.1.1 The item pertains to provide chromium plated brass bottle trap including fixing.

1.11.2 MATERIAL

1.11.2.1 Bottle trap shall be of C.P brass with thickness of CP coating not less than service grade No. 2 of IS 4827 which is capable of receiving polish and will not easily scale off.

1.11.2.2 The fitting shall conform in all respect of IS 2963 and shall be sound, free from laps below, holes and other manufacturing defects. External and internal surface shall be clean and smooth. They shall be neatly dressed and be truly machinedso that nut smoothly moves on the body.

1.11.2.3 The Bottle trap for wash basin & urinal shall be of nominal size of 32 mm and for sink shall be nominal size 40/50 mm. unless otherwise specified.

1.11.3 FIXING

1.11.3.1 Bottle trap shall be fixed to wash basin, sink or urinal as indicated in the drawing with necessary specials or as ordered by the Engineer-in-charge.

1.11.3.2 Jointing shall be done with white zinc, spun yarn etc. A few turns of fine hemp yarn dipped in linseed oil/ Teflon tape shall be taken over the threaded ends to

obtain complete water tightness. Leaky joint shall remake to make it leak proof.

1.11.4 RATE

1.11.4.1 Bottle trap with necessary specials.
1.11.4.2 Jointing & fixing material.
1.11.4.3 Necessary civil work and making good to original condition after completion ofwork.
1.11.4.4 Testing the system and rectification of defects if any.

1.11.4.5 All necessary labor, material and the use of tools.

1.11.5 MODE OF MEASUREMENT

1.11.5.1 The measurement shall be for each unit of bottle trap fixed.

1.11.6 MODE OF PAYMENT

1.11.6.1 The contract rate shall be for each unit of bottle trap fixed.

1.12 <u>TOWEL ROD/ TOWEL RING</u>

1.12.1 SCOPE

1.12.1.1 The item includes providing Towel rod/ towel ring of size as mentioned in the schedule including fixing.

1.12.2 MATERIAL

1.12.2.1 Towel rail shall be of SS or C.P brass with two CP brass bracket coated with chromium plating of thickness not less than grade No.2 of IS 4827.

1.12.2.2 The size of rail shall be 600 mm x 20 mm diameter unless otherwise specified in the schedule.

1.12.2.3 Towel ring of SS/ CP brass with one CP brass bracket with thickness not less than Grade No.2 of IS 4827.

1.12.2.4 The diameter of the ring shall be 175 mm unless otherwise specified in the schedule. The diameter of ring rod shall not be less than 8 mm.

1.12.3 FIXING

1.12.3.1 The towel rod/ ring shall be fixed to proper line and level as indicated in drawing with CP brass screws, wooden raw plug, drilling hole etc. and making good the wall to original condition after fixing the towel rod.

1.12.4 RATE

1.12.4.1 Towel rod rail/ ring CP brackets & screws etc.
1.12.4.2 Fixing material.
1.12.4.3 All necessary labor, material and the use tools.

1.12.5 MODE OF MEASUREMENT

1.12.5.1 The measurement shall be for each unit of towel rod fixed.

1.12.6 MODE OF PAYMENT

1.12.6.1 The contract rate shall be for each unit of towel rod fixed

1.13 SOAP DISH

1.13.1 SCOPE

1.13.1.1 The item includes providing white or color glazed chinaware type or CP brass or Glass soap dish of size as mentioned in the schedule including fixing.

1.13.2 MATERIAL

1.13.2.1 Soap Dish shall be of SS/ CP brass or vitreous China on specified and of size, design an approved by the Engineer in charge. Soap Dish shall conform torelevant IS standard and should have ISI certification mark.

1.13.3 FIXING

1.13.3.1 Soap Dish shall be fixed in position by means of C.P brass covers and rawl plug embedded in the wall.

1.13.3.2 Vitreous china Soap Dish shall fixed in recessed manner into the wall with 1:2 cement mortar. The pocket shall be cut in wall, if not left, finishing the gap with white/ matching cement.

1.13.3.3 Chrome plated Brass soap dish can be surface mounted by means of CP/ SS screws.

1.13.4 RATE

1.13.4.1 Soap dish.
1.13.4.2 Accessories & Hardware.
1.13.4.3 Cutting the pocket if they are not left in case of recessed fixing & drilling hole inwall in case of surface mounting.
1.13.4.4 Jointing & fixing material.
1.13.4.5 All necessary labor, material and the use of tools.

1.13.5 MODE OF MEASUREMENT

1.13.5.1 The measurement shall be for each unit of soap dish fixed.

1.13.6 MODE OF PAYMENT

1.13.6.1 Contract rate shall be for each unit of soap dish fixed.

1.14 MIRROR

1.14.1 SCOPE

The item pertains to provide Mirrors of size as specified including fixing.

1.14.2 MATERIAL & FIXING

1.14.2.1 Size of the mirror shall be as specified in schedule of quantities or as directed by Bank's Engineer. It shall be generally of make as specified in the approved make list oras directed by Bank's Engineer.

1.14.2.2 Mirror shall be with or without beveled edges.

1.14.2.3 Mirrors shall be free from all defects & shall give clear undisturbed image at any distance or angle.

1.14.2.4 Mirror shall be mounted on asbestos sheet or 6 mm plywood with brass countersunk screws & washers & detachable G.P. caps

1.14.3 RATES

1.14.3.1 Mirrors
1.14.3.2 Brackets, Accessories & Hardware.
1.14.3.3 Jointing & fixing material.
1.14.3.4 Making all damage good to original condition after completion of installation work.
1.14.3.5 Testing the entire system and rectification of defects if any.
1.14.3.6 All necessary materials, labor and use of tools.

1.14.4 MODE OF MEASUREMENT

1.14.4.1 The measurement shall be for each unit of Mirror fixed.

1.14.5 MODE OF PAYMENT

1.14.5.1 The contract rate shall be for each unit of Mirror fixed.

1.15 MULTI FLOOR TRAP

1.15.1 SCOPE

1.15.1.1 The item pertains to provide multi floor traps with grating including fixing, testing& commissioning.

1.15.2 MATERIAL & FIXING

1.15.2.1 The trap shall be of cast iron or PVC or SS as specified in schedule of quantities.
1.15.2.2 The trap shall be provided with SS/ CP brass/ PVC grating of size 100/ 150 mm size as specified in schedule of quantities.
1.15.2.3 The trap shall have generally water seal not less than 50 mm.
1.15.2.4 The trap shall have 150/ 100 mm inlet & 40/ 50/ 75/ 100 mm multiple outlets.
1.15.2.5 The trap & waste pipe shall be fixed in PCC 1:2:4, 100 mm around up to finished floor with water tight finishing & shall be firmly supported on structural floor.

1.15.3 RATES

1.15.3.1 Multi floor trap with grating cover.
1.15.3.2 Jointing & fixing material.
1.15.3.3 Making all damage good to original condition after completion of installation work.
1.15.3.4 Testing the entire system and rectification of defects if any.
1.15.3.5 All necessary materials, labor and use of tools.

1.15.4 MODE OF MEASUREMENT

1.15.4.1 The measurement shall be for each unit of Multi floor trap with grating fixed.

1.15.5 MODE OF PAYMENT

1.15.5.1 The contract rate shall be for each unit of Multi floor trap with grating fixed.

1.16 uPVC PIPE & FITTINGS

1.16.1 SCOPE

1.16.1.1 The item includes supplying of PVC pipes with fittings of specified diameter including laying, fixing, cutting, joining, painting etc.

1.16.2 MATERIAL

1.16.2.1 The uPVC pipe size & pressure class shall be as specified in schedule of quantities.

1.16.2.2 The pipes shall conform to IS: 4985 with its latest edition. Fittings shall confirm to IS: 7834 with its latest edition.

1.16.2.3 Fittings shall be of the same make as that of pipes. It shall be injection molded type.

1.16.2.4 PVC pipes and fittings shall be visually inspected before laying & shall be free from cracks, flaws and defects and shall be able to withstand a pressure as mentioned in the schedule of quantities. Cracked & damaged pipe shall be removed from the site by the contractor at his own cost. All the pipes and fittings shall be thoroughly cleaned with brush and washed if necessary to remove any accumulated stone, soil or dirt inside and outside surfaces.

1.16.2.5 The pipe shall be provided with bends, junctions, inspection doors, offsets, cowl, access pieces/ plugs etc. jointing with Solvent cement (lubricant) including cutting holes in walls and making good the same. The Access door shall be secured air and water tight with 3mm thick insertion rubber washer and white lead. The bolts shall be lubricated with grease or white lead for easy removal.

1.16.2.6 Lubricant/ solvent cement: It is available in 100 Gms, 250 Gms & 500 Gms packing. It is specially formulated for compatibility with rubber seal as well as PVC. It does not support the growth of bacteria or fungi. Solvent joints shall be used as per manufacturer's recommendations.

1.16.3 JOINTING & FIXING

1.16.3.1 The jointing of the pipes to the fittings shall be done as per the manufacturer's instructions/ recommendation.

The rubber ring socket fittings and pipes shall be jointed as follows:
The pipes and sockets shall be accurately cut. Care shall be taken that that profile or cut surfaces shall not be changed and the fibrous material shall be removed with scraper or knife. Clean the outside of the pipes spigot end and the inside of the ceiling groove of the fitting. Apply the lubricant/ solvent cement uniformly to the spigot end, sealing ring and pass the spigot end into the socket containing sealing ring until fully home.

Since solvent cement is aggressive to P.V.C., care must be taken to avoidapplying excessive cement to the inside of pipe sockets as any surplus cementcannot be wiped off after jointing. Mark the position of the socket edge with pencilor felt open on the pipe, then withdraw the pipe from the socket by approximately 10 mm to make the pipe fully fitted to the fitting.

1.16.3.2 Detachable joints shall be made where pipes of different materials have to be jointed or as specified in the schedule. The flanges are first pushed over the pipe

ends and jointing shall be made by cement solvent.

If manufacture recommends its own methods of jointing, the same shall beadopted after necessary approval from the Engineer in charge.

1.16.4 UNDERGROUND INSTALLATION

1.16.4.1 Pipe shall be laid in trenches of appropriate size. The trench bottom shall be carefully examined for the presence of hard objects such as flints, rock projection or tree roots etc. Pipe shall be embedded in sand or soft soil, free from rock & gravel, back fill 150mm above the pipe shall also be of fine sand or soft soil. Pipe shall not be painted. The width of trench shall not be less than outside diameterof pipe plus 300 mm in case of gravel soils. Pipe shall be laid at-least 900 mm below the ground level (measured from the surface of the ground to the top of pipe).

1.16.4.2 The entire length of pipe shall be evenly supported on bed of the trench throughout. Care shall be taken to prevent any sand, earth or other materials from entering into the pipes during laying. At the end of day's work the open end shall be suitably plugged.

1.16.4.3 The pipe shall also be encased if required as per site condition.

1.16.4.4 The work shall include bailing or pumping out all the water till completion or work if accumulated during the progress of work either from seepage, springs, rain or any other cause.

1.16.5 OVER GROUND INSTALLATION

1.16.5.1 For over ground exposed installation, to take care of thermal expansion, due allowance shall be made for any change in length of pipe line.

1.16.5.2 The pipe line shall be fixed in position as shown in the drawing or as directed by the Engineer-in-charge. The pipe shall be fixed with G.I. clamps not less than 2 mm thick or with suitable PVC clamps.

1.16.5.3 The clamps shall be fixed into the wall with G.I. nails not less than 40 mm long and wooden gutty. Spacing between clamps for fixing internal piping shall be as given below:

Pipe diameter	For Horizontal Runs	For Vertical Runs
20 mm	700 mm	1050 mm
25 mm	750 mm	1125 mm
32 mm	825 mm	1240 mm
40 mm	975 mm	1460 mm
50 mm	975 mm	1460 mm

1.16.5.4 The underground/ over ground pipes shall be carefully laid straight to the correct alignment or in gradients as indicated in the drawing. The entire pipe shall be used in standard length as far as possible. Cut length may be used only where itis necessary to make up exact length.

1.16.5.5 Pipes inside a toilet room shall be in chase unless otherwise shown on drawings. Where required pipes may be run at ceiling level and supported on structural with clamps.

1.16.5.6 In case of fixing of pipes and fittings on the slab & below flooring (sunk slab), these shall run on the surface of the slab under the floors, the pipe shall be laid in layer of sand filling & then apply PCC cover of 1:4:8 on the pipe.

1.16.6 PAINTING

1.16.6.1 If mentioned in schedule of work, the exposed pipe line shall be painted with two coats of approved oil paint of matching color over a coat of primer. Underground pipe line shall not be painted.

1.16.7 TESTING

1.16.7.1 Solvent welded pipe shall not be pressure tested until at least 24 hours after the last solvent cemented joint has been done. The openings of the pipes shall be sealed for the section to be tested. All control valves shall be positioned open for the duration of the test and open end closed with water tight fittings. The testing pressure on completion of the work shall not be less than 1.5 times the working pressure of the pipes.

1.16.7.2 Pressure shall be applied either by hand pump or power driven pump. Pressure gauges shall be calibrated, correctly positioned and closely observed to ensure that at no time are the test pressure exceeded. The systems shall be slowly and carefully filled with water to avoid surge pressure or water hammer. Air vents shall be open at all high points so that air may be expelled from the system during filling.

1.16.7.3 When the system has been fully charged with water and air displaced from the line air vent shall be closed and the line initially inspected for seepage at joints and firmness of supports under load. Pressure is reached. Without any additional requirement of make-up-water the test pressure should not fall more than 0.02 Mpa (0.2 kg./sq.cm)at the end of one hour test duration.

1.16.7.4 The water pressure shall be maintained for minimum of two hour with accurate pressure gauge. The engineer shall examine carefully all the joints for leakage. Any joint found leaking shall be redone, and all leaking pipes removed and replaced without extra cost.

1.16.8 RATES

1.16.8.1 PVC pipes and fittings of specified diameter & pressure class.
1.16.8.2 Laying and cutting the pipe wherever necessary and wastage.
1.16.8.3 Underground installation with all necessary civil work if specified in bill of quantities like excavation, dewatering, backfilling, bedding, encasing, etc. Or over ground installation with supports/ clamps, accessories required.
1.16.8.4 Making the solution joint, painting the pipe line if mentioned in schedule ofquantities.
1.16.8.5 Making all damage good to original condition after completion of installation work.
1.16.8.6 Testing the entire system and rectification of defects if any.
1.16.8.7 All necessary materials, labor and use of tools.

1.16.9 MODE OF MEASUREMENT

1.16.9.1 The measurement shall be for unit running meter length of pipe line laid of fixed. The measurement shall be taken along the center line of pipe. No measurement shall be recorded separately for fittings, making joint, supports, clamps, civil work, painting if mentioned in schedule of quantities.

1.16.10 MODE OF PAYMENT

1.16.10.1 Mode of payment shall be Unit length of pipe line laid or fixed. No extra payment shall be made for fittings, making joint, supports, clamps, civil work, painting if mentioned in schedule of quantities.

1.17 GUN METAL/ BRASS COPPER ALLOY GATE/ GLOBE/ CHECK VALVE

1.17.1 SCOPE

1.17.1.1 The item includes provision valves of type, size & pressure class as mentioned in the schedule of quantities including fixing, testing & commissioning.

1.17.2 MATERIAL

1.17.2.1 Full way valve shall be of either Brass fitted with a cast iron hand wheel or Gun metal fitted with a C.I. hand wheel or copper alloy as the case may be. Theweight of the full way gate valve shall be as per the table given below with a tolerance of 5 percent.

Dia-meter in mm	Flanged arch(Kg)	Screwed arch(Kg)
15	1.021	0.567
20	1.503	0.680
25	2.495	1.077
32	3.232	1.559
40	4.082	2.268

50	6.691	3.232
65	10.149	6.804
80	13.381	8.845

1.17.2.2 Check/NRV shall be either brass or Gun metal body with single door design

1.17.2.3 The valves shall have either screwed ends or flanged ends

ALL VALVES

1.17.2.3.1 All ball valves shall be heavy duty of approved make. Valves shall have suitable for pressure of PN 1.0/1.6.

1.17.2.3.2 Ball valves up to 80 mm shall have forged brass body, SS spindle & Teflon seat rings.

1.17.2.3.3 Ball valve shall conform to IS: 9890 or BS: 1868

1.17.2.4 SLUICE VALVES

1.17.2.4.1 Sluice valves shall conform to IS 14846 with PN 1.0/1.6 rating as specified. Valve body shall be cast iron & spindle, valve seat & wedge nut shall be of gun metal. The valve shall be generally non rising spindle design. The valve shall be provided with C.I. hand wheel for exposed installation & cap top for underground installation.

1.17.2.4.2 Valve shall be generally flanged ends & fitted by means of non corrosive bolt,nuts & asbestos fiber gaskets.

1.17.2.5 BUTTERFLY VALVE

1.17.2.5.1 All butterfly valves shall be heavy duty cast iron of approved make. The valves shall be suitable for PN 1 or PN 1.6 rating as specified & shall conform to IS: 13095 or BS: 5155. Valve shall be either wafer type design or flanged ends.Valve body shall be of cast iron & disc shall be of C.I. / C.S with EPDM disc seal & SS spindle. Valve shall have manual handle/ lever operation.

1.17.2.6 NON-RETURN VALVES

1.17.2.6.1 Non return valve shall be either lift single/ multi door type or spring operated check valves.

1.17.2.6.2 For sizing more than 50 mm, generally NRV shall be of Cast Iron body, CI / CS door.

1.17.2.6.3 Single door Non return valve shall conform to IS 5312 up to 600 mm. Size above 600 mm shall have multi door design. Spring operated shall conform to API 594/598 standard having spring for non slam action.

1.17.2.7 Material of Valves for hot water application shall withstand the temperature up to 80 deg. C.

1.17.2.8 Generally all internal valves (within the building) shall be of Gun Metal unless otherwise specified. All external installation on pipe line, plant rooms, etc. shall be of cast iron unless otherwise specified.

1.17.2.9 All valves up to 50 mm shall have screwed ends while all valves beyond 50 mm size shall have flanged ends. Flange dimensions shall conform to IS: 1538 Table IV & VI or IS: 6392 PN 1.0/1.6

1.17.3 FIXING

1.17.3.1 The valves shall be fixed in position in the pipeline as shown in the drawing or as directed with necessary socket or union, nuts, flanges, hardware, gaskets, tail piece, etc. During installation, flow direction on the valve shall be checked.

1.17.3.2 Valves shall be preferably installed in horizontal position, except butterfly valves which can be fixed in the vertical position.

1.17.3.3 Screwed valves after few turns shall be applied with Teflon tape over the threaded ends to obtain complete water tightness. Flanged joint shall be fixed with non corrosive bolts & nuts with suitable thickness asbestos fiber gasket conforming to IS 638 for water tightness.

1.17.4 TESTING

1.17.4.1 The valves shall be body & seat tested at manufacturer's works as per therelevant standard & duly stamped. Test certificate shall be submitted for material & hydraulic testing.

1.17.4.2 After fixing in the pipelines, the system shall be hydraulically tested for 1.5 times working pressure or 10 kg/cm2 whichever is higher for minimum 4 hrs without any pressure drop. In case of leakage, contractor shall rectify/replace valves at his own cost

1.17.4.3 Valves shall also be tested for its hand wheel/ lever function by frequent on-off operation.

1.17.5 RATES

1.17.5.1 Valve of required type, size & pressure rating.
1.17.5.2 Fixing & jointing material.
1.17.5.3 Painting.
1.17.5.4 Making all damage good to original condition after completion of installation work.
1.17.5.5 Testing.
1.17.5.6 All necessary materials, labor and use of tools.

1.17.6 MODE OF MEASUREMENT

1.17.6.1 The measurement shall be for each unit valve of specified diameter fixed.

1.17.7 MODE OF PAYMENT

1.17.7.1 The contract rate shall be for each unit of valve of specified diameter fixed. No extra payment shall be made for G.I. fittings used in fixing of the valve.

1.18 UPVC- SWR PIPING WORK

1.18.1 SCOPE

1.18.1.1 The item includes supplying of UPVC soil, waste and rain water (SWR) and ventilation pipes with fittings of specified diameter including laying, fixing, cutting, joining, painting if required etc.

1.18.2 MATERIAL

1.18.2.1 The pipes shall conforming to IS 13592, UPVC - SWR (Type 'A' or 'B' as specified) and fittings conforming to IS 13591 shall be free from cracks, flaws and defects and shall be U.V. stabilized and able to withstand a pressure as mentioned in the schedule of work. Rubber sealing rings conforming to IS: 5382 with lubricant for sliding socket joints as mentioned in the schedule of work.

1.18.2.2 EXAMINING
Before laying the pipe line, it shall be first examined for damages and cracks, No cracked or damaged pipe and fittings shall be used in the work and they shall be removed from the site by the contractor at his own cost and charge.

1.18.2.3 CLEANING
All the pipes and fittings shall be thoroughly cleaned with brush and washed if necessary to remove any accumulated stone, soil or dirt inside and outside surfaces.

1.18.3 LAYING, FIXING & JOINTING

1.18.3.1 The pipes shall be carefully laid straight to the correct alignment in gradients as indicated in the drawing. The entire pipe shall be used in standard length as faras possible. Cut length may be used only where it is necessary to make up exact length. The entire length of pipe shall be evenly supported on bed of the trench throughout. Care shall be taken to prevent any sand, earth or other materials from entering into the pipes during laying. At the end of day's work the open end shall be suitably plugged.

1.18.3.2 The pipe line shall be fixed in position as shown in the drawing or as directed by the Engineer-in- charge. The pipe shall be fixed with G.I. clamps not less than 2.0 mm thick of with suitable UPVC clamps/ clips, The clamps/ clips shall be

fixed into the wall with G.I. nails not less than 40 mm long and wooden gutties keeping the pipe about 15 mm clear of the wall.

1.18.3.3 The jointing of pipes and fittings generally shall be done with approved make cement solvent including making surface rough or rubber sealing rings with lubricant for sliding socket joints . The pipe shall be cut to desired length. Care shall be taken that that profile or cut surfaces shall not be changed and the fibrous material shall be removed with scraper or knife.

1.18.4 DETACHABLE JOINT

1.18.4.1 Detachable joints shall be made where pipes of different materials have to be jointed or as specified in the schedule. The flanges are first pushed over the pipe ends and jointing shall be made by cement solvent.

1.18.5 PAINTING

1.18.5.1 In case of underground piping, the pipe line shall be painted with two coats of approved oil paint of matching color over a coat of primer.

1.18.6 DEWATERING & CIVIL WORK

1.18.6.1 In case of underground pipes, the contract rate shall include bailing or pumping out all the water till completion or work if accumulated during the progress of work either from seepage, springs, rain or any other cause. The rate shall also include for excavation, refilling, etc. civil work required if specified in schedule of quantities. Pipe shall be laid with suitable bedding, encasing as per actual site condition. For concealed piping, chasing, drilling holes in wall, etc. shall be covered under the rate.

1.18.7 TESTING

1.18.7.1 The joints shall be tested by either smoke test for vertical stacks or 2.5 m head of water at the highest point of the section under test for horizontal drainage pipes. Smoke shall be pumped into the pipes at the lowest end from a smoke machine which consists of a below and burner .The material usually burnt is greasy cotton waste which gives out a clear pungent smoke which is easily detectable by sight as well as by smell, if there is leak at any point of the drain. The water head test shall be carried out by suitably plugging the lower end of the drain and the ends of the connection if any and filling the system with water. A knuckle bend shall be temporarily jointed to it so as to provide required test head , or the top may be plugged with a connection to a hose ending in a funnel which could be raised or lowered till the required head is obtained and fixed suitable for observation. The leaky joints shall be remade and section re-tested at no extra cost.

1.18.8 RATES

1.18.8.1 Supplying of UPVC-SWR pipes and fittings of specified diameter.

1.18.8.2 Laying and cutting the pipe wherever necessary and wastage.

1.18.8.3 Fixing the pipe line with G.I. clamps not less than 2mm thick and G.I. / M.S. nailslength not less than 40mm or with UPVC clamps, screws, wooden gutties etc.

1.18.8.4 Making the solution joint and painting if mentioned in schedule of work the pipeline.

1.18.8.5 All civil work required for concealed piping.

1.18.8.6 In case of underground pipes, dewatering if necessary till completion of work, excavation, refilling, etc civil work if specified in schedule of quantities.

1.18.8.7 Testing of pipes.

1.18.8.8 Making all damage good to original condition after completion of installation work.

1.18.8.9 All necessary materials, labor and use of tools.

1.18.9 MODE OF MEASUREMENT

1.18.9.1 The measurement shall be for unit running meter length of pipe line laid of fixed. The measurement shall be taken along the center line of pipe. No measurement shall be recorded separately for fittings, making joint, painting, civil work if mentioned in schedule of work and testing.

1.18.10 MODE OF PAYMENT

1.18.10.1 The contract rate shall be for unit running meter length of pipe line laid or fixed.

2.0 PLUMBING MAKE LIST

SR	ITEM DESCRIPTION	MAKE
01	Sanitary ware	As per Bank's Engineer selection
02	C P Fittings & Bathroom Accessories	As per Bank's Engineerselection
03	C P Grating	Chilly/ Futura
04	Ball Valve	Sent/ Zoloft/ Leader/ Honeywell
05	Gun Metal Wheel Valve	Sent/ Zoloft/ Leader/ Honeywell
06	UPVC Pipes/ Fittings	Astral/ Supreme/ Finolex
07	CPVC Pipes/ Fittings	Astral/ Supreme/ Finolex
08	SWR Pipes/Fittings	Astral/ Supreme/ Finolex

Each and every duct piece to have a tag number, which should correspond to the serial number, assigned to it in the measurement sheet. The above system will ensure speedy and proper site measurement and verification.

Unless otherwise specified, measurements for ducting for the project shall be on the basis of centerline measurements described herewith

Ductwork shall be measured on the basis of external surface area of ducts. Duct measurements shall be taken before application of the insulation. The external surface area shall be calculated by measuring the perimeter comprising overall width and depth, including the corner joints, in the center of each duct section, multiplying with the overall length from flange face to flange face of each duct section and adding up areas of all duct sections. Plenums shall also be measured in a similar manner.

For tapered rectangular ducts, the average width and depth shall be considered for perimeter, whereas for tapered circular ducts, the diameter of the section midway between large and small diameter shall be adopted, the length of tapered duct section shall be the centerline distance between the flanges of the duct section.

For special pieces like bends, tees, reducers, branches and collars, mode of measurement shall be identical to that described above using the length along the centerline.

b. Special Items for Air Distribution shall be measured by the cross-section area perpendicular to air flow, as identified herewith :

i. Grilles and registers - width multiplied by height, excluding flanges. Volume control dampers shall form part of the unit rate for registers and shall not be separately accounted.

ii. Diffusers - cross section area for air flow at discharge area, excluding flanges. Volume control dampers shall form part of unit rate for supply air diffusers and shall not be separately accounted.

iii. Linear diffusers - shall be measured by cross-sectional areas and shall exclude flanges for mounting of linear diffusers. The supply air plenum for linear diffusers shall be measured with ducting as described earlier.

iv. Fire dampers - shall be measured by their cross sectional area perpendicular tothe direction of air flow. Quoted rates shall include the necessary collars and flanges for mounting, inspection pieces with access door, electrical actuators andpanel. No special allowance shall be payable for extension of cross section outside the air stream.

D) ELECTRICAL WORK:

1.0 SCOPE:

The scope of this section comprises of fabrication, supply, erection, testing and commissioning of electric control panels, wiring and earthing of all air-conditioning equipment components and accessories, including supply, installation and wiring of remote control with indicating lamps.

The following exclusions from this contract may be provided by Owner, through other agencies, as per special conditions of contract.

i. Wiring and earthing of incoming breakers in the air-conditioning plant roomcontrol panel.

ii. Supply, installation, wiring and earthing of 15 amps three pin socket in vicinity ofeach fan coil unit if any and each single phase ventilation fan.

2.0 GENERAL:

Work shall be carried out in accordance with the specifications of local rules, Indian Electricity Act 1910 as amended upto date, and rules issued there under, regulations of the Fire Insurance Company and Indian Standard Code of practice No. IS: 732-1963 (latest upto date). Wiring for items of work not covered by any of the above regulations. Wiring rules in the 13th edition of the Institution of Electrical Engineers (London) shall apply.
Definition of terms shall be as per the rules of the Institution of Electrical Engineers (London).

3.0 WIRING SYSTEM:

All power wiring shall be carried out with 1100 volt grade XLPE/PVC insulated, armoured, overall, PVC sheathed aluminum conductor cables. Cables shall be sized for starting current and by applying proper derating factor. All control wiring shall be carried out by using 1100 volts PVC insulated copper conductor wires in wire ways or in conduit. Minimum size of control wiring shall be 1.5 sq.mm.

4.0 CONSTRUCTION FEATURES:

The control panel shall be metal enclosed sheet steel cubical indoor type, dead front, floor mounting/wall mounting type. The control panel shall be totally enclosed, completely dust and vermin proof, Gaskets between all adjacent units and beneath, all covers shall beprovided to render the joints dust proof. Control panels shall be arranged in multitier formations. All doors and covers shall be lockable. All mild steel sheets used in the construction of control panels shall be 2mm. thick and shall be folded and braced as necessary to provide a rigid support for all components. Joints of any kind in sheet metal shall be seam welded, all slag grounded off and welding pits wiped smooth with plumber metal.

All panels and covers shall be properly fitted and square with the frame and holes in the panel correctly positioned. Fixing screws shall enter into holes tapped into an adequate thickness of metal or provided with hank nuts. Self threading screws shall not be used in the construction of control panels. Base channel of 75mm x 75mm x 5mm thick shall be provided at the bottom. Minimum clear space of 200mm between the floor of control panel and bottom most unit shall be provided.

The control panels shall be of adequate size with a provision of 25% spare space to accommodate possible future additional switch gear. Knockput holes of appropriate size and number shall be provided in the control panels in conformity with the location of incoming and outgoing conduits/cables. All equipment such as meters and indicating lamps, etc shall be located adjacent to the unit with which it is associated and care shallbe taken to achieve a neat and symmetrical arrangement. Facility shall be provided for termination of cables from both above and below the control panel. Where cables enter below, cables boxes shall be fitted at the rear and arranged in tiers to facilitate making connections to the upper and lower units. Clamps shall be provided to support the weightof the cables. All incoming and outgoing feeders shall be brought out to a terminal block of adequate size at suitable location inside the control panel. All wiring inside the control panel shall be colour coded and labeled with approved plastic beads for identification. Circuit diagrams showing the arrangement of circuits shall be pasted on the inside of the

panel door and covered with transparent plastic sheet and all labeling shall be providedon the front face of the panel board.

5.0 CIRCUIT COMPARTMENTS:

Each circuit breaker, contactor and relay shall be housed in a separate compartment and shall be enclosed on all sides. Sheet steel hinged lockable door shall be duly interlocked with the breaker in the `ON' position. Safety interlocks shall be provided to prevent the breaker or Contactor from being drawn out when the breaker is in the draw out portion ofthe panel. Instruments and indicating lamps shall not be mounted on the panel compartment door. Sheet steel barriers shall be provided between the tiers in a vertical section.

7.0 TERMINALS:

The outgoing terminals and neutral links shall be brought out to a terminal block suitably located in the control panels. The current transformer for instruments, metering and for protection shall be mounted on the terminal blocks. Separate cable compartment shall beprovided for incoming and outgoing cables.

8.0 WIRE WAYS:

A horizontal wire way screwed covers shall be provided at the tip to take in the connecting control wiring in different vertical sections.

9.0 CABLE COMPARTMENTS:

Cable compartments of adequate size shall be provided in the control panels for easy termination of all incoming and outgoing cables entering from bottom or top. adequate and proper supports shall be provided in cable compartments to support cables. All incoming and outgoing terminals shall be brought out to terminal blocks in the cable compartment.

10.0 MATERIALS:

All materials shall be of the best quality complying with the appropriate Indian Institutionsand British Standard specifications, Materials used shall be subject to the approval of the Bank's Engineer/Consultant and sample of the same shall be furnished where required.

a. Air Circuit Breaker:

The air circuit breakers shall be sheet metal enclosed flush front, draw out type, and shall be provided with a trip free manual operating mechanical "ON" - "OFF" indications. The circuit breaker shall be suitable for continuous rating and ofcapacity as called for. It shall be possible to switch. "ON & "OFF" the circuit breaker without opening the circuit breaker compartment door. The operating handle and the mechanical trip push button shall be at the front of the breaker and integral with the breaker.

Cradle:

The cradle shall be so designed and constructed as to permit smooth withdrawal and insertion of the breaker into it. The movement shall be free from jerks, easily operable and shall be on steel balls/rollers and not on flat surfaces.

There shall be four distinct and separate position of the circuit breaker on the cradle.

Service	Both main and secondary isolating contacts closed.
Test	Main isolating contacts separated and secondary isolatingcontacts closed.
Isolated	Both main and secondary isolating contacts isolated.

Maintenance	Circuit breaker full outside the panel ready for maintenance. There shall be provision for locking the breaker in any or all of the first three positions.
Maintenance	Circuit breaker full outside the panel ready for maintenance. There shall be provision for locking the breaker in any or all of the first three positions.

b. Moulded case circuit breaker (MCCB)

The Moulded case circuit breaker (MCCB) shall conform to latest IEC-60 947-2 / IS13947- 2. The MCCBs should have test certificates for breaking capacities from recognized independent test authorities. The circuit breaker shall comply with theisolation function requirement of IEC 60 947-2 section 7.1.2 to marked as suitablefor isolation / disconnection to facilitate safety of operating personnel while the breaker is in use

MCCB shall be suitable for rated operational voltage of 690 V AC, 50 Hz.

The minimum service breaking capacity (Ics) shall be 35 KA upto 250A MCCBs and50 KA for MCCBs above 250 Amp rating.

The MCCBs shall be current limiting type with total tripping time of less than 10 millisecond under short circuit conditions. The MCCBs shall be 3 pole or 4 pole, with 100% neutral rating for 4 pole version, unless otherwise specified in schedule of quantities.

The MCCBs shall have a rated short circuit breaking capacity (Ics) as specified in the schedule of quantities.

MCCBs shall be provided with thermal magnetic release up to 250 Amp and microprocessor trip unit above 250 Amp rating having adjustable overload and instantaneous short circuit protections unless otherwise specified in BOQ / SLD.

MCCB shall be provided with Class II insulation between from cover and internal power circuits to avoid any accidental contact with live current carrying path with the front cover open.

MCCBs shall be made of halogen free high strength heat resisting and flame retardant thermosetting insulating material.

MCCB shall conform to Glow Wire Test as per IEC-60695-2 with superior qualityof engineering grade plastics used for insulation purpose.

The operating mechanism of the MCCB shall be quick make/break, trip free type. ON, OFF and TRIP indications shall be provided, unless otherwise specified.

All MCCBs shall be fitted with the rotary operating mechanism with facility ofpadlocking suitably interlocked with the door unless otherwise specified.

The MCCBs shall have spreader links and phase barriers as standard feature.

For motor application, motor duty MCCBs (as SCPD) shall be selected withreference to Type 2 coordination chart.

c. Cables:

M.V. cables shall be XLPE insulated aluminum conductor and armoured cables conforming to latest IS. MV cables shall be armoured and suitable for laying in trenches, duct, and on cable trays as required. MV cables shall be termite resistant. Control cables, and indicating panel cables shall be termite resistant. PVC insulated copper conductor and armoured cables.

d. Wires:

1100 volts grade PVC insulated aluminum conductor wires in conduit shall beused.

11.0 CABLE LAYING:

Cable shall be laid generally in accordance with Indian Standard Code of practice. Cable shall be laid on 14 gauge perforated M.S. sheet (Galvanized tray for outdoor application) cable trays as approved by the Supervisor. Easy access to all cables shall be provided to allow cable withdrawal/replacement in the future. Where more than one cable is running, proper spacing shall be provided to minimize the loss in current carrying capacity.

Cable shall be suitably supported with wooden cleats when run on wall/floor ducts. Whenburied, they shall be covered with a layer of soft shifted sand and protected with cement concrete tiles bricks. Special care shall be taken to ensure that the cable are not damaged at bands. The radius of band of the cables when installed shall not be less than 12 times the diameter of the cable.

12.0 EARTHING:

Shall be in galvanised Iron Strips/wires, or copper strips/wires as mentioned in Bill of Quantities.

i.	3 phase switches and control panels upto 60 Amps rating.	2 Nos. 3mm dia copper Wires.
ii.	3 phase switches and control panel 125 amps to 200 Amps rating	2 x 6mm dia copper wire.
iii.	3 phase switches and control panels 63 Amps to 100 Amps rating	2 Nos. 4mm dia copper wires.
iv.	3 phase switches and control panels, bus ducts above tapes 200 Amps rating.	2 Nos. 3mm x 6mm copper.

13.0 RATING :

All components, accessories, cables etc specified, shall be operational for rated capacities at 55 degree centigrade operating temperature.

14.0 DRAWINGS:

Shop drawings for control panels and wiring of equipment showing the route of conduit/cable shall be submitted by the contractor for approval of Bank's Engineer/Consultant before starting the fabrication of panel and starting the work. On completion, four sets of completion "As-installed" drawings incorporating all details like, conduit routes, number of wires in conduit, location of panels, switches, junction/pull and cable route etc. shall be furnished by the Contractor.

15.0 PAINTING:

All sheet steel work shall undergo a process of degreasing, through cleaning, and painting with a high corrosion resistant primer. All panels shall then be baked in an oven. The finishing treatment shall be by application of synthetic enamel paint of Siemens Gray, Pheroze or any other shade approved by Owner/Bank's Engineer/Consultant.

16.0 TESTING:

Before commissioning of the equipment, the entire electrical installation shall be tested in accordance with latest Code of practice and test report furnished by a qualified and authorised person. The entire electrical installation shall be got approved by Electrical Inspector and a certificate from Electrical Inspector shall be submitted. All tests shall be carried out in the presence of supervisor.

E) BALANCING AND COMMISSIONING:

1.0 General:

Perform following testing and commissioning to approval:

Hydraulic tests (testing and balancing) including water flow balancing and thermal capacity testing of .

Excessive noise & vibration testing.

2.0 Criteria:

Systems shall be balanced and adjusted to give design/operating conditions under following criteria:

- Tolerance of air flow quantities : 3% S.A. Ducts, 5% other ducts
- Tolerance of water flow quantities : 5%
- Maximum noise level reading : NC-35 in occupied spaces.
- Maximum current load on motors : 100% of nameplate capacity

3.0 Reports:

3.1 On completion, supply at least six copies of balancing and test report, suitably bound, 8 ½" x 11" size for checking and review. submit completed reports within three weeks oftesting and balancing.

3.2 Reports shall include all design data together with recorded data of all tests for comparison and schematic of each system and components.

3.3 Report all temperatures in Degree Celsius. For convenience, reports may also show temperature in Fahrenheit but only as secondary data.

3.4 Reports should show schematic of each system. Location of each traverse should be mark and each outlet should have corresponding number.

3.5 Keep a record of all tests and have these signed by General Contractor's superintendent and where applicable, equipment Manufacturer's Representative. Show in an approved schedule form, record of systems or parts of systems tested or intended to test, date of test, circumstances such as pressure, temperature, duration of test and any special remarks pertaining to events during test.

3.6 Final Report Shall Include:

- Specified and achieved total air quantities per system.
- Specified and achieved individual air quantities for each VAV box complete with sp.
- Specified and achieved individual air quantities per outlet with supporting schematic diagrams.
- Specified and actual fan total SP with breakdown showing inlet and discharge pressure.
- Sheaves and belt sizes and quantities per unit.
- Each pump suction pressure, head pressure, amps and voltage, nameplate amperage and voltage.
- Specified and achieved total water flow per system.
- Specified and achieved individual water flow and pressure drop though Cooling Tower and Chiller.

4.0 Testing:

4.1 carry out all tests specified. Test equipment to requirement of and where necessary, in presence of equipment manufacturer.

4.2 Tests for balancing shall proceed only after system installation has been completed and system has been put into continuous operation.

SECTION – : LIST OF APPROVED MATERIAL IN ORDER OF PREFERENCE

a) All materials and product used in the works shall conform to the relevant standards / specification and shall be of approved make and design. A list of approved manufacture / vendors is given herein below. The approval of a manufacture / vendor shall be given only after review of the sample / specimen by the Engineer-In-Charge. The complete system and installation shall be in conformity with the "Applicable Codes Standards and Publication".

b) List of Approval makes for Product, Materials and specialist agencies is given below. Other equivalent manufacture may be considered with prior approval; however the decision of the Engineer-In-Charge shall be final.

c) The Contractor while quoting shall quote for first make only. However at the time of execution, if first make is not available, then the other makes may be considered with prior approval from Engineer In charge/ Consultant/ Bank's Engineers. However the decision of the Engineer-In-Charge shall be final.

Note- SPECIFICATIONS/BRAND NAMES of materials and finished approvedby the Bank's Engineer/Employer are listed below: However equivalent materials and finished of any other specialized firms may be used, in case it is established thatthe brands specified below are not available in the market are subject to the approval of the alternative brand by the EIC of Bank Only.

**Contractor has to considered make as given in the list of Approved make only. Ifnot mentioned in approved list for any item, then bank shall considered the make mentioned in the technical specification and approved by EIC.

LIST OF ACCEPTABLE MAKES FURNISHING MATERIALS

S. NO.	ITEM	DESCRIPTION
1.	REINFORCEMENT STEEL	Tata,Sail,Jindal,Rathi
2.	AAC BLOCK	Bilt
3.	CEMENT	Ordinary Portland cement 53 grade manufactured by Acc/ Jaypee/ Ultra Tech/Ambuja Pozzolona cement shall not be used.
4.	POLYSULPHIDE SEALANT	Pidiseal by M/S Pidlite INDUSTRIES Ltd., Fosroc, Shalimar
5.	WATER PROOFING COMPOUND	Cico ,Fosroc, Dr Fixit,Pidilite
6.	SHUTTERING PLYWOOD	Indian Green Century.
7.	TOUGHENED GLASS	Sait Govind/Modi,Trutuf or equivalent
8.	GLASS/LACQUERED GLASS	Modi Float. St. Gobain.,
9.	WIRED GLASS	6mm thk. Wired glass manufactured by Hindustan Safety Glass Works Ltd. Calcutta, Or Vallabh Glass Works Gujrat./HARYANA SHEET GLASS.
10.	WHITE CEMENT	J.K. White Cement , Birla White Cement
11.	PLASTIC,ENAMEL PAINT	Enamel, Plastic Emulsion manufactured by Paint and Primer Berger Paints, Asian Paints, Nerolac ICI.
12.	PLASTER OF PARIS	Birla,J.K
13.	PUTTY	Asian Paints., JK, Birla
14.	EXPANSION BOLTS FOR FIXING	Dash Fasteners of appropriate size by HILTI OR M/S. Dev Ashish Trades
15.	WINDOW HARDWARE	Hettich, Kaff, Ebco.
16.	CERAMIC TILES	Johnson,Somany,Kajaria,AGL ,
17.	VINYL FLOOR	Armstrong, Rikvin , Wonder Floor.
18.	VITRIFIED TILES	Johnson, Somany, Kajaria,AGL,Nitco

19.	GLAZED TILES	Johnson,Somany,Kajaria.AGL,Nitco ,
20.	SPECIAL CERAMIC TILES	Khurja/AGL/Somany or approved by Bank's Engineer
21.	HINGES AND DRAWER SLIDE	Kaff, Hettich, ozone (telescopic channel for drawer and key board and slide -on hingesfor wooden cabinet shutters)
22.	LOCKS, HANDLES	Godrej, Dorset, Dorma
23.	DOOR CLOSERS, FLOOR SPRING AND HARDWARE FITTING	Dorma, Dorset, Ozone,
24.	ALUM, TOWER BOLTS,HARDWAREFITTING	Ebco, Everite, Sigma
25.	MS SCREW	Nettle Fold,Crab
26.	M.S. PIPES (RAILING)	Jindal or Prakash.
27.	FLUSH DOORS	Duro, Century, Greenply, Archid
28	VENEER	Duro, Century, Green
29.	LAMINATE DECORATIVE LAMINATE	Archid, Greenlam, Century,Sunmica
30.	PLYWOOD, BLOCK BOARD ,	Duro, Century, Green, Archid.
31.	STRUCTURAL STEEL	Sail, Tisco, Jindal.
32.	TEXTURE TILES FOR FALSE CEILINGS / FIBER CEMENT BOARD	Armstrong,Everest Industries Ltd.
33.	WOOD	Teak Wood First Class of CP or Burma
34.	M.S. ALUMINIUM LINEAL CEILING	Interarch, Vista.
35.	VENETIAL BLINDS,ROLLER BLIND	Trac, Vista, Mac. Hunter douglas
36.	GYPBOARD CEILING	Gypsum India, St. Gobain
37.	HEAT REFLECTIVE FILM	Garware, 3M,
38	ADHESIVE	Fevicol SH, Century, Vemicol,bluecoat
39.	TILE ADHESIVE	Unitile, Roff Chemicals, Kajaria.
40	MIRROR	Atul, Jolly, Modi Guard
41.	G.I.PIPE AND FITTINGS	Tata, Jindal, Appolo, Unik,
42.	CENTRIFUGALLY CAST (SPUN) IRON SOIL WASTE & VENT PIPE &FITTINGS	JayaswalNeco (Nagpur), C.I.A.L. (Durgapur)
43.	WOOD PRESERVATIVE	Wood Guard or Approved EQ/ICI.
44.	ALUMINIUM COMPOSITE SHEET	Alucobond, Alstone, Eurobond.
45.	ALUMINIUM SECTIONS	Jindal, Indal, Hindalco.
46.	C.I./R.W.P.	Neco, RIF, IIS OR EQ.
47	C.P BRASS FITTING	Jaguar, Parko ,Parryware
48.	SANITARY WARE	Hindware, Parryware, Jaguar, Hindustan Sanitary Ware,
49.	STAINLESS STEEL SINK	Diamond ,Nirali, Jayna, Nilkanth,

50.	SANITARY FITTINGS VISIBLE	Jaguar, Cera Grohe OR Equivalent ISI Make
51.	PVC,U.P.V.C PIPE	Supreme, Prince, Astral, Finolex or Equivalent ISI Make
52.	CI BRASS LA PIPES	Electro Steel, Kesoram or approved
53.	STONE WARE PIPES	Bhaskar, Anand, ISI marked of approved quality
54.	R.C.C PIPES	ISI marked of approved quality
55.	LOFT TANK	Syntax, Uniplas, Polycon
56.	CI PIPES & WORK	Neco, RIF,SIF,BIS OR Equivalent ISI Make
57.	Anti termite	Bayer,PCE, Lindane,chloropyriphos
58.	GATE VALVES	Leader, Zoloto
59.	PLASTIC W.C SEAT COVER	Commander, Diplomant
60.	GUN METAL VALVE(FULL WAY CHECK &GLEBE Valves)	Leasde,Sant, Zoloto
61.	C.I VALVE (FULL WAY CHECK & GLEBE VALVES	Kirloskar, Leader, Zoloto
62.	CPVC	Prince, Astral, Finolex , Supreme,
63.	READY MIX CONCRETE	Acc, Ultratech, RmcIndia ,Lafarge

Signature of the Tenderer/s With the Seal of the Company

Date:

Place

Signature of the Tenderer/s With the Seal of the Company

Date:

Place

TECHNICAL SPECIFICATION OF ELECTRICAL WORKS

1.0 CODES AND STANDARDS

The work shall be carried out as per the tender specifications confirming to following codes and standards for equipment and installation thereof.

STANDARDS

	TITLE
Codes for Practice / Guide	
IS: 732 - 1989	Code of practice for electrical wiring installations
IS: 4648 – 1968	Guide for electrical layout in residential buildings
IS: 8061 - 1976	Code of practice for design, installation and maintenance of service lines upto and including 650V.
IS: 8884 - 1978	Code of practice for installation of electric bells and call system.
IS: 5578 - 1985	Guide for marking of insulated conductor.
IS: 11353 - 1985	Guide for uniform system of marking and identification of conductors and apparatus terminals.
IS: 10118 (Part-1) - 1982	Code of practice for selection, installation and maintenance of switchgear and control gear: General.
IS: 4201 - 1983	Application guide for current transformers.
IS: 2309 - 1989	Code of practice for the protection and allied structures against lightning.
IS: 3043 - 1987	Code of practice for earthing.
IS: 5216 (Part-2) - 1982	Guide for safety procedures and practices in electrical work: General.
IS: 5216 (Part-2) - 1982	Recommendation on safety procedure and practices in electrical works – life saving techniques.
IS: 374 - 1979	Electric ceiling type fans and regulators.

IS: 11037 - 1984	Electronic type fan regulators.

Low voltages switchgear and control gear

IS: 12155 - 1987	General and safety requirements for fans and regulators for household and similar purposes.
IS: 8828 - 1996	Electrical accessories – circuit breakers for over current protection for household and similar installation.
IS: 13032 - 1991	A.C.Miniature circuit breaker boards for voltages upto and including 1000 volts AC.
IS: 12640 – Part I 1988	Residual current operated circuit breakers without integral over current protection.
IS: 12640 – Part II 1988	Residual current operated circuit breakers with integral over current protection.
IS: 2959 - 1985	Contactors for voltages not exceeding 1000 V AC or 1200 V DC.
IS: 8623 (Part-2) - 1993	Particular requirements for bus bar trunking system.

Power Cable

IS: 694 - 1990	PVC insulated cables for working voltage upto and including 1100V.
IS: 1554 (Part –1) - 1988	PVC insulated (heavy – duty) electric cables: For working voltages upto and including 1100V.
IS: 3961 (Part –5) - 1968	Recommended current ratings for cables: PVC insulated light duty cables.

Electric wiring accessories

IS: 9537 (Part –1) – 1980	Conduits for electrical installations General requirements.
IS: 9537 (Part –2) - 1981	Conduits for electrical installations: Rigid steel conduits.
IS: 3480 – 1966	Flexible steel conduits for electrical wiring.

IS: 2667 - 1988	Fittings for rigid steel conduits for electrical wiring.
IS: 3837 - 1976	Accessories for rigid steel conduits for electrical wiring.
IS: 9537 (Part –3) - 1983	PVC conduit for electrical installation rigid PVC conduit.
IS: 3854 - 1997	Switches for domestic and similar purposes.
IS: 4615 - 1968	Switch socket outlets (non-interlocking type)
IS: 4160 - 1967	Interlocking switch socket outlet.
IS: 1293 – 1988	Plugs and socket outlets of rated voltage up to and including 250 volts and rated current upto and including 16 amperes.

Electrical lamps and their auxiliaries

IS: 418 - 1978	Tungsten filament general service electric lamps.
IS: 2418 (Part –1) - 1977	Tubular fluorescent lamps for general lighting service: Requirements and tests.
IS: 2215 - 1983	Starters for fluorescent lamps.
IS: 1534 (Part –1) - 1977	Ballast for fluorescent lamps: For switch start circuits.
IS: 1569 - 1976	Capacitors for use in tubular fluorescent high-pressure mercury and low-pressure sodium vapor discharge lamp circuits.

Miscellaneous

IS: 2551 - 1982	Danger notice plates.

Safety

IS: 4770 – 1991	Rubber gloves for electrical purposes.
IS: 5424 – 1969	Rubber mats for electrical purposes.

1.0 GENERAL SPECIFICATIONS

1.1 Drawings: DELETED

The work shall be carried out in accordance with the drawings enclosed with the tender documents and also in accordance with modification thereto from time to timeas approved by the Owner / Consultant/ Project Manager.

1.2 Conformity to IE Act, IE Rules and Standards:

All Electrical works shall be carried out in accordance with the provisions of Indian Electricity Act, 1910 and Indian Electricity Rules, 1956 amended up to date (Date of call of tender unless specified otherwise).

1.3 Quality of Materials:

All materials and equipments supplied by the contractor shall be new. They shall be of such design, size and materials as to satisfactorily function under the rated conditions of operation and to withstand the environmental conditions at site.

1.4 Inspection of Materials and Equipments:

a) Materials and equipments to be used in the work shall be inspected by the Owner / Consultant/ Project Manager. Such inspection will be of following categories:

   i) Inspection of materials/equipments to be witnessed at the Manufacturer's premises in accordance with relevant BIS/ Agreement Inspection Procedure.

   ii) To receive materials at site with Manufacturer's Test Certificate(s).

   iii) To inspect materials at the Authorized Dealer's Godowns to ensure delivery of genuine materials at site. .

   iv) To receive materials after physical inspection at site.

b) The Consultant /Project Manager will take adequate care to ensure that only tested and genuine materials of proper quality are used in work.

c) Similarly, for fabricated equipments, the contractor will first submit dimensional detailed drawings for approval before fabrication is taken up in the factory. Suitable stage inspection at factory also will be made to ensure proper use of materials, workmanship and quality control.

d) The tender specifications will stipulate the Inspection requirements or their waiver for various materials/equipments including norms of inspection in specific cases.

1.5 Ratings of Components:

a) All components in a wiring installation shall be of appropriate ratings of voltage, current, and frequency, as required at the respective sections of the electrical installation in which they are used. .

b) All conductors, switches and accessories shall be of such size as to becapable of carrying the maximum current, which will normally flow through them, without their respective ratings being exceeded.

1.6 Conformity to Standards:

a) All components shall conform to relevant Indian Standard Specifications, wherever existing. Materials with ISI certification mark shall be preferred.

1.7 Interchangeability:

Similar parts of all switches, lamp holders, distribution boards, switch gears, ceiling roses, brackets, pendants, fans and all-other fittings of the same type shall be interchangeable in each installation.

1.8 WORKMANSHIP:

Good workmanship is an essential requirement to be complied with. The entire work of manufacture/fabrication, assembly and installation shall conform to sound engineering practice.

1.9 Proper Supervision/Skilled Workmen:

The contractor shall be a licensed electrical contractor of appropriate class suitable for execution of the electrical work. He shall engage suitably skilled/licensed workmen of various categories for execution of work supervised by supervisors / Engineer of appropriate qualification and experience to ensure proper execution of work. They will carry out instructions of Owner / Consultant/ Project Manager during the progress of work.

1.10 Use of quality materials:

Only quality materials of reputed make as specified in the Approved List of Makes will be used in work. Any other item to be used but not specified in the list shall be approved by Client/Consultants.

1.11 Fabrication in Reputed Workshop:

Switch boards and LT panels shall be fabricated in a factory/workshop havingmodern facilities like quality fabrication, seven tank process, powder/epoxy paint plant, proper testing facilities, manned by qualified technical personnel.

The tender shall specify some quality makes of fabricators with modern facilities of design, fabrication and testing capable of delivering high quality LT panels and switch boards after testing as per relevant specifications.

1.12 TESTING:

All tests prescribed in these General Specifications, to be done before, during and after installation, shall be carried out, and the test results shall be submitted to the Project Manager in prescribed Performa, forming part of the Completion Certificate.

1.13 COMMISSIONING ON COMPLETION:

After the work is completed, it shall be ensured that the installation is tested and commissioned.

1.14 GUARANTEE

The installation will be handed over to the Client after necessary testing and commissioning. The installation will be guaranteed against any defective workmanship. Similarly, the materials supplied by the contractor will be guaranteed against any manufacturing defect, inferior quality.

MINIATURE CIRCUIT BREAKERS

The MCB's shall be of the completely moulded design suitable for operation at 240/415 Volts 50 Hz system. MCB’s shall be quick make and break type conforming to relevant IS. Housing shall be heat resistant and have a high impact strength. MCB’s shall be flush mounting type and shall be provided with trip free manual operating liver with ON/OFF indications

MCB’s shall be provided with magnetic thermal releases for over current and short circuit protection. The overload or short circuit device shall have a common trip bar in case of DP and TPN MCB’s. The MCB's shall have inverse time delayed thermal overload and instantaneous magnetic short circuit protection. The MCB time current characteristic shall coordinate with H.R.C. fuse/PVC cable characteristic.

The MCB's shall have a minimum breaking capacity of 10 kA at 230/415 volts in accordance with IEC : 898 - 1995 and IS : 8828 – 1996

MOULDED CASE CIRCUIT BREAKERS

1.0 GENERAL

Moulded case circuit breakers shall be incorporated in the switch board wherever specified. MCCB shall conform to IEC:947-II or IS:13947-II in all respects.MCCB shall be suitable for three phase 415 volts AC. Suitable discrimination shall be provided between upstream and down stream breakers in the range of 10-20 milli seconds. All MCCBs will have earth fault module (if specifically asked) and front operated. All four pole MCCB shall be suitable for three phase four wire system, with the neutral clearly identified and capable of first make last break feature.

2.0 CONSTRUCTION

The MCCB cover and case shall be made of high strength heat-resistant and flame retardant thermosetting insulating material, operating handle shall be quick make/quick break. The operating handle shall have suitable `ON' `OFF' and `TRIPPED' mechanical indicators notable from outside. All MCCBs shall have a common operating handle for simultaneous operation and tripping of all the three phases. The MCCB should be suitable for disconnection and isolation with marking on front name plate.

Suitable arc extinguishing device shall be provided for each contact. Tripping unit shall be thermal-magnetic type provided on each pole and connected by a common trip bar such that tripping of any one pole operates all three poles to open simultaneously. Thermal magnetic tripping device shall have IDMT characteristics for sustained over load and short circuits. All MCCBs above 250 Amps will also have short circuit magnetic pickup level adjustment.

MCCBs

All MCCBs shall have variable thermal overload releases which can be adjusted at site.

3.0 Contact tips shall be made of suitable arc resistant, sintered alloy for long electrical life. Terminals shall be of liberal design with adequate clearances. All MCCBs of higher ratings above 250 Amps, shall be provided with separate extended arcing contacts.

4.0 INTERLOCKING

Moulded case circuit breakers shall be provided with the following interlocking devices for interlocking the door of a switch board.

a) Handle interlock to prevent unnecessary manipulations of the breaker.
b) Door interlock to prevent the door being opened when the breaker is in ON or OFF position.

c) Defeat-interlocking device to open the door even if the breaker is in ON position.

5.0 BREAKING CAPACITY

The moulded case circuit breaker shall have a rated service. Short circuit breaking capacity of not less than 25 KA rms at 415 volts AC. Wherever required, higher breaking capacity breakers to meet the system short circuit fault shall be used.

6.0 ACCESSORIES

All the accessories like shunt, under voltage contact blocks shall be of snap fitting possible at site.

7.0 TESTING

a) Original test certificate of the MCCB shall be furnished.

b) Pre-commissioning tests on the switch board panel incorporating the MCCB shall be done as per standard specifications.

WIRING

1 GENERAL

Technical Specifications in this section cover the Internal Wiring Installations comprising of :

- Wiring for lights and convenience socket outlets etc. in concealed/surface conduit/raceways.
- Wiring for telephone outlets.
- Submain wiring.
- Conduiting for Low Voltage System

2 STANDARDS AND CODES

Latest upto date Indian Standard (IS) and Code of Practice will apply to the equipment and the work covered by the scope of this contract. In addition therelevant clauses of the Indian Electricity Act 1910 and Indian Electricity Rules 1956 as amended upto date shall also apply. Wherever appropriate Indian Standards arenot available, relevant British and / or IEC Standard shall be applicable.

3 CONDUITS

3.1 Steel Conduits

These shall be of mild steel 16 gauge upto 32mm and 14 gauge for sizes above 32mm, electric resistance welded (ERW), electric threaded type having perfectly circular tubing. Conduits shall be precession welded ERW and shall be fabricated from tested steel strips of thickness as per IS by high frequency induction weld process. Weld shall be smooth and of consistent of high quality to ensure crack proofbending. The conduits shall be black enamel painted inside and outside in its manufactured form. Wherever so specified, the conduit shall be galvanized. All conduits used in this work shall be ISI embossed.

3.2 MS Conduits

The electrical wiring shall be done in recessed MS Conduits, unless mentioned otherwise.

No conduit less than 25 mm in diameter shall be used, unless otherwise specifically ask by Consultant / Project Manager.

3.3 PVC Conduits (if required)

Wiring shall be carried out in recessed /surface PVC conduits. The PVC conduits conform to latest and shall be ISI embossed. The conduits shall be heavy gauge

(minimum 2 mm wall thickness) and the interiors of the conduits shall be free from all obstructions. All joints in conduits shall be sealed/cemented with approved solvent cement. Damage conduits/fittings shall not be used. Cut ends of conduits shall not have sharp edges.

3.4 Bends

As far as possible, the conduit system shall be so laid out that it shall obviate use of tees, elbows and sharp bends. No length of conduit shall have more than the equivalent of two quarter bends from inlet to outlet.

3.5 Conduit Accessories.

3.5.1 Standard accessories

The conduit wiring system shall be complete in all respects, including their accessories. Bends, couplers etc. shall be solid type in recessed type of works and may be solid or inspection type as required, in surface type of works. The accessoriesshall conform in all respects to the relevant IS. Samples shall be got approved by Consultant / Project Manager before use.

3.5.2 Fabricated accessories

Wherever required, outlet/junction boxes of required sizes shall be fabricated from 1.6 mm thick MS sheets excepting ceiling fan outlet boxes which shall be fabricated from minimum 3 mm thick sheets. The outlet boxes shall be of approved quality, finish and manufacture. Suitable means of fixing connectors etc., if required, shall be provided in the boxes. The boxes shall be protected from rust by zinc phosphate primer process. Boxes shall be finished with minimum 2 coats of enamel paint of approved colour. A screwed brass stud shall be provided in all boxes as earthing terminal.

3.6 Open/Surface Conduit System with FRLS PVC Conduits:

a) Wherever specifically called for, surface conduit system shall be adopted. All conduits shall be of rigid FRLS PVC pipe. All conduits and its accessories shall be of threaded type. Conduits shall run in parallel, perpendicular, square and Symmetrical lines. Before the conduits are installed, the exact route shall be marked at the site and approval of the Construction Manager/ Consultant shall be obtained. Conduits shall be fixed by heavy duty FRLS PVC saddles (or as per standard accessories specified bythe manufacturer and as approved by the Consultant), secured by suitable rawl plugs, at an interval of not more than 1 meter. Wherever, couplers, bends, or similar fittings are used saddles shall be provided at either side at a distance of 300 mm from the center of such fittings. Conduits shall be joined by means of screwed couplers and screwed accessories only. In long distancestraight runs of conduit, inspection type couplers /junction boxes shall be provided. Threading shall be long enough to accommodate pipe to the full

threaded portion of the couplers and accessories. Cut ends of conduits shall have neither sharp edges nor any burrs left to avoid damage to insulation of wires.

b) Bends in conduit runs shall be done by using readymade bends with inspection elbows / standard elbows as per the instructions of the Consultant / Construction Manager / as per site requirements. Sharp bends shall be accomplished by introducing solid bends, inspection bends or heavy duty PVC / FRLS PVC inspection boxes. Radius of solid bends shall not be less than 75mm. Not less than 90-degree bend shall be used in a conduit run from outlet to outlet.

c) Wherever conduits terminate into control boxes, outlet boxes, distribution boards etc, they shall be rigidly connected to the box with check nuts on either side of the entry.

d) Steel wire /fish wire shall be drawn in each conduit.

e) Separate PVC insulated copper conductor earth wire shall be drawn in each conduit.

f) Draw boxes shall be located at convenient location for easy drawing of wires.

g) Every mains and submains shall run in an independent conduit with an independent earth wire of specified capacity along the entire length of conduit.

h) The conduit to be installed shall be of ample cross section area to facilitate the drawing of wires. The diameter of the conduit shall be selected as per table specified in these specifications; but in no case it shall be less than 20 mm diameter.

i) Entire conduit layout shall be done such as to avoid additional junctions boxes other than for outlet points. Conduits shall be free from sharp edge and burrs. Conduits shall be laid in a neat and organized manner as directed and approved by the Construction Manager/Consultant. Conduit runs shall be planned so as not to conflict with any other services pipe, lines/duct.

j) The conduit shall be painted with two coats of enamel paint, color as approved by the Construction manager/ Consultant after installation.

k) If required, connection between PVC or FRLS PVC and steel conduits shall be through a junction box. Direct connection between PVC and steel conduits are not allowed.

l) Where exposed conduits are suspended from the structure, they shall be clamped firmly and rigidly to hangers of design to be approved by the Construction Manager/Consultant. Where hanger supports are to be anchored

to reinforced concrete, appropriate inserts and necessary devices for their fixing shall be left in position at the time of concreting, making holes and opening in the concrete will generally not be allowed. Where inserts are not provided, contractor shall use only anchor fasteners. In case, it isunavoidable, prior permission of the Construction Manager /Consultant shall be obtained to make any openings in the concrete surface.

m) **Conduit Joints:**

Conduit pipes shall be joined by means of screwed couplers and screwed accessories, as per IS: 2667. The threads shall be free from grease or oil. In long distanced straight runs of conduit, inspection type couplers at reasonable intervals shall be provided or running threads with couplers and lock nuts shall be provided. The bare threaded portion shall be treated with anti- corrosive paints. Threads on conduit pipes in all cases shall be between 11mm or 27mm long, sufficient to accommodate pipes to full threaded portion of couplers or accessories. Cut ends of conduit pipes shall have neither sharp edges nor any burrs left, to avoid damage to the insulation of conductors while pulling them through such pipes.

Brass female bushes shall be used in each conduit termination in a switch box, outlet box, electrical panel or any other box.

Conduit shall be secure in each outlet box, switch box, electrical panel or any other box by means of one PVC / FRLS FRLS PVC/brass hexagonal lock nut and bush, outside and inside the box.

At each building expansion joints, approved oil tight double wire wound flexible steel conduit or any other approved method shall be used. This shall be united on both sides with the rigid conduits by suitable union.

Conduits installed in the plant room for mechanical equipment shall be properly clamped with the mechanical supports, but in no case, it shall be fixed with the body of the equipment.

The connection of conduit to the mechanical equipment shall be through oil tight double wire wound flexible steel conduit. In any case the length of the flexible conduit shall not exceed one meter. The flexible conduit shall be properly clamped with the body of the equipment. They shall not in any case be clamped to any cover or any removable parts of the equipment.

n) **Bends of Conduits:**

All necessary bends in the system including diversion shall be done by bending pipes or by inserting suitable solid or circular inspection type normalbox or similar fittings. Conduit fittings shall be avoided as far as possible on conduit system exposed to weather, where necessary, solid type fittings shall be used. Radius of such bends in conduit pipes shall be not less than 75mm. No length of conduit shall have more than the equivalent of four-quarter bends from outlet, the bends at the outlets not being counted.

o) Protection against Dampness:

In order to minimize condensation or sweating inside the conduit, all outlets of conduit system shall be properly drained and ventilated, but in such a manner as to prevent the entry of insects, as far as possible.

p) Protection of Conduit Against Rust:

The outer surface of the conduits including bends, junction boxes, etc., forming part of the conduit system shall be adequately protected against rust, particularly when such system is exposed to weather. In all cases, no bare/ threaded portion of conduit pipe shall be allowed unless such bare threaded portion is treated with anti-corrosive coating or covered with approved plastic compound.

All screwed and socketed connections shall be adequately made fully water tight by the use of proper joining material i.e. white lead for metal conduits.

q) Bunching of Cables:

Unless otherwise specified, insulated conductors of different phases shall be bunched in separate conduit.

Wires carrying current shall be so bunched in the conduit that the outgoing and return wires are drawn in to the same conduit. Wires originating from two different phases shall not be run in the same conduit.

The number of insulated wires/cables that can be drawn into the conduits shall be as per the following table.

MAXIMUM PERMISSIBLE NUMBER OF 1100 VOLTS GRADE SINGLE CORE CABLE THAT CAN BE DRAWN INTO FRLS FRLS PVC CONDUITS.

CABLE SIZE IN SQ. MM	SIZE OF CONDUITS (MM) [MAX.NO. OF CABLES]				
	20	25	32	40	50
1.5	5	10	14	-	-
2.5	5	8	12	-	-
4.0	3	6	10	-	-
6.0	2	5	8	-	-
10.0	-	4	7	10	-
16.0	-	3	5	6	-

25.0	-	-	3	4	6
35.0	-	-	2	3	5
50.0	-	-	-	-	4

4. WIRES

Wiring shall be carried out with FRLS PVC insulated 660/1100 volt grade unsheathed single core wires with electrolytic annealed stranded copper (unlessotherwise stated) conductors conforming to latest IS Code. All wire rolls shall be ISI marked. All wires shall bear manufacturer's label and shall be brought to site in new and original packages. Manufacturer's certificate, certifying that wires brought to siteare of their manufacture shall be furnished as required.

5 COAXIAL CABLES

The coaxial cables shall be of videband type with operation up to 300 MHz capability. Aging resistance shall comply with latest code i.e. maximum 5% increase in attenuation at 200 MHz measured by artificial aging (14 days at 80o C) cables shall meet all exceed following specifications

Center core Dia	0.8 mm
Diaelectric Dia	4.8 mm
Dielectric	PE
Outer Conductor Dia	5.4 mm
Outer Dia	7.0 mm
Bending radius	more than 30 mm
Impedance	75 ohms
D.C Resistance	50 ohms/KM
Screening factor	more than 50
Attenuation	
50 MHz	6.5
100 MHz	9
200 MHz	13
300 MHz	16

6 LAYING OF CONDUITS

- Conduits shall be laid either recessed in walls and ceilings or on surface on walls and ceilings or partly recessed and partly on surface, as required.

- Same rate shall apply for recessed and surface conduiting in this contract.

- Stranded copper conductor insulated wire of size as per schedule of quantities shall be provided in entire conduiting for loop earthing.

- GI wire of suitable size to serve as a fish wire shall be left in all conduit runs to facilitate drawing of wires after completion of conduiting.

6.1 Recessed Conduiting

Conduits recessed in concrete members shall be laid before casting, in the upper portion of slabs or otherwise as may be instructed, so as to embed the entire run of conduits and ceiling outlet boxes with a cover of minimum 12 mm concrete. Conduits shall be adequately tied to the reinforcement to prevent displacementduring casting at intervals of maximum 1 meter. No reinforcement bars shall be cutto fix the conduits. Suitable flexible joints shall be provided at all locations where conduits cross expansion joints in the building.

Conduits recessed in brick work shall be laid in chases to be cut by electrical Contractor in brick work before plastering. The chases shall be cut by a chase cutting electric machine. The chases shall be of sufficient width to accommodate the required number of conduits and of sufficient depth to permit full thickness of plasterover conduits. The conduits shall be secured in the chase by means of heavy duty pressed steel clamps screwed to MS flat strip saddles at intervals of maximum 1 meter. The chases shall then be filled with cement and coarse sand mortar (1:3) and properly cured by watering.

Entire recessed conduit work in concrete members and in brick work shall be carried out in close coordination with progress of civil works. Conduits in concrete members shall be laid before casting and conduits in brick work shall be laid before plastering. Should it become necessary to embed conduits in already cast concrete members, suitable chase shall be cut in concrete for the purpose. For minimising this cutting, conduits of lesser diameter than 25 mm and outlet boxes of lesser depth than 50 mm could be used by the Contractor for such extensions only after obtaining specific approval from Consultant /Project Manager . For embedding conduits in finished and plastered brick work, the chase would have to be made in the finished brick work. After fixing conduit in chases, chases shall be made good in most workmanlike manner to match with the original finish.

Cutting chases in finished concrete or finished plastered brick work for recessing conduits and outlet boxes etc shall be done by the Contractors without any extra cost.

6.2 Surface Conduiting

Wherever so desired, conduit shall be laid in surface over finished concrete and/or plastered brickwork. Suitable spacer saddles of approved make and finish shall be fixed to the finished structural surface along the conduit route at intervals not exceeding 600 mm. Holes in concrete or brick work for fixing the saddles shall be made neatly by electric drills using masonry drill bits. Conduits shall be fixed on the saddles by means of good quality heavy duty MS clamps screwed to the saddles by counter sunk screws. Gitti not to be used for fixing the saddle. Neat appearance and good workmanship of surface conduiting work is of particular importance. The entire conduit work shall be in absolute line and plumb.

6.3 Fixing of conduit fittings and accessories

For concealed conduiting work, the fittings and accessories shall be completely embedded in walls/ceilings leaving top surface flush with finished wall/ceiling surface in a workman like manner.

Loop earthing wire shall be connected to a screwed earthstead inside outlet boxes to make an effective contact with the metal body.

6.4 Painting and Colour coding of conduits

Before laying, conduits shall be painted specially at such places where paint has been damaged due to vice or wrench grip or any other reason.

If so specified, surface conduits shall be provided with 20 mm wide and 100 mm long colour coding strips as below

Use	Code colour
Low voltage	Grey
Telephone	Black
Earthing system	Green
Control system lighting	Purple

6.5 Protection of Conduits

To safeguard against filling up with mortar/plaster etc. all the outlet and switch boxes shall be provided with temporary covers and plugs which shall be replaced by sheet/plate covers as required. All screwed and socket joints shall be made fully water tight with white lead paste.

6.6 Cleaning of Conduit Runs

The entire conduit system including outlets and boxes shall be thoroughly cleaned after completion of erection and before drawing in of cables.

6.7 Protection Against Dampness

All outlets in conduit system shall be properly drain and ventilated to minimise chances of condensation/sweating.

6.8 Expansion Joints

When crossing through expansion joints in buildings, the conduit sections across the joint shall be through approved quality heavy duty metal flexible conduits of the

same size as the rigid conduit. **The expansion joint crossing shall be done as approved by Project Manager.**

6.9 Loop Earthing

Loop earthing shall be provided by means of insulated stranded copper conductor wires of sizes as per Schedule of Quantity laid along with wiring inside conduits for all wiring outlets and sub-mains. Earthing terminals shall be provided inside all switch boxes, outlet boxes and draw boxes etc.

7 LAYING AND DRAWING OF WIRES

7.1 Bunching of Wires

Wires carrying current shall be so bunched in conduits that the outgoing and return wires are drawn into the same conduit. Wires originating from two different phases shall not be run in the same conduit.

7.2 Drawing of Wires

The drawing of wires shall be done with due regard to the following precautions:-

- No wire shall be drawn into any conduit, until all work of any nature, that may cause injury to wire is completed. Burrs in cut conduits shall be smoothen before erection of conduits. Care shall be taken in pulling the wiresso that no damage occurs to the insulation of the wire. Approved type bushes shall be provided at conduit terminations.

- Before the wires are drawn into the conduits, conduits shall be thoroughly cleaned of moisture, dust, dirt or any other obstruction by forcing compressed air through the conduits if necessary..

- While drawing insulated wires into the conduits, care shall be taken to avoid scratches and kinks which cause breakage of conductors.

- There shall be no sharp bends.

- The Contractor shall, after wiring is completed, provide a blank metal/sunmica plate on all switch / outlet / junction boxes for security and to ensure that wires are not stolen till switches / outlets etc.. are fixed at no extracost the contractor shall be responsible to ensure that wires and loop earthing conductors are not broken and stolen. In the event of the wire been partly / fully stolen , the contractor shall replace the entire wiring alongwith loop earthing at no extra cost. No joint of any nature whatsoever shall be permittedin wiring and loop earthing .

7.3 Termination /Jointing of Wires

- Sub-circuit wiring shall be carried out in looping system. Joints shall be made only at distribution board terminals, switches/buzzers and at ceiling roses/connectors/lamp holders terminals for lights/fans/socket outlets. No joints shall be made inside conduits or junction/draw/inspection boxes.

- Switches controlling lights, fans or socket outlets shall be connected in the phase wire of the final sub circuit only. Switches shall never be connected in the neutral wire.

- Wiring conductors shall be continuous from outlet to outlet. Joints where unavoidable, due to any special reason shall be made by approved connectors. Specific prior permission from Project Manager in writing shall be obtained before making such joint.

- Insulation shall be shaved off for a length of 15 mm at the end of wire like sharpening of a pencil and it shall not be removed by cutting it square or wringing.

- Strands of wires shall not be cut for connecting terminals. All strands of wires shall be twisted round at the end before connection..

- Conductors having nominal cross sectional area exceeding 1.5 sq. mm shall always be provided with crimping sockets. Tinning of the strands shall be done wherever crimping sockets are not available as per instructions of the Project Manager

- All wiring shall be labelled with appropriate plastic ferrules for identification.

- At all bolted terminals, brass flat washer of large area and approved steel spring washers shall be used.

- Brass nuts and bolts shall be used for all connections.

- The pressure applied to tighten terminal screws shall be just adequate, neither too much nor too less.

- Switches controlling lights, fans, socket outlets etc. shall be connected to the phase wire of circuits only.

- Only certified valid license holder wiremen shall be employed to do wiring / jointing work.

7.4 Load Balancing

The Contractor shall plan the load balancing of circuits in 3 phase installation and get the same approved by the Project Manager before commencement of the work.

7.5 Colour Code of Conductors

Colour code shall be maintained for the entire wiring installation - red, yellow, blue for three phases, black for neutral and green for earth.

8. SWITCHES AND FIXTURES

8.1 SWITCHES

All 6 and 16 amps switches shall be of the modular enclosed type flush mounted 220 Volt AC of the best quality and standard or as approved by Interior designer/Bank's Engineer/Project Manager. The switch moving and fixed contacts shall be of silver nickel and silver graphite alloy and contact tips coated with silver. The housing of switches shall be made from high impact resistant, flame retarding and ultra violet stabilized engineering plastic material.

8.2 FLUSH PLATES

Switches, receptacles and telephone system outlets in wall shall be provided with molded cover plates of shape, size and colour approved by the Project Manager made from high impact resistant, flame retarding and ultra violet stabilized engineering plastic material, and secured to the box with counter sunk round head chromium plated brass screws. Where two or more switches are installed together, they shall beprovided with one common switch cover plate as described above with notches to accommodate all switches either in one, two or three rows.

One and two gang switch cover plate, telephone outlet cover plate, 6 and 16 amps switched/unswitched plates, shall have the same shape and size. Three and four gang switch cover plates shall have the same shape and size. Six and eight gang switch cover plates shall have the same shape and size. Nine and twelve switch cover plates shall have the same shape and size. Wherever five switches, seven switches, ten switches and eleven switches are to be fixed the next higher size of gang switch cover plate to be used and extra openings shall be provided with blank-off.

8.3 EXTERNALLY OPERATED SWITCHES

Externally operated switches, shall be of general purpose type, 250 volts of the proper size and rating and shall be provided in weather proof enclosures, complete with weather proof gasketed covers. The MCB's for all externally operated switches shall be separate and of proper rating.

8.4 WALL SOCKET OUTLETS

All 6/16 Amps wall socket outlets unless otherwise mentioned on the drawings shall be switched, five/six round pin and fitted with automatic linear safety shutters to ensure safety from prying fingers. Un-switched 6/16 amp wall socket outlets where called for in the drawings shall be of five/six round pin type. The socket outlets shall be made from high impact resistant, flame retarding and ultra violet stabilized engineering plastic material.

The switch and sockets shall be located in the same plate. The plates for 6 amp switched/un-switched plugs and telephone outlets shall be of the same size and shape.

All the switched and un-switched outlets shall be of the best standard.

An earth wire shall be provided along the cables feeding socket outlets for electrical appliances. The earth wire shall be connected to the earthing terminal screw inside the box. The earth terminal of the socket shall be connected to the earth terminal provided inside the box.

8.5 LIGHTING FIXTURES

The light fixtures and fittings shall be assembled and installed complete and ready for service, in accordance with details, drawings, manufacturer's instructions and to the satisfaction of the Project Manager.

Wires brought out from junction boxes shall be encased in GI flexible pipes for connecting to fixtures concealed in suspended ceiling. The flexible pipes shall be provided with a checknut at the fixture end.

Pendant fixtures specified with overall lengths are subject to change and shall be checked with conditions of the job and installed as directed.

All suspended fixtures shall be mounted rigid and fixed in position in accordance with drawings, instructions and to the approval of the Project Manager.

Fixtures shall be suspended true to alignment, plumb, level and capable of resisting all lateral and vertical forces and shall be fixed as required.

All suspended light fixtures etc. shall be provided with concealed suspension arrangement in the concrete slab/roof members. It is the duty of the Contractor to make these provisions at the appropriate stage of construction.

All switch and outlet boxes shall be bonded to earth with insulated stranded copper wire as specified.

Wires shall be connected to all fixtures through connector blocks.

Flexible pipes, wherever used, shall be of make and quality approved by the Project Manager.

9. MEASUREMENT AND PAYMENT OF WIRING

Wiring for lights, fans, convenience socket outlets and telephone outlets etc. shall be measured and paid for on **POINT BASIS** as itemized schedule of quantities and as elaborated as below unless otherwise stated.

9.1 Primary and Secondary light point wiring

In respect of group control of lights (more than one light controlled by one switch or MCB), wiring upto the first light in the group shall be measured and paid for as a primary light point. Wiring for other lights looped in one group for switch controlled as also MCB controlled lights shall be measured and paid for as secondary light points. Primary light points for switch controlled lights shall include the cost of control switch whereas primary light points controlled by MCBs shall not include theswitch cost. The cost of MCB controlling such lights shall not be included in the primary light point rate since the MCB shall be paid for in the item of DB.

The point wiring basis shall assume average wiring length and average conduiting length per point based on parameters stipulated in para 9.2 below. The average wiring length and average conducting length forming the basis of point wiringpayment, shall take the electrical layouts of the entire project into consideration. Tenderers are advised to seek clarifications, if they so desire, on this aspect before submitting their tenders. No claim for extra payment on account of electrical layouts in part or whole of the project requiring larger average wiring and conduiting length per point, whether specifically shown in tender drawings or not, shall be entertained after the award of contract.

9.2 Parameters: Wiring shall be carried out as per following parameters in recessed/ surface conduit system.

- Only looping system of wiring shall be adopted throughout. No joints excepting at wiring terminals shall be permitted.

- All accessories shall be flush type unless otherwise stated.

- Lights, fans and 6 amp socket outlets shall be wired as per the item given in the Bill of Quantities.

- Power circuits shall normally have maximum two/one 16 amps socket outlet unless otherwise stated. Separate circuit shall be run for each Geyser, Window/Split air conditioners and similar appliances.

- Wiring rates shall include painting of conduits and other accessories as required.

- Wiring rates shall include cleaning of dust, splashes of colour wash or paint from all fixtures, fans, fittings etc. at the time of taking over of the installation.

- Wiring rates shall include blanking of outlet boxes to prevent damage/pilferage of wires.

- Wiring rates shall include circuit wiring from DB to first control switch & shall be done as per Bill of Quantities.

9.3 Definitions

9.3.1 Wiring for Lights

Primary Light Points : Wiring for primary light points, as defined in para 9.1 above, shall commence at the Distribution Board terminals and shall terminate at the ceiling rose/connector in ceiling box/lamp holder via the control switch (for switch controlled lights). Rates for primary light point wiring shall be deemed to be inclusive of the cost of entire material and labour require for completion of primary light point thus defined including : .

- Recessed / surface conduting system with all accessories, junction/draw/inspection boxes, bushes, check nuts etc. complete as required,

- Wiring with stranded copper conductor PVC insulated 660/1000 volt grade wires including terminations etc. complete as required.

- Control switch with switch box and cover plate of specified type including fixing screws, earth terminal etc. complete as required. Cost of this switch is applicable only for switch controlled points. This cost shall not be applicable for DB controlled points.

- Loop earthing with insulated copper wires.

Secondary Light points :

Secondary light points, as defined in para 9.1 above, shall cover the cost of interconnection wiring between group controlled light fittings and shall be deemed to be inclusive of the
cost of entire materials and labour required for completion of the secondary light point thus defined including

- Recessed / surface conduting system with all accessories, junction/draw/inspection boxes, bushes, check nuts etc. complete as required.

- Wiring with stranded copper conductor PVC insulated 660/1000 volt grade wires including terminations etc. complete as required.

- Loop earthing with insulated copper wires.

9.3.2 Wiring for Ceiling Fans

Wiring for ceiling fan points shall be same as for primary light points.

9.3.3 Wiring for Exhaust Fans

Wiring for exhaust fan points shall be same as for primary light points and shall in addition include the cost of providing a 3/5 pin 6 amp socket outlet near the fan alongwith plug top and a 6 amp control switch at convenient location near the room entry.

9.3.4 Wiring for Call Bell Points

Wiring for call bell points shall be the same as for primary light points. A call bell switch which include in lieu of the control switch at a convenient location as required.

9.3.5 Wiring for Telephone Outlets

Wiring for telephone outlets points shall include the entire wiring and conduiting from the telephone tag block to the telephone outlet including the telephone outlet complete as required and as itemized in the Schedule of Quantities

9.3.6 Wiring for TV Outlets

Wiring for TV outlet points shall include the entire wiring and conduiting from the central point to the TV outlet including the TV outlet complete as required and as itemized in the Schedule of Quantities

9.3.7 Wiring for Convenience Socket Outlets

3/5 pin 6 amps and 3/6 pin 16 amps single phase switched convenience socket outlets shall be provided in the building as indicated in the layout drawings. In addition, combined 3 pin 6 / 16 amps socket outlets at modular intervals in special PVC raceway over the work tables in laboratories shall be provided. Wherever required, 20/32/50 amps single phase and 32/50 amps 3 phase outlets shall also be provided.

Wiring for 3/5 pin 6 amps convenience socket outlets

Point wiring for 3/5 pin 6 amps socket outlets (in locations other than over the laboratory work tables) on point wiring basis shall be the same as primary light point defined in para 8.3.1 and shall in addition include 3/5 pin 6 amp socket outlet with 6 amp control switch in MS box with cover including loop earthing of the third pin complete as required as as itemised in scheduled of quantities.

Wiring for 3/6 pin 16 amps convenience socket outlets

Point wiring for 3/6 pin 16 amps socket outlets (in locations other than over the laboratory work tables) on point wiring basis shall be the same as primary light point defined in para 8.3.1 and shall in addition include 3/6 pin 16 amp socket outlet with 16 amp control switch in MS box with cover including loop earthing of the third pin complete as required as itemised in scheduled of quantities.

Wiring for special socket outlets

In addition to the above, special convenience outlets of 20/32/63 Amps single phase and 32/63 Amps three phase, required in few locations as indicated in the layout drawings, shall be paid for on linear basis as itemised in schedule of quantities. Outlets only shall be paid separately in numbers as per actuals. Wiring alongwith loop earthing shall be paid separately on running meter basis and conduiting /PVC raceway shall be paid separately on running meter basis.

9.3.8 Submains wiring

Submains wiring shall be measured from outer end of the boxes. Extra Loop length shall be left at each end as required.

10. ROUTINE AND COMPLETION TESTS

10.1 Installation Completion Tests

At the completion of the work, the entire installation shall be subject to the following tests:

1. Wiring continuity test
2. Insulation resistance test
3. Earth continuity test
4. Earth resistivity test

Besides the above, any other test specified by the local authority shall also be carried out. All tested and calibrated instruments for testing, labour, materials and incidentals necessary to conduct the above tests shall be provided by the contractor athis own cost.

10.2 Wiring Continuity Test

All wiring systems shall be tested for continuity of circuits, short circuits, and earthing after wiring is completed and before installation is energized.

10.3 Insulation Resistance Test

The insulation resistance shall be measured between earth and the whole system conductors, or any section thereof with all protection in place and all switches closed

and except in concentric wiring all lamps in position of both poles of the installation otherwise electrically connected together, a direct current pressure of not less than twice the working pressure provided that it does not exceed 1100 volts for medium voltage circuits. Where the supply is derived from AC three phase system, the neutral pole of which is connected to earth, either direct or through added resistance, pressure shall be deemed to be that which is maintained between the phase conductorand the neutral. The insulation resistance measured as above shall not be less than 50 megaohms divided by the number of points provided on the circuit the whole installation shall not have an insulation resistance lower than one megaohm.

The insulation resistance shall also be measured between all conductors connected to one phase conductor of the supply and shall be carried out after removing all metallic connections between The two poles of the installation and in those circumstances the insulation shall not be less than that specified above.

The insulation resistance between the frame work of housing of power appliances and all live parts of each appliance shall not be less than that specified in the relevant Standard specification or where there is no such specification, shall not be less than half a Megaohm or when PVC insulated cables are used for wiring 12.5 Megaohms divided by the number of outlets. Where a whole installation is being tested a lower value than that given by the above formula subject to a minimum of 1 Megaohms is acceptable.

10.4 Testing Of Earth Continuity Path

The earth continuity conductor including metal conduits and metallic envelopes of cable in all cases shall be tested for electric continuity and the electrical resistance of the same alongwith the earthing lead but excluding any added resistance of 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.

10.5 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 connected to the same conductor throughout, and such conductor shall be labeled or marked for connection to an outer or phase conductor or to the non-earthed conductor of the supply. In the three of four wire installation, a test shallbe made to verify that every non-linked single pole switch is fitted to one of the outeror phase conductor of the supply. The entire electrical installation shall be subject to the final acceptance of the Project Manager as well as the local authorities.

10.6 Earth Resistivity Test

Earth resistivity test shall be carried out in accordance with latest IS Code of Practice for earthing.

10.7 Performance

Should the above tests not comply with the limits and requirements as above the contractor shall rectify the faults until the required results are obtained. The contractor shall be responsible for providing the necessary instruments and subsidiary earths for carrying out the tests. The above tests are to be carried out by the contractor without any extra charge.

10.8 Tests And Test Reports

The Contractor shall furnish test reports and preliminary drawings for the equipment to the Project Manager for approval before commencing supply of the equipment. The Contractor should intimate with the tender the equipment intended to be supplied with its technical particulars. Any test certificates etc., required by the local Inspectors or any other Authorities would be supplied by the Contractor without any extra charge. All test reports shall be approved by the Project Manager prior to energizing of installation.

EARTHING & LIGHTNING PROTECTION

1.0 EARTHING

1.1 The scope of this section covers supply, installation and testing of earthing systemfor all non-current carrying metal parts of electrical installation.

1.2 Installation of earthing system for electrical equipment shall be carried out in accordance with IS 3043 - code of Practice for earthing and conforming to Indian electricity Rules 1956 as ammended upto date.

1.3 Earthing System & Equipment Bonding:

1.3.1 Earthing system shall comprise earth electrodes at each building. Test link boxes shall be provided at each earth electrodes for periodical resistance measurement. Allsuch earth electrodes shall be interconnected forming a main loop - (MEL).

1.3.2 The entire conduit installation, cable sheaths and cable armour shall also be bonded to earth at both ends. It must be ensured that the conduit installations maintain electrical continuity throughout its entire length. Conduits shall be effectively bonded together at each joint, such as couplings, junction boxes, draw boxes or anyother accessories and equipments. Where conduits and screwed cable glands are terminated at equipment enclosures with slip-holes, an earthing/bonding washer (e.g. star-washer) shall be used to maintain electrical continuity.

1.3.3 All earth connections with solid conductors shall be made by means of soldered cable lugs. Connections with G. I. copper tapes shall be directly bolted type. All hardware used shall be galvanised steel, brass or passivated to prevent corrosion. Spring washer or lock washers shall be used to make all connections secure and vibration-proof. All contact surfaces shall be thoroughly cleaned and coated with conducting petroleum jelly to prevent corrosion.

1.3.4 Earth connections from Switch Boards shall be taken as directly as possible to the earth buses or test links
Main earth conductors from earth bus or test-link to the Earth Electrode shall be coated with bitumastic to reduce straddle potential.

1.3.5 All earth terminations on all switch board/switch panels shall be with suitablesize crimped lugs of Dowel or equivalent make.

1.4 Earth Electrodes:

Earth electrodes shall consist of Copper/G.I. plates burried in ground or G.I. pipes laid in ground. The type of electrodes shall be as specified in the BOQ. The

method of installation earth electrode shall be in accordance with IS:3034. Earth plates shall be buried minimum 3 meters below virgin ground. Salt or charcoal shallbe filled around the electrode to reduce the resistively of the soil and 20mm dia G.I. pipes (class heavy) shall be suitably installed to treat it with water. Every earth electrode shall have earth test link. Additional earth electrode shall be provided if necessary to bring down earth resistance within one-ohm.

1.5 Main Earth Conductor:

Main earth conductors shall be Galvanised Iron or copper strip as specified in BOQ or solid conductors with or without PVC sheath as specified. They shall beconnected at one end to the earth electrode and to the earth bus or test link at the other end. All connections below ground shall be made by bolting or rivetting and brazing or welding. Sizes of main earth conductors shall be as specified. All connections to the test-link or earth bus shall be securely bolted. Contact surfaces shall be tinned and suitably protected with Petroleium Conducting Jelly to prevent corrosion.

1.6 Installation :

1.6.1 All joints shall be revetted and sweated. Jointes in the earth bar between the switch gear units or to
cable sheaths shall be bolted at the joints.

1.6.2 Where the diameter of the bolt for connecting earthbar to apparatus exceeds one quarter of the width of the earth-bar, the connection to the bolt shall be made witha wider piece to earth bar. These shall be tinned at the point of connection to equipment and special care taken to ensure a permanent low resistance contact to iron or steel. All bolts, nuts, washers, etc. shall be cadmium plated.

1.6.3 Main earth-bars shall be spaced sufficiently away from the surface to which they are fixed, such as walls or the side of trenches, to allow for ease of connections.

1.6.4 The earthing lead shall be suitably protected from mechanical injury by galvanised iron pipe wherever it passes through wall and floor. The portion within ground shall be buried at least 60 cm deep.

1.6.5 The earthing lead shall be securely bolted and soldered to the plate or pipe as the case may be. In the case of the plate, the lead shall be connected by means of a cable socket, with two bolt and nuts. All washers shall be of the same material as the plate or pipe. All iron bolt, nuts and washers shall be galvanized.

1.6.6 The earthing plate shall be surrounded by alternate layer of charcoal or coke and salt. There shall be a 20mm G.I. pipe running from the top of the plate or pipe. The top of this pipe shall provided with a funnel and mesh for watering the earth. This will be housed in a masonary enclosure not less than 30cm x 30cm x 30cm deep. A cast iron frame with 10 mm thick cover shall be suitably embeddeed in the masonry.

1.6.7 Earth electrode resistance shall be measured as per IS 3043. No earth electrode installed shall have a greater ohmic resistance than 1.0 ohms as measured by an approved earth testing apparatus.

1.7 CHEMICAL EARTHING

In maintenance free earthing copper bonded earthing rod electrode shall be of 14.35 mm in diameter and 3 meter length. The rod shall be placed in a 150 mm dia an augured hole in the ground and then surrounded by ground enhancement material in either a dry form or pre mixed in a slurry. Once set, ground enhancement material becomes hard and as such holds positively to the rod as well as surrounding ground.

Earth rod offered shall have passed the test required of BS7430/ANSI/UL-467 and confirm to the adhesion of the copper coating to the steel core (Design feature that prevents the ingress of moister and subsequently the integrity of the rod.

Minimum 0.25 mm thickness of copper shall be deposited over the steel core as per BS 7430/UL 467. Average life of the ground rod shall be 30 years in most soil.

Ground enhancement material shall be as per IEEE-80 clause 14.5 with a resistivity of less than 0.12 ohm – meter. The ground enhancement material shall be permanent and not leach any chemicals in to the ground. The pH value of the ground enhancement material shall be 6.9 to 7.2 of 100gm / lit@20 deg.C.

Minimum 30 Kg of ground enhancement material shall provided for each earth electrode.

Inspection chamber shall be of 400 x 500 mm with concrete base CI manhole cover with frame painted with bitumastic paint. 2 Nos.of 50 x 6 mm cross section & 300 mm long copper strip to be cjamped with copper claded rod electrode have sufficientnos. (But not less than 4 Nos.) of 10Φ mm GI nuts & bolts for connection to the equipment / interconnection to the other pits to form equi-potential boonding.

2.0 LIGHTNING PROTECTION SYSTEM:

2.1 Advanced LIGHTNING ARRESTOR Generation-2

2.1.1 Technical specification

Advanced Proactive -Early Streamer Emission(ESE) without aid of any primary power, to provide optimum protection against any negative Lightning in its zone of protection. Model DP 25/ 45/60 , dameks, Turkey.

2.1.2 Special features of Protector ESE sensor type Lightning protector

1. The active conductor should be ESE (Early Streamer Emission) type certified by High Volt Test Lab for 8/20 wave form at over 100kA.

2. As well as tested by CPRI Bangalore, India as per their available capacity.

3. The active conductor should derive the energy from the electrostatic field intensity variations that is formed in the air , for which no extra energy source like wind energy, solar energy or kinetic energy that is created by the vibrations are required. The inner structure should not consist of either coils or condensers which could be flammable or explosive during the discharge nor should it use Piezo crystals that might be broken during the discharge orvibration.

4. The active conductor should be made from special materials to prevent the system from chemical corrosion.

5. The conductor should have a protection mechanism that prevents anyinternal damage due to the lightning discharge.

6. The active conductor should be designed as compact and small (weight below 3kg)to maintain installation and transportation advantage.

7. The Basic Model of the Air terminal should have Protection Radius of 42 m at 5 meter clear height above highest structure. Data on other ranges ifrequired shall be furnished on case to case basis .

2.2 PROTECTOR LIGHTNING COUNTER(optional)

Specifications:

Dimensions	: 173 x 82 x 44 mm
Weight	: 740 gr
Temperature range	: -20 to +50oC
Counter	: 6 digits
Protection	: IP 65
Starting treshold	: 1 100 kA in 8/20 wave
Min. Time between 2 discharges	: 100 ms
Connection	: □8 30x2 30x3 available
RES M	

WORKING PRINCIPLE

The lightning counter is to count the lightning strike discharges that goes through the conductor down to the ground. The counter is to be installed on the down conductor. It can either be installed serial or parallel.

No maintenance should be required. The device should be a high technology product and conform to the working and laboratory test conditions.

2.3 PROTECTOR TESTER(optional)

Specifications:

Dimensions	: 107 x 148 x 44 mm
Weight	: 930 gr

Operation Frequency : Standard
Power : 6 V battery
RES M

WORKING PRINCIPLE

The tester is developed for specific use where it is required to maintain thehighest security and make sure that the lightning conduction system works properly such as in remote installed areas, where services may not be available on demand.
The tester enables to verify that the Air terminal conductor is in standard operation by making a connection both to the upper tip and the lower shaft. By using the tester, the lightning conductor is tested in addition to the ground resistivity tests and these two tests together creates a common and proper control on the system.

2.4 ESE LIGHTNING CONDUCTOR PROTECTION RADIUS CALCULATION (NF C 17-102 S 2.2.3.2) FOR ALL MODELS OF PROTECTOR

The protection radius of air terminal is calculated by the standard formula given in the French Standard NF C 17-102.

The formulation is based on the lightning conductor triggering advance (□T), installation height (h) and the triggering distance (□L).

Rp = √h(2D-h) +Δ □L(2D+Δ □L) h ≥ 5m.

ΔL = V x □Δ T

Rp : Conductor protection area radius

h : The distance between the point of the conductor and the area to be protected

ΔT : Triggering time

D : Triggering distance according to the NF C 17 102 standard

ΔL(m) = v (m/□µs)..ΔT(m/□µs)

The values of Triggering advance & triggering distance for each model should be stated against the requirement given in the table below. Deviations if any must be explained

TYPE	(ΔT)	(D)
DP 25	25 µs	20 M.
DP 45	40 µs	45 M.
DP 60	60 µs	60 M.

INSTALLATION SCHEME

DP type / model select

ESE CONSUCTORS	h = Conductor tip height (m)								
	2	4	5	7	10	15	20	45	60
LEVEL -1									
DP 25	17	34	42	43	44	45	45	45	45
DP 40	26	50	63	64	64	65	65	65	65
DP 60	32	64	79	79	79	80	80	80	80
LEVEL -2									
DP 25	23	46	57	59	61	63	65	70	70
DP 40	34	64	76	77	78	80	82	85	85
DP 60	40	78	97	98	100	101	103	105	105
LEVEL -3									
DP 25	26	52	65	66	70	72	75	84	85
DP 40	36	72	89	90	92	95	97	104	105
DP 60	44	87	107	108	110	111	114	119	120

Components of LPS

ESE lightning conductor

1. Mast to ensure desired free height
2. Down Conductor for grounding
3. Protector lightning strike counter
4. Test joint
5. Protection guard
6. Earthing

MEDIUM VOLTAGE DISTRIBUTION BOARDS:

1 GENERAL

This section covers specification of DBs.

2. STANDARDS AND CODES

The latest and amended upto date Indian Standard Specifications and Codes of Practice will apply to the equipment and the work covered by the scope of this contract. In addition the relevant clauses of the Indian Electricity Act 1910 and Indian Electricity Rules 1956 as amended upto date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and/or IEC Standards shall be applicable.

3. MINIATURE CIRCUIT BREAKERS

- The MCB's shall be of the completely moulded design suitable for operation at 240/415 Volts 50 Hz system.
- The MCB's shall have a rupturing capacity of 10 KA at 0.5 p.f.
- The MCB's shall have inverse time delayed thermal overload and instantaneous magnetic short circuit protection. The MCB time current characteristic shall coordinate with XLPE cable characteristic.
- Type test certificates from independent authorities shall be submitted with the tender.

4. FINAL DISTRIBUTION BOARDS

- **Final distribution boards shall be flush mounting, totally enclosed, dust and vermin proof and shall comprise of miniature circuit breakers, earth leakage circuit breakers, neutral link etc as detailed in the schedule of quantities.**

- The distribution equipment forming a part of the Distribution Boards shall comply to the relevant Standards and Codes of the Bureau of Indian.

- The board shall be fabricated from 16 gauge CRCA sheet steel and shall have a hinged lockable spring loaded cover. All cutouts and covers shall be provided with synthetic rubber gaskets. The entire construction shall give a IP42 (double door and four tier-arrangement) degree of protection.

- The bus-bar shall be of electrical grade copper having a maximum current density of 1.6 ampere per square mm and PVC insulated throughout the length. The minimum spacing between phases shall be 25 mm and between phase and earth 19 mm

- Separate neutral link for each phase shall be provided.

- All the internal connections shall be with either solid copper PVC insulated or copper conductor PVC insulated wires of adequate rating.

- All the internal connections shall be concealed by providing a hinged protective panel to avoid accidental contact with live points.

- All outgoing equipment shall be connected direct to the bus bar on the live side. The equipment shall be mounted on a frame work for easy removal and maintenance.

- The sheet steel work shall undergo a rigorous rust proofing process, two coats of filler oxide primer and final powder coated paint finish.

- All the circuits shall have an independent neutral insulated wire, one per circuit, and shall be numbered and marked as required by the Project Manager.

- A sample of the completed board is to be got approved by the Project Manager before commencement of supply and erection.

- Before commissioning, the distribution boards shall be megger tested for insulation and earth continuity.

5 SHEET STEEL TREATMENT AND PAINTING

- Sheet Steel materials used in the construction of these units should have undergone a rigorous rust proofing process comprising of alkaline degreasing, descaling in dilute sulphuric acid and a recognized phosphating process. The steel work shall then receive two costs of oxide filler primer before final painting. Castings shall be scrupulously cleaned and fettled before receiving a similar oxide primer coat.

- All sheet steel shall after metal treatment be given powder coated finish painted with two coats of approved shade on the outside and white on the inside. Each coat of paint shall be properly stoved and the paint thickness shall not be **less than 50 microns**.

6. NAME PLATES AND LABELS

- Suitable engraved white on black name plates and identification labels of metal for all Switch Boards and Circuits shall be provided. These shallindicate the feeder number and feeder designation.

1.0 TELEPHONES / MATV/DATA SYSTEM WIRING

1.1 Scope:

The scope of this section covers the supply, laying and testing of conduits and cables for Telephones, Computer Data and MATV System Wiring. The supply of associated equipments are not included in the scope of this tender.

1.2 Telephone Cables:

1.2.1 The telephone cables shall be of copper conductor, PVC insulated and PVC sheathed armored or unarmored as specified. The telephone cables shall comply with as specified. The telephone cables shall comply with I.T.I. or I.T.L. specifications and in case of armoring, to IS - 1554 Part -I - 1964. Copper conductors shall be of 0.51 mm, 0.61 mm diameters, as specified, where specified cat 5 LAN Cable shall be used.

1.2.2 Each conductor shall be PVC insulated with a different colour as per the colour and shall be twisted together with its mate conductor to form a pair. All pairs shall be PVC insulated and supplied
with Nylon Rip Cord to felicitate easy unsheathing without damaging the PVC insulation.

1.2.3 The raw material used in the manufacture shall be of high grade and quality. The conductors shall be drawn from high purity electrolytic copper and shall be annealed and tinned. The PVC insulation shall be of high grade and shall be resistant to ageing and fading, to ensure identification of colours etc., after prolonged use.

1.2.4 The type, size and pairs shall be as given in the Bill of Quantities.

1.2.5 All multi-pair cables and 2-core telephone distribution unarmored cables shall be laid in steel or PVC conduits, as per BOQ. Wherever multi-pair cables are to be laid in the open on walls and ceilings, these cables shall be of the armored type. Separate conduits shall be used for external and intercommunication system. The conduits shall be coloured as per the ITD colour code. The extended rims of conduits shall befitted with 150mmx 150mm x 75mm MS pull boxes. The pull boxes shall be suitably painted for easy identification and shall be provided at intervals of 10 meters. The pull-boxes can be of the surface mounting type or flush=mounting type as specified.

1.3 Tag Boxes:

The tag boxes shall be of sheet steel, suitably painted suitable for multi-core telephone cables. For single pair telephone cables, suitable terminal connections shall be provided.

1.5 MATV System Wiring:

Wiring for MATV system equipment shall be carried out with insulated coaxial cable

to Delton specified Model laid in surface/recessed conduit as shown in the drawings. RG6 and RG 11 coaxial cables shall be used final distribution and main feeders/risers.

1.6 DATA CABLE SYSTEM

1.6.1 Data cables for LAN shall be Cat-6 or Cat-6a as specified.

1.6.2 The cables shall be laid in conduits or channels as specified in BOQ.

1.6.3 Data cables shall be terminated in RG 45 Complete terminals.

MODE OF MEASUREMENTS

1.0 Wiring light points, fan points, exhaust fan points, call bell points, socket outlets, telephone / TV outlets shall be measured and paid on point basis as per BOQ, and as elaborated below unless stated otherwise.

2.0 In case of group control light points i.e. more than one light points controlled by switch or MCB, wiring from switch / MCB upto first point shall be primary light point and subsequent points in the group shall be deemed as secondary light points and paid as per item in BOQ. The rate shall include all the items mentioned in the BOQ. Wiring point shall include circuit wiring from DB to 1st tap off point includingthe earth wire. 6A socket outlet points, power points, fan points, bell points shall be paid on point basis at schedule rates.

3.0 Telephone outlets points shall include wiring from Tag block to 1st tap off point and 1st tap off point to subsequent telephone outlet points. This would include conduit with conduit accessories telephone wire outlet box, with cover plate and telephone jack.

4.0 Wiring for TV outlet shall include wiring from Tap / Splitter box to the 1st outlet and1st outlet to subsequent outlets. In case DTH connectivity conduit from switcher to various outlets shall be paid on linear measurement basis. The outlet box with cover plate shall be paid separately as per item of BOQ. Wiring shall be drawn by service provider and would not be in the scope of electrical contractor.

5.0 Wiring for fire alarm system shall be measured and paid on linear basis at schedule rates.

6.0 Submain wiring and cables, conduits for various services shall be measured on linear basis and paid as per item of the work.

LIST OF APPROVED MAKES OF MATERIAL

S. No.	Item	Approved Make
1)	Rigid PVC Conduit (FRLS only)	Precision Plastic Industries, Nihir, Astral,
2)	Accessories for conduit	Same make as of pipe.
3)	Flexible Copper Wires (FRLS)	Finolex, RR Kable, Havells/polycabe
4)	Modular Switches	Legrand (Myrius), MK (Blenze),D- link
5)	Telephone cables Jelly Filled	Finolex, RR cable, Havells
6)	PVC tape	Steel grip, Anchor
7)	Panel Manufacturer	ISO Certified & CPRI approved Panel Builder
8)	MCBs/ELCBs/ELMCBs / Contactor Time Switch (Timer)	Legrand, L&T, Siemens
9)	Distribution boards- TPN & SPN DB (IP 43),	Hensel, Legrand (MDS-DX3), L&T, Siemens
	VTPN DB (IK 43)	Hensel, Legrand (MDS-DX3), L&T,
10)	LT Cables	XLPE armoured cable for 1.1 KV as per ISI 1554. Finolex, Polycab, RR Kable, Hawells.
11)	Glands	Single Compression type, Heavy duty and deep threading
12)	Cable Lugs	Dowells, 3-D, Raychem.
13)	Metal Clad Plugs	Indoor –Legrand, Scame, Hensel. Outdoor - Legrand, Scame, Hensel.
14)	Button holder, Angle holder,	Anchor, CPL
15)	Digital Meter	Rishabh, L &T, Schneider
16)	Cable Tray	i) Ladder/Perforated - Hot deep GI -Indiana, MEM, OBO Better man, Rico steel
17)	CT	AE, Kappa, Rishabh
18)	Telephone tag block	Krone.
19)	TV Cable R G 6 / 11	Finolex, RR Cable, Polycab.
20)	Fire Extinguisher	Should be of ISI approved - Safex,Firex,Safeline
21)	Cat-6 Wire & Fibreoptic Cable andAccessories	Legrand, SYSTIMAX, Panduit, Siemon/D-link
22)	UPVC Cable trucking	Legrand, OBO Betterman, MK
23)	RJ 45 Data outlet	Legrand, SYSTIMAX, Panduit, Siemon/D-link
24)	Network Switch	HP, Cisco,Legrand,D-link
25)	Rack	Legrand, Rittal, Panduit, Vellrack
26)	Modular Patch Panel	Legrand, SYSTIMAX, Panduit, Siemon,D-link
27)	Light Fixture	Philips, Wipro, Havells
28)	Fan(Grey colour, Mat finish /White colour as Required Site).	Crompton, Usha, Havells, Bajaj – Sample to beapproved By consultant.
29)	Emergency Signage Light	Legrand, Sigma, Prolight

30)	Exhaust Fan (Should be withlouvers)	Usha, Havells, Crompton
31)	Floor Junction Box	Fabricated
32)	Floor Raceway	Fabricated
33)	Addressable Fire Detection System	Honeywell/BOSCH/SIEMENS/UTC/Ravel/Hikvision.
34)	Access Control System	Zk-teco / Honeywell / Seimens
35)	CCTV	Pelco / Honeywell/ AXIS/hikvision
36)	Monitors Display units	Samsung, LG, Sony
37)	Hard Disk	WD / Seagate
38)	Speakers	Bosch, Yamaha, Honeywell
39)	Amplifier	Bosch, Yamaha, Honeywell
40)	Telephone instrument	BEETEL /BINATONE/PANASONIC
41)	Digital PIR Sensor	Legrand / MK
42)	Display Panel (TV)	SAMSUNG , SONY
43)	HDMI Cable	MX, Kramer, Crestron
44)	Projector	EPSON , PANASONIC, SONY
45)	POP-UP BOX	LEGRAND / MK
46)	Video Conferencing Unit	Cisco / Polycom
47)	Flexible Cable / Flexible ShildedCable	RR / Finolex / Polycab
48)	FIRE SUPPRESSION SYSTEM	Novec or equivalent

NOTE: -

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

END OF SECTION