SUBJECT: INTERIOR RENOVATION OF MULTIPURPOSE HALL AT GROUND FLOOR OF CENTRAL OFFICE,239, NARIMAN POINT MUMBAI.

TENDER FOR CIVIL/INTERIOR FURNISHING/ELECTRICAL/NETWORKING WORKS

PART-1

PREQUALIFICATION CUM TECHNICAL BID

Date of issue of Tender	: **25.04.2024** to **10.05.2024** During office hours.
Last date for submission of tender	: **10.05.2024** up to **3.00** pm.
Opening of Bid	: **10.05.2024** at **3.30** pm.
Pre bid Meeting	: **03.05.2024** at **3.30** pm.

Owner:	**Consultant:**
Union Bank of India, **Central Office, 239, Vidhan Bhavan Marg, Nariman Point, Mumbai-400021.** **Tel: 022-22892587,89.**	**M/s Design Ideas, Architects.** **1, Girja Bhavan, 163/B, Dr Ambedkar Rd, Dadar East, Mumbai-400014** **Tel: 24118778/ 24121713.** **Mobile: 9821004421.** **Email: ideas.design@yahoo.com**

CENTRAL OFFICE MUMBAI.
ARCHITECT DIVISION,SUPPORT SERVICES DEPARTMENT
7th FLOOR, UNION BANK BHAVAN,
239, VIDHAN BHAVAN MARG,
NARIMAN POINT, MUMBAI.

NIT FOR INTERIOR RENOVATION OF MULTIPURPOSE HALL AT GROUND FLOOR, CENTRAL OFFICE, NARIMAN POINT, MUMBAI.

Union Bank of India invites Tenders in two-bid system i.e. Technical Bid and Commercial/Price Bid from eligible established contractors having **registered Branch office in Mumbai and executed at least one project, work of similar nature in Mumbai** for carrying out Interior Renovation work of Multipurpose hall at Ground floor, Central Office Building. The estimated cost of work is **Rs.173.00 Lakhs +GST as applicable** and the **Completion** period is **2 months.** Tender forms (prequalification bid & Price Bid) can be collected against payment of **Rs.1000/- (non-refundable)** by way of pay order drawn from Scheduled Bank in favour of "Union Bank of India" payable at Mumbai during working hours from **25.04.2024 to 10.05.2024** upto **1pm.**The tenders are also available on Bank's website www.unionbankofindia.co.in. & Government portal www.eprocure.gov.in.Tenderer downloading documents from website, must submit pay order for document cost **(Rs.1000/-)** while submitting the tender in a separate envelope super scribing "tender cost" else tender will not be considered for opening. The last date of submission of tender is **10.05.2024** upto **3.00** PM.

Applicants registered as ***MSME / NSIC / Udyog Aadhar/SSI*** Scheme are exempted from depositing cost of BID document / EMD provided they attach self attested copy of the relevant certificate.

Contractors submitting ***MSME / NSIC / Udyog Aadhar/SSI*** Scheme certificate under any other categories of work and seeking exemption from EMD will not be entertained and may lead to disqualification from further process.

The Bank reserves the right to reject any or all applications without assigning any reasons whatsoever. Please refer banks website and Govt. portal regarding any corrigendum for the subject tender till finalization.

ASST. GENERAL MANAGER

CENTRAL OFFICE, MUMBAI

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DISCLAIMER

The information is provided to prospective tenderer having Registered Branch Office in Mumbai, who intend to participate in bidding process for Interior furnishing, Civil, Electrical, HVAC and Networking works of Multipurpose Hall at Ground floor, Central Office Mumbai, for Union Bank of India for which this tender has been issued, as per the terms and conditions set out in this tender and any other terms and conditions related to such information.

This tender is neither an agreement nor an offer and the purpose of this Tender/ Request for Proposal (RFP) is to provide the Bidder(s) with information to assist the formulation of their proposals. The RFP does not claim to contain all the information each Bidder may require. While Bank has taken due care in the preparation of the information contained herein, it does not claim that the information is exhaustive. Respondents to this tender are required to make their own inquiries/analysis and should check the accuracy, reliability and completeness of the information in this RFP and where necessary obtain independent advices/clarifications. They should not rely solely on the information contained in the blank tender documents / forms. Bank may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information in this RFP.The Bank is not responsible if no due diligence is performed by the Respondents.

The Bank, its employees and advisors make no representation or warranty and shall have no liability to any person, including any applicant or Bidder under any law, statute, rule or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expenses which may arise from or be incurred or suffered on account of anything contained in this tender or otherwise, including the accuracy, adequacy, correctness, completeness or reliability of the tender and any assessment, assumption, statement or information contained therein or deemed to form part of this tender or arising in any way for participation in this Bid stage.

Union Bank of India reserves the right to alter, amend, update or supplement the information reflected in this document or to change the process or procedure to be applied. It also reserves the right to decline bids without assigning any reason thereof.

The Bidder shall bear all its costs associated with or relating to the preparation and submission of its Bid including but not limited to preparation, copying, postage, delivery, fees, expenses associated with any demonstrations or presentations which may be required by Bank or any other costs incurred in connection with or relating to its Bid.All such costs and expenses will remain with the Bidder and Bank shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder in preparation or submission of the Bid, regardless of the conduct or outcome of the Bidding process.

NOTICE FOR INVITING TENDER

To

Dear Sir,

SUBJECT: INTERIOR RENOVATION OF MULTIPURPOSE HALL AT GROUND FLOOR, CENTRAL OFFICE, NARIMAN POINT, MUMBAI.

1) Sealed, Item Rate, tenders are invited in the prescribed format from contractors having registered Branch office in Mumbai for execution of Interior Renovation Works, Internal furnishing, Civil, Electrical and Networking works of Multipurpose hall at Ground floor, Central Office Building as per following details:

Estimated Cost of the Work	: **Rs.173.00 lakhs + GST as applicable.**
Earnest Money Deposit	: **Rs.3,46,000.00** by way of pay order drawn From Scheduled Bank in favor of Union Bank of India payable at Mumbai.
Period of Completion	: **2 months**
Validity of Tender	: 120 days
Date of Issue of Tender	: **From 25.04.2024 to 10.05.2024 During office hours**
Pre-bid Meeting with Contractor	: **3.30 p.m. on 03.05.2024**
Last date of submission of Tender	: **Up to 3.00 p.m. on 10.05.2024**
Date & Time of opening the Technical bid.	: **3.30 p.m. on 10.05.2024**

The tender document can be obtained from the office of the Client: 7th floor, Support Services Department, Union Bank of India,239,Central Office,Nariman point, Mumbai on payment of Rs.1000/- (non-refundable) by way of pay order drawn from Scheduled Bank in favour of "Union Bank of India" payable at Mumbai and should be submitted in original, duly stamped, and sealed in the same office.

2) The Item Rates under the contract include for full, final & entire completion of all works in all respects described in the tender document & as shown in drawings forming part of the contract. Contractor must quote Item Rates on estimated cost. Tenders will be opened in the presence of contracting agencies or their authorized representatives.

3) The tenders shall be submitted in two envelopes. The envelope No.1 shall be marked as Technical Bid and shall contain Technical Bid of the tender, EMD in the form of Demand Draft/ Pay Order drawn from Scheduled Bank, Prequalification application and any other matter.
The envelope No. 2 shall be marked as **Price Bid**.
All the above 2 envelopes to be put in **3rd envelope** super scribing the subject tender before submitting.

4) **Envelope No.1.**Will be opened on the due date of opening. **Envelope No. 2** of the contractors will be opened at later date (to be intimated subsequently) and of those whose prequalification application meets with eligibility criteria of the advertisement and the requirement of Tender fees, EMD and the terms/ conditions submitted, acceptance of technical bid, etc.

5) Tenders are to be submitted in one sealed Envelope Cover Enclosing Therein the Envelope No.1 and Envelope No.2 Duly Super scribed **"Tender for interior furnishing, Civil, Electrical, HVAC and Networking works of Multipurpose Hall at Ground floor, Central Office Mumbai".**

6) The tenderer must use only the tender forms issued for the purpose to fill in the rates. Intimation of tender quoted by letter, telegram/ telex will not be acceptable. The tender must be dropped in a tender box kept **at Reception, Ground floor, Union Bank of India,239,Central Office,Nariman point, Mumbai**. **Delivery of the tender through courier/ post shall be avoided and any disputes arising thereof shall not be entertained.**

7) Tenderers are advised not to make any alteration/modification in the tender documents, Item of work or in any respect whatsoever. Violation of this requirement will make the Tender liable for rejection.

8) In case of postal delivery, the tenderer has to ensure that tender is reached before the due date and time and dropped in the tender box. The Bank will not be responsible for damage in the transit and delay of receipt of tender, if any or sent by a special messenger. **Tender received late shall be rejected.**

9) Every 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 with the General and Special Conditions of Contract, Specifications etc. as laid down.Any tender with any of the documents not so signed will be subjected to rejection.

10) No consideration will be given to a tender received after the time stipulated above and no extension will be allowed for submission of the tender.

11) The Union Bank of India shall not be bound to accept the lowest tender and reserves the right to accept or reject any or all the tenders without assigning any reason whatsoever.

12) This notice inviting tenders, the conditions of tender and the duly completed form of tender etc. will form part of the Agreement to be executed by the successful tenderer with the Bank.

13) Tender submitted without EMD from Scheduled Bank will be treated as incomplete and the same will be rejected out rightly. The EMD shall be strictly in the form of Pay Order / Demand Draft. No Cheques will be accepted on account of EMD. Tenders submitted with the cheque as EMD will be treated as incomplete and will be rejected.

ASST. GENERAL MANAGER

"INTEGRITY PACT (IP):

Vendors/bidders/sellers, only those who commit themselves to Integrity Pact (IP) with the Bank, would be considered competent to participate in the bidding process. In other words, entering into this pact would be the preliminary qualification. Bids not accompanied with signed IP by the bidders shall be summarily rejected.

IP shall cover all phases of contract i.e. from the stage of Notice Inviting Tenders (NIT)/ Request for Proposals (RFP) till the conclusion of the contract i.e. final payment or the duration of warrantee/guarantee. Format of IP is attached in Annexure "A" or strict compliance.

The following Independent External Monitors (IEMs) have been appointed by the Bank, who will review independently and objectively, whether and to what extent parties have complied with their obligation under the pact.

1. Dr. Meeran Chadha Borwankar, IPS (Retd.),
   e-mail: mcborwankar@gmail.com
2. Smt. Bharathi Sivaswami Sihag, IAS (Retd.),
   e-mail: bsihag@hotmail.com

It may kindly be noted that all clarification/query/status with respect to tender may be forwarded to the following officer and not to IEMs except query related to Integrated Pact:
Ms.Leena Raut
leena.raut@unionbankofindia.bank
Chief Manager
Ph. No.:022-22892587

Asst. General Manager

BIO – DATA OF CONTRACTING AGENCY

1. Name of the firm :

   Address :

   Telephone No. :
   Office :
   Residence :
   Mobile :
   Fax :
   E-Mail :

2a) Whether proprietary/partnership/: Pvt. Ltd. / Public Ltd. (certificate of registration / partnership deed to be enclosed as Annexure-I).

b) Name of the Proprietor, Partners, Directors

I)

II)

c) Year of establishment :

3. Registration with Tax Authorities :

   i) Income-tax (PAN) No. :

   ii) GST No. :

   iii) EPF Regn. No. :

   iv) ESI Regn. No. :

   v) TIN / VAT No. :

   (Copies of certificates of registration with relevant authorities to be enclosed as Annexure-II-A, II-B, II-C, II-D & II-E)

4. Names of the Bankers with address & telephone numbers:

   I)

   II)

5. Enclose solvency certificate of the Amount of 30% of estimated cost : Enclosed/ Not enclosed

Note: The solvency certificate should be addressed to "Whom so ever it may concern" and not older than six months from the date of advertisement.

6. Furnish copies of audited balance-Sheet and Profit & Loss A/C. for the last 3 years i.e. Assessment years-2020-2021,2021-2022,2022-2023 as Annexure-IV-A, IV-B & IV-C. : Enclosed/ Not enclosed

7. Registration with Govt. / Public Sector / Banks (certificates of Registration to be enclosed as Annexure-V.

Name of the Organization	Year since empanelled

8. Give details if at present involved in litigation in similar type of contracts:

Sr. No.	Name of Project	Name of Employer	Nature of work	Work order dated	Date of completion of work	Value Rs.

9. Details of civil suit, if any, that arose during execution of contract in the past 10 years. :

10. Specify maximum value of single value project executed during the last three years. :

11. Name & relation, if any, with the staff Member of Union Bank of India. :

12. Details of work executed during the last 3 years:

Type of work	Work executed for (name of the Institution / Body)	Nature of work (in brief)	Location	Value Rs.	Duration of work with dt Commence completion		If work left incomplete or terminated (give reasons)

Note: Copies of work orders along with Xerox copies of relevant TDS certificate, satisfactory completion certificate obtained from the client shall be enclosed as Annexure VI. Please note without the copies of certificates, your application is liable to be rejected.

13. Details of work on hand (photo copies of performance certificate, work orders issued by valued clients, preferably Banks, Govt., and Semi-Govt. Bodies should be enclosed as Annexure VII).

Type of work	Work executed for (name of the Institution / Body)	Nature of work (in brief)	Location	Value Rs.	Duration of work, stipulated time	Present stage of work

14. Details of Pre-Qualifying work (Filling of columns is mandatory and to be supported by copies of work order and completion letters as per the criteria. On Non-filling of columns or not enclosing credentials, the application form submitted will be rejected without assigning any reason thereof.)

Name of the work	Name of the client	Work order reference/date	Completion letter reference/ date	Value of work completed

15. LIST OF NAME/S OF PROPRIETOR/ PARTNERS & EMPLOYEES

Name	Qualifications	Experience	Particulars of work done	Employed in your firm since	Value of work done

16. Turnover in last 5 years:

Sr. No.	Year	Turnover (Rs.in lacs)	Income-tax paid	VAT paid	Service Tax paid
1	2018-19				
2	2019-20				
3	2020-21				
4	2021-22				
5	2022-23				

Copies of income-tax returns / assessment orders for each year to be enclosed as Annexure VIII-A,B,C,D& E

17. List of equipments / machinery owned:

Sr. No.	Name of equipment	Year of manufacture	Nos. available

18. PRE-QUALIFICATION CRITERIA:

It is mandatory that all the agencies shall have registration for PAN /VAT / TIN / GST.
(Estimated Cost: Rs.173.00 lakhs + GST as applicable)

Sr. No.	Criteria	Weightages	Self rating marks
1	Should have executed one similar work of 80% of estimated cost i.e. Rs.1,38,40,000.00 OR Should have executed two similar work of Rs.50% of estimated cost i.e. Rs.86,50,000.00 OR Should have executed three similar works of 40% of estimated cost i.e. Rs.69,20,000.00 during last 7 years.	50	
2	Average turnover for the last three years shall be 30% of estimated cost i.e. Rs.51,90,000.00 and above.	25	
3	Should have submitted solvency certificate of 30% of estimated cost i.e. Rs.51,90,000.00 (not older than 6 months).	Mandatory	
4	Should have made profit at least in two years during last three years.	25	

NOTE: The value of work executed will be enhanced by 5% per year to ascertain current value of the work done. Criteria mentioned above are just minimum requirement.The Bank at its discretion may upgrade the criteria. No complaint on this account will be entertained. Contractors scoring 80 marks & above will only be considered for pre-qualification.Contractors themselves have to fill in self-rating marks column in the above table.
The similar work means Interior furnishing work including furniture/furnishing along with related service of Civil, Electrical, Networking, Fire Alarm System, Access Control works etc.

19. LIST OF ENCLOSURES:

ANNEXURE NO.	PARTICULARS	TICK IF ENCLOSED
I	Certificate of registration of Company / partnership deed.	
IIA, IIB, IIC, IID, IIE	Certificates of registration with Income Tax, GST, EPF, ESI and VAT / TIN authorities.	
III	Solvency Certificate.	
IVA, IVB, IVC	Audited Balance Sheet & Profit & Loss A/c. Statement for 2020-2021 , 2021-2022 & 2022-2023	
V	Certificates of Registration with Govt. / Public Sector / Banks.	
VI	Copies of work orders along with Xerox copies of relevant TDS certificate, satisfactory completion certificate mentioning value of work.	
VII	Copies of performance certificate, work orders issued by valued clients, preferably Banks, Govt. and Semi-Govt. Bodies. At least One qualifying work mentioned by the Contractor in Bid is to be from Govt./Public Sector/Banks.	
VIIIA, VIIIB, VIIIC, VIIID, VIIIE	Copies of income-tax returns/ assessment orders for each year from 2020 to 2023	

Note: In absence of any of the above enclosures, your application is likely to be rejected.

DETAILS OF PREQUALIFYING WORKS - I

(Filling all details is mandatory without which application will be summarily rejected)

1.	NAME OF FIRM & ADDRESS FOR WHOM THE WORK IS EXECUTED	
2.	DETAILS OF WORK DONE BY THE FIRM	1. FURNISHING WORK=Rs._____ 2. CIVIL WORK = Rs. _____ 3. ELECTRICALS = Rs._____
3.	PHOTOGRAPHS OF WORK COMPLETED (PLEASE ENCLOSE COPY)	
4.	VALUE OF CONTRACT EXECUTED	
5.	BRIEF DISCRIPTION OF THE WORK	
6.	PERIOD DURING WHICH THE CONTRACT IS EXECUTED	
7.	WORK ORDER REFERENCE (PLEASE ENCLOSE COPY OF THE WORK ORDER)	
8.	COMPLETION CERTIFICATE REFERENCE (PLEASE ENCLOSE COPY OF THE COMPLETION OF WORK)	
9.	DELAY IN EXECUTION OF WORK	
10.	WHETHER TIME SCHEDULE IS ADHERED TO	
11.	ANY OTHER INFORMATION WHICH YOU CONSIDER WILL HELP US IN TAKING OUR DECISION.	

PLACE: SIGNATURE WITH OFFICE SEAL

DATE:

DETAILS OF PREQUALIFYING WORKS - II

(Filling all details are mandatory without which application will be summarily rejected)

12.	NAME OF FIRM & ADDRESS FOR WHOM THE WORK IS EXECUTED	
13.	DETAILS OF WORK DONE BY THE FIRM	1. FURNISHING WORK=Rs._____ 2. CIVIL WORK = Rs. _____ 3. ELECTRICAL = Rs._____
14.	PHOTOGRAPHS OF WORK COMPLETED (PLEASE ENCLOSE COPY)	
15.	VALUE OF CONTRACT EXECUTED	
16.	BRIEF DISCRIPTION OF THE WORK	
17.	PERIOD DURING WHICH THE CONTRACT IS EXECUTED	
18.	WORK ORDER REFERENCE (PLEASE ENCLOSE COPY OF THE WORK ORDER)	
19.	COMPLETION CERTIFICATE REFERENCE (PLEASE ENCLOSE COPY OF THE COMPLETION OF WORK)	
20.	DELAY IN EXECUTION OF WORK	
21.	WHETHER TIME SCHEDULE IS ADHERED TO	
22.	ANY OTHER INFORMATION WHICH YOU CONSIDER WILL HELP US IN TAKING OUR DECISION.	

PLACE: SIGNATURE WITH OFFICE SEAL

DATE:

FORMAT OF CONFIDENTIAL REPORT

(To be submitted by the Client of applicant on their letter head in sealed envelope to the Bank - Mandatory requirement)

To:

Asst. General Manager/ Dy. General Manager,
Support Services Dept.,7th floor,
Union Bank of India,
Union Bank Bhavan,
239,Vidhan Bhavan Marg, Nariman Point,
Mumbai- 400 021.

Sir,

Confidential Report on M/s._____

This is to certify that M/s. _____, having Office at_____ have completed the work of _____. Confidential Report for our project executed is as under:

1.	***DETAILS OF PROJECT EXECUTED BY THE FIRM***	
2.	**AREA OF CONSTRUCTION**	
3.	***DATE OF COMMENCEMENT OF PROJECT***	
4.	***DATE OF COMPLETION OF PROJECT***	
5.	***TOTAL VALUE OF PROJECT EXECUTED***	
6.	***QUALITY OF SERVICE RENDERED***	
7.	***COMPETENCE TO HANDLE WORKS***	
8.	***INTEGRITY AND RELIABILITY OF THE FIRM***	
9.	***DEALING IN EXECUTION OF WORK***	
10.	***WHETHER TIME SCHEDULE IS ADHERED TO***	
11.	***WHETHER ANY PENALTY IMPOSED FOR THE DELAY***	
12.	***GENERAL ATTITUDE OF THE FIRM***	
13.	***ANY OTHER INFORMATION WHICH YOU CONSIDER WILL HELP US IN TAKING OUR DECISION***	

PLACE: **SIGNATURE: _____**
NAME: _____

DATE: **DESIGNATION: _____OFFICE SEAL**

DECLARATION

I / We have read the instructions appended to the Proforma and I / We understand that if any false information is detected at a later date, any future contract made between ourselves and Union Bank of India, on the basis of the information given by me / us can be treated as invalid by the Bank and I / We will be solely responsible for the consequences.

I / We acknowledge that:

It shall be deemed that by submitting the Proposal, I/we have:

a) made a complete and careful examination of the RFP;
b) received all relevant information requested from the Authority;
c) accepted the risk of inadequacy, error or mistake in the information provided in the RFP or furnished by or on behalf of the Authority or relating to any of the matters referred above;
d) satisfied itself about all matters, things and information, including matters referred above, necessary and required for submitting an informed Application and performance of all of its obligations there under;
e) acknowledged that it does not have a Conflict of interest: and
f) Agreed to be bound by the undertaking provided by it under and in terms hereof.

I / We agree that the decision of Union Bank of India in selection of contractors will be final and binding to me / us.

I / We agree that I / we have no objection if enquiries are made about the work listed by me / us in the accompanying sheets.

I / We agree that I / We have not applied in the name of sister concern for the subject empanelment process.

All the information furnished by me hereunder is correct to the best of my knowledge and belief.

Place :
Date :

SIGNATURE
NAME & DESIGNATION
SEAL OF ORGANISATION

INSTRUCTION WITH REGARD TO SUBMISSION OF TENDER

1) Rates should be quoted both in figures and words in columns specified. All erasures and alterations made while initials of the tenderer must attest filling the tender. **Overwriting of figures is not permitted.** Failure to comply with either of these conditions will render the tender invalid and it will be the option of Union Bank of India to accept or reject the tender. No request of any change in rate or conditions after opening of the tender will be entertained.

2) In the case of figures, the word Rs. should be written before the figures of rupees and the word 'P' written after the decimal figures e.g. Rs. 3.25 P. In the case of words, the word Rupee should similarly precede and the words "Paise only" should be written at the end, closely following each the Item rate. The word "only" should not be written in the next line unless the rate quoted is in whole Rupees closely followed by the word "only". The amount should invariably be upto two decimal places.

3) The different Schedules should be filled as follows:
(a) The "Rate" Column wherever applicable to be legibly filled in ink in both figures and words.
(b) The "Amount" Column also to be legibly filled in ink in both figures and words.
(c) All corrections to be initialed.
(d) No over writing is allowed.
(e) The figure of Item of rate shall be legibly filled in ink in both figure and words.

4) Errors in the bill of quantities shall be dealt with in the following manner.

   a. In the event of any discrepancy between the rates quoted in words and the rates in figures the former shall prevail.
   b. In the event of an error occurring in the amount column of the bills of quantities as a result of the wrong extension of the unit rate and the quantity, the unit rate shall be regarded, as firm and extension shall be amended on the basis of the rates.
   c. All the errors in totaling in the amount column and in carrying forward the totals shall be corrected.

5) The tender shall be signed and dated at all places provided therein. Also all pages, drawings and corrections/ alterations shall be initialed. The tender submitted on behalf of a firm shall be signed by all the partners of the firm or by a partner who has the necessary authority on behalf of the firm to enter into the proposed contract. Otherwise the tender may be rejected by Union Bank of India.

6) The time allowed for completion of works is **2 months** from the date of commencement of the work is reckoned from the tenth day from the date of Letter of Intent.Time shall be considered the essence of contract.

7) It shall be the responsibility of the contractor to arrange for water and electricity required for completing construction. If water is available with the Bank, the same will be supplied to the contractor by recovering 1% of the value of work done. However, contractor will have to make arrangement of pipeline for distributing water. Contractor to make own arrangement of electricity and pay tariff to the electricity board. In case the Bank is supplying electricity, the contractor will have to install separate energy meter and pay the charges as per its consumption.

8) Every tender shall be accompanied by earnest money of **Rs.3,46,000.00 (Rupees Three Lakhs fourty six thousand only)** by way of Demand Draft/Pay Order drawn from Bank favoring UNION BANK OF INDIA, payable at Mumbai.Tender submitted without earnest money shall be summarily rejected. The contractor whose tender is accepted will have to deposit as security deposit a further sum to make up 5% of the value of the accepted tender. The security deposit will have to be made within 14 days from the date of

acceptance of tender, failing which the Bank at his discretion may revoke the letter of acceptance and forfeit the earnest money deposit furnished along with the tender.

9) The Earnest Money may be retained in the case of the successful tendered as part of the security for due fulfillment of the Contract. No interest shall be paid on this deposit.Failure to enter into the Contract agreement within the stipulated time of 10 days from the date of acceptance of work order or withdrawal from bidding during bid validity period shall entail the forfeiture of the Earnest money Deposit. The Earnest money of unsuccessful tenderer will be released after issue of work order, without any interest.

10) The tenderer shall submit his tender after carefully examining the whole of the tender document and the terms and conditions of contract, the drawings and specifications, the schedule of quantities etc., and also after examining the site and conditions prevailing in and around site.

11) The Bank does not bind himself to accept the lowest or any tender and reserve to them the right of accepting the whole or any part of the tender and tenderer is bound to perform the same at the rates quoted.The Bank will not be bound to accept the lowest tender and reserves the right to accept or reject any or all the tender without assigning any reasons whatsoever. The work may also be divided among the contracting agencies depending on the exigencies of the Bank.

12) Bank shall not be responsible for any expenses incurred by bidders in connection with the preparation and delivery of their bids, including expenses incurred during bidding.

13) Bids from consortium shall not be accepted. Telex / Telegraphic / Fax / Email bids shall not be accepted. Late/ Delay / post tenders shall be rejected and representative of such bidder shall not be allowed to attend the bid opening.

14) The Bank is not concerned with any rise or fall in the prices of materials and labour. The rates quoted shall include all costs, allowances, taxes including sales tax on works contract or any other charges including any enhanced labour rates etc. which may become effective for any reason including those due to acts of Government/ Statutory Bodies enacted from time to time by the State and or the Central Government. Under no circumstances, shall the Bank be held responsible for compensation or loss to the contractor due to any increase in the cost of labour or materials etc.

15) Contractor to coordinate and assist the Architect/Interior Designer in obtaining all statutory approvals and any other State and Central rules in force.Any expenses incurred in obtaining such approvals are deemed included in the rates quoted by the Contractors.

16) Tenders shall remain valid for a period of 120 days from the date of opening of the tender which period may be extended by mutual agreement and the tenderer shall not cancel or withdraw the tender during the initial validity period of 120 days.

17) The successful tenderer shall be bound to implement the Contract and mobilize and sign specified agreements within 10 days from the date of acceptance of work order.

18) Tenderer must include in their rates all taxes excluding GST.Due to change in taxes structure by orders from Central Govt. / State Govt. after opening of tenders shall be reimbursed to the contractor as per actual and upon verifying the proof of having made the payment.

19) This contract shall be an Item Rate contract. The Contractor shall be paid for actual quantity of work done, as measured at site including any deviation plus or minus. The rate of any non-schedule items of work shall be decided as mentioned in the conditions of contract.

20) The tender drawings exhibited/enclosed are preliminary drawings intended for the guidance of the Contractor only. They may be subject to revision and alteration without vitiating any of the terms of the contract and the Contractor shall be bound to execute the works as shown on the final drawings without claiming any extra payment.

21) No correspondence will be entertained in respect of this tender other than any clarifications strictly pertaining to this tender.

22) The tender price quoted by a tenderer shall be kept strictly confidential and shall not be divulged to any other party even approximately before the time limit for delivery of tender. The only exception be for obtaining an insurance quotation, you may give your insurance company or agent any essential information they ask for, so long as it is done in strict confidence. No information about other's tender price should be obtained and no arrangement with anyone else should be made whether or not he submits the tender.

23) For electrical, sanitary, water supply and drainage works, tenderer must possess respective valid licenses from the competent authority of the area where the site is located.

24) Contractor should sign at the end of every page prior to submitting the tender.

25) Conditional tenders will be summarily rejected.

26) COMPLETION PERIOD OF THE PROJECT WILL BE **2 MONTHS.**

27) The contractor shall be responsible for obtaining all the necessary statutory permissions for the same.

28) The Contractor to depute a full time Supervisor, who shall be a degree civil engineer with minimum 10 years' experience in managing similar Interior projects. The contractor should submit the necessary credentials of such engineer to UBI for scrutiny & approval. Such engineer shall be deputed on the site full time for the full duration of the project & shall report daily to the concerned person in charge from UBI.

29) The minimum salary requirement to be considered for such engineer shall be Rs 50,000/- (Rupees Fifty Thousand only) per month.

30) If it is found that the work on site is being carried out in absence of such an engineer, the contractor shall be fined Rs 5,000/- per day for such non-compliance. If such non-compliance is observed more than 10 times, UBI reserves the authority to ask the contractor to cease work on the site & terminate the contract without any explanation whatsoever & the termination process as per the tender document shall follow.

31) **COMMERCIAL EVALUATION:** Only the technically qualified bidders who are successful will be asked to participate in commercial bid/price Bid opening.The indicative commercial bids of all the bidders' found ineligible as per the requirements of this RFP will be unopened or returned to them unopened against acknowledgement.

32) After opening of Commercial Bid, the lowest amount quoted by the bidder will be termed as L1 Bidder.The evaluation of the Commercial Bids will also be done by the Project Architect and tender evaluation committee at Central Office. If L1 vendor refuses due to any reason, the Bank may contact L-2 or L-3 vendor and @ L-1 agreed rate may be accepted (Due to time constraint).

33) **If any cartel formation is found during any stages of the tender process, the bank has every right to cancel all the offers of shortlisted vendors and will be debarred / expelled from applying from the tenders for Union Bank for 2 to 3 years. The Bank's decision is final and binding.**

Asst. General Manager/ Dy. General Manager,
Support Services Dept., 7th floor,
Union Bank of India,
Union Bank Bhavan,
239, Vidhan Bhavan Marg, Nariman Point,
Mumbai- 400 021.

TENDER FORM

To,

Asst. General Manager/ Dy. General Manager,
Support Services Dept., 7th floor,
Union Bank of India,
Union Bank Bhavan,
239, Vidhan Bhavan Marg, Nariman Point,
Mumbai - 400 021.

TENDER FOR INTERIOR RENOVATION OF MULTIPURPOSE HALL AT GROUND FLOOR, CENTRAL OFFICE, NARIMAN POINT, MUMBAI.

Sir,

1. We have read and examined the following documents as received by us:

    a) Notice Inviting Tender
    b) Instructions to Tenderer
    c) Conditions of Contract.
    d) Supplementary Conditions.
    e) Specifications
    f) Drawings
    g) Schedule of Quantities.
    h) Addition condition of contract

2. We are well aware and familiar with CPWD/ PWD, Schedule of Rates 2022 and their specifications, CPWD/ PWD Specification, BIS publication and National Building code which shall apply to this contract to supplement any missing details in this contract in order of preference.
   Further to the above, we have visited and examined the site of the proposed works and have acquired the requisite information relating thereto as affecting the tender invited by Bank.

3. We agree that any other terms or conditions of contract or any general reservation which may be printed on any correspondence emanating from us in connection with this tender or with any contract resulting from this tender shall not be applicable to this tender or to the contract.

4. We have obeyed the rules about confidentiality of tenders and will continue to do so as long as they apply.

5. We are enclosing along with our tender an earnest money of Rs._____(Rupees _____ only) drawn from Scheduled Bank favoring Union Bank of India, payable at Mumbai (Pay Order No.------- dated ---------- drawn on ----------). We hereby agree that this sum shall be forfeited by Union Bank of India in the event of our tender being accepted and if we fail to execute the contract when called upon to do so.

6. Subject to and in accordance with paragraphs 3 & 4 above and the terms and conditions contained or referred to in the documents listed in paragraph 1, we agree and offer to execute all the Works referred to in the said documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be ordered to be valued as per the conditions of contract.

7. We undertake to complete and deliver the whole of the works within a period i.e.**2 Months** as specified in the contract and further confirm that the time allowed for completion is adequate. Time allowed for completion of entire job or part job assigned shall be reckoned from the tenth day of the date of acceptance of work order. We shall be under the obligation to pay the sum as stated in the contract for every day that the works shall remain incomplete, damages as compensation subject to the conditions of contract relating to extension of time.

8. We hereby agree that unless & until a formal agreement is prepared & executed in accordance with the Articles of agreement, this tender together with your acceptance thereof, shall constitute a binding contract between us.
9. EMD Submitted by us shall be treated as Initial Security Deposit. EMD submitted shall be by way of DD/PO drawn from Scheduled Bank in favour of UNION BANK OF INDIA, payable at Mumbai. We further agree for a deduction of 8% from the running bill as retention money till accumulating total security deposit.
10. Validity of the tender is 120 days from the date of opening of tender or it may be beyond 120 days if mutually accepted.

11. The Bank is at liberty to accept or reject any tender, without assigning any reasons whatsoever.

12. The work may be split up in the first instance as per exigencies of the Bank. It may be split up in more parts or parts combined if so desired by the Bank without assigning any reasons whatsoever. We will not have any claim either for loss of profit or revision in rates.
13. Adherence to the pert chart will be ensured by us as the project is to be executed in a very strict time frame.
14. We are aware that the quantities of work indicated in the bill of quantities are approximate, may vary to any extent, even it may be omitted. We will not have any claim of any kind against the Bank.

Signed in the capacity of duly authorized
to sign tenders for and on behalf of

Address ……. Telephone No……..

…… Telex No.

…… Fax No.

……..

Date:

Scope of Work:

_____
_____
_____
_____
_____.

SUPPLEMENTARY CONDITION

On the acceptance of his tender,the contractor will be required to execute an Indemnity Bond with-in 10 days of issue of work order in favor of the Bank against third party claims, civil or criminal complaints, site mishaps and other accidents or disputes and, against any damages, loss or expenses caused to bank and bank's any of articles, fixtures, fittings, infrastructure, due to or resulting from any negligence, misconduct or breach of duty on the part of the contractor, his subcontractors/assignees or his employees and agents , representatives etc., as per the appropriate Indemnity Bond attached.

It will also be covered by labour laws of the Govt. of India.

Any other conditions suggested by the Bank may be added subsequently.

The EMD/SD may be forfeited:

If the Bidder withdraws his Bid during the period of Bid validity specified in this RFP.

or

If the Bidder makes any statement or submit information which turns out to be false / incorrect at any time prior/post of issuing Purchase order.

or

If the Bidder fails to furnish security Deposits or is there any benefit of doubt of formation of cartel by bidders.

or

If the bidder backs out or do not accept the work order after being declared L-1 bidder.

or

In case of a successful Bidder, if the Bidder fails to sign/execute the contract in accordance with this RFP.

or

If a bidder refuses to accept the corrections of errors calculated in accordance with the provisions of the bidding documents, its bid shall be rejected and its EMD shall be forfeited.

1. The Contract Document is complimentary. What is called for in any one shall be as binding as called for by all. The aforesaid shall form integral part of contract and in the event of any inconsistency between any provisions herein the provisions of the Contract Documents shall prevail. When any of the General and Special Conditions are at variance, the condition stipulated in the Special Conditions of Contract shall supersede relevant provisions in General Conditions. For all matters not specifically provided for herein the provisions of General and Special Conditions in the Tender Documents shall apply and the rights and liabilities of the parties shall be decided accordingly. The decision of the Bank in this regard shall be final and binding.

2. All time limits stated in the Contract Document are of the essence of the contract where the work has to be completed within 2 months failing which liquidated damages will be recovered @ 1.0% of contract amount for per week of delay subject to maximum recovery of 10 % of the contract amount.

3. For the consideration hereinafter mentioned, the Contractor shall carry out and complete the Works in conformity with the contract documents and in accordance with the instructions issued by the consultant from time to time including all

modifications extra and additional works and obligations to be carried out either on the Site or at any factory or work shop or any other place for subsequent incorporation as required for the due performance of the contract.

4. The general character and the scope of the Works is illustrated and defined by the specifications and the bills of quantities herewith attached and by the signed drawings. The scope includes furnishing all materials, labour, tools, equipment and management necessary for and incidental to the construction and completion of the Works. If the Contractor shall find any discrepancy in or divergence between the contract drawings and/or the contract bills he shall immediately give to the Consultant a written notice specifying the discrepancy or divergence and the Consultant shall issue instructions in regard thereto which shall be complied with by the Contractor.

5. INTENT

The intention of arrangement is to secure the performance of the Contractor's obligations to the satisfaction of the Bank/ Architect/ Consultant. All labour, material, equipment, constructional plant and transportation necessary for the proper execution of the Project is to be provided by the Contractor and should only be of the approved manufacturer/agencies respective kinds as described in the Contract Documents which is to be subjected from time to time to such tests as the Engineer/ Consultant's representative may direct. In case the required material/services of approved manufacturers/agencies are not available or are not upto the mark the Contractor shall procure material/ services from such other manufacturer/agencies as may be approved by the Consultant / Bank and the Contractor shall submit rate analysis for such material.

6. EXTENT

The Contractor shall carry out and complete the Works in every respect in accordance with this contract and with the directions of and to the reasonable satisfaction of the Consultant. The Consultant may in their absolute discretion and from time to time issue further drawings, details and/or written instructions and written explanations whole of which are collectively referred to as Consultants' instructions. All such drawings and instructions shall be consistent with the Contract Document true developments thereof as reasonably inferable there from.

7. TYPE OF CONTRACT

The Contract is Item Rate contract. The Contractor shall be paid for the actual quantity of Work done, as measured at Site, at the Item quoted by him in the Contract Bills. The contractors have

i. Been informed that the schedule of approximate quantities is liable to alteration by omission, deduction, substitution or additions at the discretion of the Consultant/Bank without affecting the terms of the contract and no compensation to Contractor.
ii. Fully and correctly understood the meaning of all the tender documents, the General Conditions of Contract, Special Condition of Contract, Technical Specifications, Bill of Quantities and working drawings or part thereof.

8. CONTRACTORS COVENANTS

i. The Tender form conditions, priced schedule of quantities, contract drawings and General and Special Conditions of Contract, specifications, Drawings, priced Bill of Quantities, Schedule of Rates and Prices, if any, Tender, pre-contract correspondence, Letter of Intent/Acceptance, Work order, shall be read and construed as forming part of this agreement and the Contractor shall abide by and submit themselves to all the conditions and stipulations contained therein; which are not specifically incorporated herein;

ii. The Contractor shall obtain necessary permissions/ certificates/ order from the Competent Authority in respect of workmen employed by them for the Project and shall keep the Bank safe, harmless and reimburse all amounts/expenses incurred or suffered by the Bank in connection with any such claim;

iii. The Contractors shall not make any claim as regards want of information of any particular point or any change in the rate or conditions save and except as provided herein;

iv. The Contractors shall have a duly authorized agent at the place of Work to accept services of notice and to agree to extras, omissions, additions and substituted items of Works and rates from the commencement of the Work until it is virtually completed.

v. In the event of any discrepancy between the details and/or description given in the Bill of Quantities, the Drawings and the Technical Specifications, such item shall be deemed to have been priced in accordance with the details and/or description confirming to the most superior provisions contained in any of the following :-

   a) Bill of Quantities
   b) Drawings
   c) Technical Specifications

vi. It shall be understood that the details and/or description not specifically mentioned in the Bill of Quantities and/or the drawing shall be the same as those mentioned in the Technical Specification. Any further interpretation of above Clause shall be at the discretion of the Consultants, whose decision shall be final and binding on the parties to the contract.

vii. The Contractors shall not make any claim for increase in the contract consideration on the basis of incorrectness and insufficiency of the information available at the time of submitting the Tender and/ or incorrectness and insufficiency of the rates and prices stated in the price bill of quantity and schedule of rates and prices or otherwise alleging insufficiency of the tender amount to cover their obligation under the contract or matters concerning the execution of the Project.

viii. The Contractor shall be fully responsible for the adequacy, stability and safety of all site operations and methods of construction, 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, or for the design or specification of any Temporary Works prepared by the Consultant.

ix. The Contractor shall promptly inform the Consultant of any error, omission, fault and other defects in design, drawing or specifications for the Works, which are discovered while reviewing the Contract Documents or in the process of execution of the Works.

x. The Contractor shall arrange for the permits and licenses for release of materials, which are under Government control subject to the Bank giving all the necessary assistance and upon being advised by the Consultant signing any forms or applications that may be necessary.

xi. The Contractor shall comply with the provisions of legislation prevailing during the currency of contract.

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

10. GENERAL CONDITIONS

i. The schedule of Quantities given in the Contract Bill is provisional and is meant to indicate the intent of the Work and to provide a uniform basis for tendering. The Bank reserves the right to increase or decrease any of the quantities or to totally omit any item of Work and the Contractor shall not claim any extras or damages on these grounds.

ii. Any error in description or in quantity or omission of items from the Contract Bill shall not vitiate this Contract but shall be treated as a variation.

iii. The rates quoted by the Contractor in the priced bill of quantities (Contract Bills) shall be treated as firm and the contract sum shall be deemed to have been calculated with reference to the cost of execution of Works as set out in Contract Documents and shall not be adjusted or altered for any reason.

12. Notwithstanding anything contained elsewhere in any of the clauses of the tender, the prices/rates quoted for each item/Work in the Bills of Quantities shall be deemed to be inclusive of all direct and indirect costs, and taxes, etc. on any of inputs, royalty on quarried items etc. that may be involved in completing the item/Work as required in the fulfillment of all obligations under the contract and to the satisfaction of the Engineer. Additional Taxes/ Levies by Central/ State Government legislations after opening of tender shall be reimbursed to the contractors as per actual.

13. All the interim payments shall be regarded as payments by way of advance against the final payment only and not as payments for Work actually done and completed, and shall not preclude the repairing of bad, unsound, and imperfect or unskilled Work to be removed and taken away and reconstructed, or re-erected or be considered as an admission of the due performance of the contract, or any part thereof in any respect or the accruing of any claim, nor shall, it conclude, determine or affect in anyway the power of the Bank under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract. The final bill shall be submitted by the Contractor within one month of the date fixed for completion of the Work or of the date of certificate of completion furnished by the Consultant and payment shall be made within eight (8) weeks from the date of receipt of final Certificate from the Consultant.

14. INSURANCE

i. Without limiting the obligations and responsibilities under Contract Clause for Care of Work the Contractor shall effect third party insurance with an insurer and in terms approved by the Bank in the joint names of the Bank and the Contractor-

ii. against all loss or damage from whatever cause arising, other than the excepted risks stated in contract clause of the General Conditions for which the Contractor is to be held responsible under the terms of the Contract so as to cover the Bank and the Contractor during the period beginning with commencement of the Works until the date stated in the Certificate of Completion for the whole of the Works.

iii. against any loss or damage occasioned by the Contractor in the course of any operations carried out by him for the purposes of completing the outstanding Work during the Defects Liability period pursuant to the Undertaking given at the time of applying for the issue of Certificate of Completion.

iv. against any loss or damage occasioned by the Contractor in the course of any operations carried out by him for rectifying any defect in perfection or fault appearing during the progress of the Work or during the Defects Liability Period.

v. against any loss or damage occasioned by the Contractor in the course of any operations carried out by him for searching the cause of any defect, imperfection or fault appearing during the progress of the Works or during the Defects Liability Period.

vi. against any liability for or in respect of any damages or compensation payable at law in respect of or in consequence of any accident or injury to any workmen or other person in the employment of the sub-Contractor provided the sub-contractors shall not have insured against such contingency. (Insurance against accident etc. to workman)

vii. Unless otherwise instructed the Contractor shall insure the Works and keep them insured until the virtual completion of the contract against loss or damage by fire and/or earthquake, flood.

viii. The Contractor shall maintain Contractors' all risks insurance policy covering loss, damage, theft, burglary etc. of all materials and equipments, temporary Works and the Work shall be insured for a total sum equal to the value of all such items plus 10% of such value.

Provided always that all the insurance under the contract documents shall be arranged by the Contractor from a first class insurance company having a branch near the site who can deal with all matters pertaining to the subject, the insurance must be placed with a company approved by the Bank, in the joint names of the Bank and the Contractor for such amount and for any further sum if called to do so by the Bank, the premium of such further sum being allowed to the Contractor as an authorized extra.

15. The Contractor shall deposit the policy and receipt for premiums paid with the Bank within 21 (twenty one) days from the date of issue of Work order unless otherwise instructed. In default of the Contractor insuring as provided above, the Bank on his behalf may so insure and may deduct the premiums paid from any money due, or

which may become due to the Contractor. The Contractor shall as soon as the claim under the policy is settled or the Work reinstated by the Insurance Company should they elect to do so, proceed with due diligence with the completion of the Works in the same manner as though the insured risk/contingency has not occurred and in all respects under the conditions of the contract. The Contractor in case of rebinding or reinstatement after the occurrence of the insured risk/contingency shall be entitled to such extension of time for completion as the Bank may deem fit.

15.1 Such insurance shall continue during the whole of the time of continuance of Work and/or during such time that any persons are employed by him on the Works and shall when required produce before the Bank or the consultant, such policy of insurance and the receipt for payment of the earlier premium and the current premium.

15.2 The insurance shall be effective in such manner that the Bank is indemnified under the policy. In the event of the sub-contractor having affected an insurance against accident etc. to the workmen the Contractor shall require such sub-contractor to produce to the Bank/ consultant when required, such policy of insurance and the receipt for the payment of the current premium, then in that event insurance under clause (vii) hereof by the Contractor shall not be necessary.

16. The Contractor shall provide for adequate cover to the Bank as per the provisions of Workmen Compensation Act.

17. The Contractor shall make available the insurance cover note before the commencement of the Work and shall notify any change in the nature or extent of the Work and also make available additional insurance of Works if required in special circumstances.

18. DEFECTS LIABILITY

18.1 Any defects, shrinkages or other faults which shall appear within the Defects Liability Period of 12 months from the date of handing over the works and which are due to materials or workmanship not in accordance with this contract or on account of failure on the part of the Contractor to comply with any of his obligations expressed or implied shall be specified by the consultant in a schedule of defects which he shall deliver to the Contractor not later than 14 days after the expiration of the Defects Liability Period, and within a reasonable time after receipt of such schedule the defects, shrinkages and other faults therein specified shall be made good by the Contractor and (unless the consultant shall otherwise instruct, in which case the contract sum shall be adjusted accordingly) entirely at his own cost.

18.2 The Contractor shall make good at his own costs and to the satisfaction of the consultant, all defects, shrinkages or small faults arising in the opinion of the consultant/ engineer from Work or materials not being in accordance with the drawings or specifications or schedule of quantities or the instructions of the Engineer/ consultant which may appear within the "**Defects Liability Period of 12 months from the date of handing over completed site**" referred to in the Appendix to General Conditions. All defects, shrinkages or small faults arising from any other cause not attributable to the Contractor shall be rectified by the Contractor as an additional work.

18.3 In the event of failure of the Contractor to carry out any such work to the satisfaction of the Engineer/ consultant, the Bank shall be entitled to carry out the same at the Contractor's costs and all expenses consequential and incidental thereto shall be deducted by the Bank from any monies due or to become due to the Contractor.

18.4 When in the opinion of the Engineer/consultant any defects, shrinkages or other faults which he may have required to be made good under sub-clause (1) and (2) of this condition shall have been made good he shall issue a certificate to that effect, and completion of making good defects shall be deemed for all the purposes of this contract to have taken place on the day named in such certificate.

19. SPECIAL RISK

The Contractor shall not be liable for or in respect of any consequences arising out of any special risks as enumerated in relevant clause of the General Conditions. The responsibilities, rights and liabilities of the parties in such case shall be determined with respect to Clause 65 of the General Conditions.

20. STATUTORY OBLIGATIONS, NOTICES, FEES AND CHARGES

The Contractor shall comply with and give all notices required by any Act of Parliament, any instrument rule or order made under any Act of Parliament, or any regulation or byelaw of any local authority or of any statutory undertaker which has any jurisdiction with regard to the Works or with whose systems the same or will be connected. The Contractor before making any variation from the contract drawings or the contract bills necessitated by such compliance shall give to the Engineer / consultant a written notice specifying and giving the reason for such variation and the Engineer / consultant may issue instructions in regard thereto. If within 7 days of having given the said written notice the Contractor does not receive any instructions in regard to the matters therein specified, he shall proceed with the Work confirming to the Act of Parliament, instrument, rule, order, regulation or byelaw in question and any variation thereby necessitated shall be deemed to be a variation required by the Engineer / consultant.

There shall be no employer –Employee relationship whatsoever between the bank and the successful bidder/his sub-contractors/agents/labourers /employees/staff/representatives. The bidder shall be liable for compliance of all labour laws applicable in connection with the contract and shall be responsible for payment of wages/arrears of wages under the applicable laws.

21. MATERIALS, WORKMANSHIP, SAMPLES, TESTING OF MATERIALS

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

21.2 If required by the consultant /Engineer the Contractor shall have to carry out tests on materials and workmanship in approved materials testing laboratories or as prescribed by the consultant /Engineer at his own cost to prove that the materials etc., under test conform to the relevant I.S. Standards or as specified in the specifications. The necessary charges for preparation of mould (in case of concrete cube) transporting, testing etc., shall have to be borne by the Contractor. No extra payment on this account should in any case be entertained.

21.3 In case contractor is delaying or refusing or avoiding testing of material, the consultant/engineer shall arrange for carrying out testing of material and the necessary expenditure in carrying out the testing, transportation and incidental expenses shall be recovered from the contractor.

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

23. During the inclement weather the Contractor shall suspend concreting and plastering for such time as the Consultant /Engineer may direct and shall protect from injury all Work when in course of execution. Any damage (during constructions) to any part of the Work for any reason due to rain, storm or neglect of Contractor shall be rectified by the Contractor in an approved manner at no extra cost.

24. If the Work be suspended by reason of rain, strike, lock-outs or any other cause, the Contractor shall take all precautions necessary for the protection of Work and at his own expenses shall make good any damage arising from any of these causes.

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

27. <u>SUBSTITUTION</u>

Should the Contractor desire to substitute any materials and workmanship, he/they must obtain the approval of the Bank / Consultant in writing for any such substitution well in advance. Materials designated in this specification indefinitely by such term as “Equal” or “Other approved” etc. specific approval of the Bank/Consultant has to be obtained in writing. The term equivalent means, if material specified is not available, then after satisfying to the fact, the consultant / engineer may give other material to be used which will be subject to adjustment in purchase prices.

28. INSPECTION OF WORKS

28.1 All materials and workmanship shall be subject to inspection, examination and test at any and all times during manufacture and/or construction. The Consultant may issue instructions requiring the Contractor to open up for inspection any Work covered up or to arrange for or carry out any test at any and all times.
The Consultant / Engineer shall have the right to reject the defective material and workmanship or require its correction.

1. The test of any materials or goods (whether or not already incorporated in the Works) or of any executed Work, and the cost of such opening up or testing (together with the cost of making good in consequence thereof) shall be added to the contract sum unless provided for in the contract bills or unless the inspection or test shows that the Work, materials or goods are not in accordance with this contract.

2. The Consultant / Engineer may issue instructions in regard to the removal from the site of any Work, materials or goods, which are not in accordance with this contract.

3. The Engineer may (but not reasonably or vexatious) issue instructions requiring the dismissal from the Works of any person employed thereon.

4. On the failure of the Contractor to comply with any of the Engineer's instructions the Engineer may proceed to replace or correct such material/workmanship entirely at the cost of the Contractor.

29. REMOVAL OF IMPROPER WORK

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

30. PROTECTIVE MEASURES

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

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

30.3 The contractor shall provide necessary temporary enclosures etc. for the protection of the work and materials and for altering and adopting the same as may be required and removing on completion of the works and making good all works disturbed.

31. NOTICE AND PATENTS OF APPROPRIATE AUTHORITY AND OWNERS.

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

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

1. ASSIGNMENT AND SUB-LETTING

a. The whole of the Works included in the contract shall be executed by the Contractor and the Contractor shall not directly or indirectly transfer, assign or underlet the contract or any part, share or interest therein nor, shall take a new partner, without written consent of the Bank and no subletting shall relieve the Contractor from the full and entire responsibility of the contract or from active superintendence of the Work during their progress.

b. The Contractor shall not assign the Contract or any benefit or interest therein or there under, otherwise than by a charge in favour of the Contractor's Bankers of any monies due or to become due under this Contract, without the prior written consent of the Bank.

c. The Contractor shall not sub-let the whole of the Works except where otherwise provided by the contract, the Contractor shall not sublet any part of the Works without the prior written consent of the Engineer, which shall not be unreasonably withheld, and such consent, if given shall not relive the Contractor from any liability or obligation under the contract and he shall be responsible for the acts, defaults and neglects of any sub-contractor, his agents, servants or workmen as fully as if they were the acts, defaults or neglects of the Contractor, his agents, servants or workmen. Provided always that the provision of labour on a piecework basis shall not be deemed to be a subletting under this clause. The Contractor shall co-ordinate and shall be responsible for all aspects of his sub-contractor(s) without being relieved of any of his obligation under the contract.

d. If, the contracting agencies are violating the tender terms and sub-let the work without Bank's consent and the same is brought to the notice of the Bank, the Bank will be entitled to recover 10% of such work as penalty besides initiating measures as provided in contract.

33. If, at any time during the execution of the Works, the Consultant/ Engineer shall require the Contractor to make boreholes or to carry out exploratory excavation, such requirement shall be ordered in writing and shall be deemed to be an addition ordered under the provisions of the General Conditions unless a provisional sum in respect of such anticipated Work shall have been included in the Bill of Quantities.

34. The Contractor shall in connection with the Works provide and maintain at his own costs all lights, guards, fencing and watching when and where necessary or required by

the Consultant / Engineer or the Bank, or by any duly constituted authority, for the execution and for the protection of the Works, and/or for the safety and convenience of the public / others.

35. The Contractor shall, in accordance with the requirements of the Consultant/ Engineer, afford all responsible opportunities for carrying out their Work to any other Contractors employed by the Bank and their workmen and to the workmen of the Bank and of any other duly constituted authorities who may be employed in the execution on or near the Site of any Work not included in the contract or of any contract with the Bank may enter into in connection with or ancillary to the Works. The Contactor will not be paid any compensation on this account.

36. Shall keep the Site reasonably free from unnecessary store of constructional plant and machinery, wreckage and rubbish during progress of Works and on completion leave the whole site clean and in a workmanlike condition to the satisfaction of the Consultant / Engineer.

37. <u>Default of Contractor</u>

37.1 If the Contractor

i. being a company presents a petition for winding up and/or goes into liquidation (other than voluntary liquidation for the purposes of amalgamation or reconstruction) or

ii. shall make an assignment or a composition for the benefit of the greater part, in number of amount of his creditors or shall enter into a Deed or arrangement with his creditors, or

iii. if a Receiver of the Contractor's firm appointed by the court shall be unable, within fourteen days after notice to him requiring him to do so, to show to the reasonable satisfaction of the Bank that he is able to carry out and fulfill the contract, and if so required by the Bank to give reasonable security therefore, or

iv. if the Contractor shall suffer execution to be issued, or

v. shall suffer any payment under this contract to be attached by or on behalf of and of the creditors of the Contractor, or

vi. shall assign, charge or encumber this contract or any payments due or which may become due to the Contractor without the consent in writing of the Bank first obtained, there under, or

vii. shall agree to carry out the contract under a committee of inspections of his creditors, or

viii. shall have an execution levied on his goods, or

ix. shall use improper materials or workmanship in carrying on the Works, or

x. shall in the opinion of the Bank not exercise such due diligence and make such due progress as would enable the Work to be completed within due time agreed upon, and

xi. the Consultant/ Engineer certifies in writing that the Contractor has failed to commence the Works or failed to proceed with the Works after the suspension order when so called upon by the Consultant/ Engineer, or

xii. shall abandon the contract,

xiii. without reasonable excuse has failed to commence the Works or have suspended the progress of Works for 28 days after receiving from the Consultant/ Engineer written notice to proceed on

xiv. has failed to remove materials from the site or to pull down or replace for 28 days after receiving from the Consultant/ Engineer written notice that the said materials or Work has been condemned and rejected by the Consultant/ Engineer under these conditions or

xv. despite previous writings by the Consultant/ Engineer in writing has failed to execute Works in accordance with the contract, or is persistently or flagrantly neglecting to carry out his obligations under the contract or as to the detriment of good workmanship or in defiance of the Consultant / Engineer's instructions to the contrary, sublet any part of the contract then and in any of the said cases the Bank may notwithstanding previous waiver

a) determine the contract by after giving 14 days notice in writing to the effect as hereinafter mentioned, but without thereby affecting the powers of the Bank or the obligations and liabilities of the Contractor the whole of which shall continue in force as fully as if the contract, had not been so determined and as if the Works subsequently executed had been executed by or on behalf of the Contractor (without thereby creating any trust in favour of the Contractor)

b) further the Bank or his agent, or servants, may enter upon the Site and take possession of the Work and all Constructional Plant, amenities, unused materials, tools, scaffolding, sheds, machinery, steam and other power, utensils and materials lying upon premises or the adjoining lands or roads reserved for the execution of the Works and

- sell the same as his own property or
- may employ the same by means of his own servants and workmen in carrying on and completing the Works or
- by employing any other Contractors or other persons or person to complete the Works, and the Contractor shall not in any way interrupt or do any act, matter of thing to prevent or hinder such other Contractors or other persons or person employed from completing and finishing or using the materials and plants for the Works when the Works shall be completed, or as soon thereafter as conveniently may be, the Bank shall give notice in writing to the Contractor to remove his surplus materials and plants and should the Contractor fail to do so within a period of 14 days after receipt by him the Bank may sell the same by Public Auction and shall give credit to the Contractor for the amount so realized.

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

37.3 Upon such entry and expulsion by the Bank the Consultant/ Engineer may adopt an appropriate mode at his discretion and certify the amounts, if any, that had at the time of such entry and expulsion reasonably been earned in respect of the work

actually done by him and the value of any unused or partially used materials, any Constructional Plant and any amenities brought into existence exclusively for execution of the Works.

37.4 If the Bank shall enter and expel [the Contractor] under this Clause, he shall not be liable to pay to the Contractor any money on account of the Contract, until the expiration of the Defects Liability Period and thereafter until the costs of execution, damages for delay in completion, if any, and all other expenses incurred by the Bank have been ascertained and the amount thereof certified by the Consultant / Engineer.The Contractor shall then be entitled to receive only such sum or sums, if any, as the Consultant / Engineer may certify would have been payable to him upon due completion by him after deducting the said amount. If such amount shall exceed the sum which would have been payable to the Contractor on due completion by him, then the Contractor shall, upon demand, pay to the Bank the amount of such excess and it shall be deemed a "debt due" by the contractor to the Bank and shall be recoverable accordingly.

38 NOTICES

39.1 All certificates, notices or written orders to be given by the Bank or by the Consultant / Engineer to the Contractor under the terms of the Contract shall be served by sending by registered post or by Courier or delivering the same to the Contractor's principal place of business, or such other address as the Contractor shall nominate for this purpose.

39.2 All notices to be given to the Bank or to the Consultant/ Engineer under the terms of the Contract shall be served by sending by registered post or by Courier or delivering the same to the respective addresses nominated for that purpose in Part II of these conditions.

39.3 Either party may change a nominated address to another address in the country where the Works are being executed by prior written notice to the other party and the Consultant / Engineer may do so by prior written notice to both parties.

40 The work should be executed is time bound and Bank has the right to exit/cancel /terminate the contract with immediate effect and engage another contractor, in case the bidder defaults or commit breach of any Tender terms. In such an event, bank shall recover from the bidder the cost, expenses for loss, damage caused due to the bidder, by various means not limited to forfeiture of security deposit and unpaid bills.

ARBITRATION

40.1 Wherever, in any of the documents forming part of the Contract, the Bank's Asst. General Manager/ Dy. General Manager, SSD Central Office has been vested with the final powers, his decision, opinion, certificate or any other discretion shall be final conclusive and binding on the parties and shall be without appeal. All other matters shall be subject to the right of arbitration.

40.2 All disputes or differences of any kind whatsoever save and except matters referred to in clause 1) arising out of or in connection with the Contract, whether during the progress of Work or after Completion and shall after written notice by either party to the contract to the other of them and to the Bank hereinafter mentioned be

referred for adjudication to two Arbitrator, one each to be nominated by the Contractor and the Bank, who shall thereafter appoint an Umpire. The provisions of Indian Arbitration and Conciliation Act 1996 shall apply for the purposes.

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

40.4 The Arbitrator shall be deemed to have entered on the reference on the date he issued notice to both the parties fixing the date of the first hearing.

40.5 The Arbitrator may from time to time, with the consent of the parties, enlarge the time for making and publishing the award.

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

40.7 The fees, if any, of the Arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award including the fees, if any, of the Arbitrator who may direct to and by whom and in what manner, such costs or any part thereof shall be paid and may fix or settle and amount of costs to be so paid.

40.8 The award of the Arbitrator shall be final and binding on both the parties.

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

40.10 The Bank and the Contractor hereby also agree that arbitration under clause shall be a condition precedent to any right to action under the contract with regard to the matters hereby expressly agreed to be so referred to arbitration.

IN WITNESS WHEREOF the Bank and the Contractor have set their Respective hands to these presents through their authorized representatives the day, month and year First herein above written.

GENERAL INSTRUCTIONS TO CONTRACTORS AND SPECIAL CONDITIONS

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

2) The Tender Form must be filled in English and all entries must be made by the hand and written in ink. If any of the documents is missing, or unsigned, the Tender may be considered invalid by the Bank in its discretion.

3) EMD of Successful bidder will be returned after submission of Performance security. Performance Security should be for an amount of **Two percent** (2%) of the contract value. Performance Security may be furnished in the form of an Account payee Demand Draft or bank Guarantee from a Commercial Bank in an acceptable form safeguarding the interest of the bank in all respects. Performance Security should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including warranty obligations. i.e 60 days beyond defect liability period. If the successful bidder desires to adjust the amount of EMD as Performance Security, then balance amount of performance Security should be taken separately and, in such case,EMD should not be returned/ refunded to the successful bidder until completion of all such obligations under the contract. Performance Security shall be forfeited and credited to the Bank's account in the event of breach of contract by the supplier/contractor, in terms of the relevant provision of the contract. Performance Security will be refunded to the supplier/contractor without any interest, after the supplier/contractor duly performs and completes the contract in all respects.

4) Performance Security deposit to be kept @ 2 % of the contract value. This amount is kept with the bank.50% of the Total Security Deposit may be refunded to the contractor by the bank at its sole discretions without any interest on issue of virtual completion certificate by the Architect/Premises department, Contractor's removal of his material, equipments, labour force, temporary sheds/ stores, etc. from the site (excepting for small presence required, if any, for defect liability period and approval by the Bank) and payment of Final Bill. The remaining 50% of the Performance Security Deposit may be refunded 15 days after the end of completion of defect liability period i.e after one year, provided the contractor has satisfactorily carried out all the works and rectified all the defects in accordance with the conditions of contract. The Bid Security or Bank Guarantee/security deposit may be forfeited by the Bank for any default/failure to implement any of the terms by the successful bidder.

5) The contractor shall not assign the contract. He shall not sub-let any portion of the contract except with the written consent of the Bank.In case of breach of these conditions, the Bank may serve a notice in writing on the contractor rescinding the contractor whereupon the Security Deposit shall stand forfeited to the Bank, without prejudice to his other remedies against the contractor. Central Govt./ State Govt. organization will not be allowed to sublet the work on back to back basis.

6) The contractor shall carry out of all the work strictly in accordance with Drawings, details and instructions of the Architect, Consultant and the Bank. If in the opinion of the Architect, consultant or the Employer, changes have to be made in the

design and with the prior approval in writing of the Employer, they desire the contractor to carry out the same, the contractors shall carry out the same without any extra charge. The Bank's decision in such cases shall be final and shall not be open to arbitration.

7) A Schedule of probable quantities in respect of each work and specifications accompany these special conditions. The Schedule of probable quantities is liable to alteration by omission, deductions or additions at the discretion of the Architect/ Bank. No claim will be entertained from the contractor on account of loss of profit over revising the tender rates.

8) The Tenderer must obtain for himself on his own responsibility and at his own expenses all the information which may be necessary for the purpose of filling of Tender and for entering into a contract and must examine the drawings and must inspect the site of the work and acquaint himself with all local conditions, means of access to the work, nature of the work and all matters pertaining thereto no compensation will be paid on account of not getting proper information.

9) The rates quoted in the Tender shall be inclusive of all charges for clearing of site before commencement as well as after completion, water, electrical consumption, meters, double-scaffolding, centering, boxing, staging, planking, timbering and pumping out water, including bailing, fencing, planking, timbering and pumping out water, including bailing, fencing, hoarding, plant and equipment, storage sheds, watching and lighting by night as well as day, including Sundays and Holidays, temporary plumbing and electric supply, protection of the public and safety of adjacent roads, streets, cellars, vaults, open pavements, walls, houses, buildings and all other erections, matters or things and the contractor shall take down and remove any or all such centering, scaffolding, staging, planking, timbering, strutting, shoring, etc. as occasion shall require or when ordered so to do, and fully reinstate and make good all matters and things disturbed during the execution of the work and to the satisfaction of the Bank / Consultant.

10) Time allowed for carrying out the work as mentioned in the Memorandum shall be strictly observed by the contractor and its shall be reckoned from the 10 days after acceptance of order to commence the work or the date of handing over the site to the contractor whichever is later. The work shall throughout the stipulated period of the contract be proceeded with all due diligence and if the contractor fails to complete the work within the specified period i.e. 2 Months, he shall be liable to pay compensation as defined in the conditions of contract.

11) 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 case 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 if the project or in commencement or completion of such works or in procuring government controlled or other building materials or in obtaining water and power connections for construction purposes or for the other reasons whatsoever and the Employer shall not be liable for any claim in respect thereof. The Employer does not accept liability for any sum besides the Tender amount, subject to such variations as are provided for herein.

12) 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 quantities and rates. Schedule of instructions in respect of such additional items and their quantities will be issued in writing by the Architect/ consultant with the prior consent in writing of the Bank.

13) The successful Tenderer must co-operate with the other contractors appointed by the Employer so that the work shall proceed smoothly with the least possible delay and to the satisfaction of the Architects/ Consultant.

14) The contractor must bear in mind that all the work shall be carried out strictly in accordance with the specifications made by the Architect/ Consultant and also in compliance of the requirements of the Authorities concerned and no deviation on any account will be permitted.

15) (i) The rates quoted in the Schedule rates also include the expenditure for providing all the water required for the work and the contractor shall make his own arrangements for the supply of good quality water including obtaining Municipal connection for his labour as well as for construction purpose and all charges shall be borne by him. If Municipal water connection is not available and should it become necessary for the contractor to drill a bore well for obtaining water for construction purposes or to bring water from outside by Tankers, The Bank shall not be liable to pay any charges in connection therewith.

(ii) The rates quoted in the Tender shall also include Electric consumption charges for Power. If no power is available at site, the contractor shall have to make his own arrangement to obtain electric power connection and maintain at his own cost an efficient service of electric light and power and shall pay for the electricity consumed.

(iii) For water and power, the contractor to whom the work is allotted shall maintain the same in good working conditions.

(iv)Contractor for other trades appointed by the Bank shall also be allowed to use water and power available by fixing reasonable charges mutually agreed.

(v) Any dispute regarding payment for water and power charges by the other contractor and or by subsidiary agencies appointed by the Bank to the contractor, who has obtained the temporary connections and allowed sub–connections, will be settled by the Bank / Consultant and the decision taken by the Bank / Consultant shall be final and shall be that of the contractor.

(vi) The Bank as well as the Consultant shall give all possible assistance to the Contractor to obtain the requisite permission from the various authorities, but the responsibility for obtaining the same shall be that of the contractor.
(vii) If no such facility is available at the site of work and if available found inadequate, it shall be the responsibility of the contractor to make his own arrangement for obtaining water and power at his cost.

16) The contractor will have to obtain completion / clearance certificate in respect of services such as water supply, sewerage, etc. The contractor will also obtain

permanent water connection for the entire project. The Bank will pay necessary fee to be made to Govt. authorities.

17) The Contractor shall strictly comply with provision of safety code annexed hereto.

18) The contractor shall indemnify Union Bank of India, against any claim or legal action arising out of the said Act due to the failure of non-compliance of the provisions of the said Act and the penalty or any other amount levied by the authorities, shall be recoverable from the payments due to the contractors.

19) The Contractor shall comply with the provision of the Apprentices Act,1961, and the Rules and Orders issued there under from time to time. Failure to do so will be in a breach of the contract and the Architect / consultant and the Bank may in their discretion cancel the contract. The contractor shall also be liable for any pecuniary or other liabilities arising on account of any violation by him of the provisions of the Act.

20) The Security Deposit of the successful Tender will be forfeited if he fails to comply with any of the conditions of the contract.

21) The contractor shall be responsible for the observance of all Central Rules and Regulation framed by the Central Government under the Contract Labour (Regulation and Abolition) Act,1970. The Bank shall be entitled to deduct all damages, which it might suffer on account of non-observance of these rules by the Contractor, from the amount payable to the Contractor.

22) Contractors are not allowed to remove materials brought at Site against which advances have been paid.

23) The Contractor is to provide at all times during the progress of the works and the maintenance period / defect liability period proper means of access, with ladders, gangways, etc., and the necessary attendance to move and adopt as directed for the inspection or measurement of the works by the Consultant or their representatives.

24) Materials shall be of approved quality and the best of their kind available and shall generally conform to I.S. Specifications. The Contractor shall order all the materials required for the execution of work as early as necessary and ensure that such materials are on site well ahead or requirement for use in the work. The work involved calls for approved standard of workmanship combined with speed and to the entire satisfaction of the Architect/ consultant. All the material shall be approved by the Consultant / Bank before use. Contractor to arrange samples well in time.

25) The Contractors shall after completion of the work clear the Site of all debris and left over materials at his own expenses to the entire satisfaction of the Bank / Consultant and Municipal or other public authorities.

26) The contractor herewith agrees that in respect of inspection of works by the Chief Technical Examiner of the works, a wing of Central Vigilance Commission and the bills of the contractor including all supporting vouchers, abstract etc. to be made after payment of the bills and if as a result of such audit and technical examination any sum is found to have been over paid in respect of any work done by the

contractor under the contract of any work claimed by him to have been done by him under the contract and found not to have been executed or any work is found not to have been executed in accordance with the contract, the contractor shall be liable to refund the amount of over payment made already and it shall be lawful for the Bank to recover the same from him in any manner the Bank deems fit either from any payments due and / or becoming due to the contractor or from the security deposit or retention money or through any further bills and / or final bill or in any other manner whatsoever not excluding through recourse to legal action. The certification of bills / measurements by consultant / Architect and Engineer will be scrutinized by the Bank's Central Office / Audit / Vigilance and any deficiency will be corrected accordingly. Contractor cannot insist for payment just because it is signed by consultant / architect / engineer. The contractor herewith agrees to co-operate with the Bank / Consultant while such examinations of works and redo the things without any extra cost to the Bank.It is essential and agreed condition of the contract that any such action taken by the Bank shall deemed to be the fully legal and valid and binding on the contractor.

27) Contractors are requested to note that no extra item or deviated item of work to be executed without taking prior permission, the Bank shall not be held responsible for the payment of such works executed. Contractors will have to submit all the particulars including purchase bills/price list for the materials along with the rate analysis for verification of Item Rates.

28) If it is observed the existing compound wall, gates railings are damaged then the contractors will have to make good the same at their own cost.

29) If contractors fail to pay the taxes/royalties to the Authorities concerned, the Bank reserve their rights to recover the said amount from the amount payable to the contractor and pay the same to the Authorities concerned.

30) Work is to be executed & measurements are to be paid as per the detail specification & description of item given in the Standard Specification Book except for the items which are specifically mentioned in the tender for which the details of item and mode of measurements to be followed as indicated separately in the conditions of contractors.

31) If there are any contracting clauses mentioned in the tender, the interpretation of the same will be done by the Architect / consultant. However, the decision of the Bank will be final and binding.

32) After awarding the work, contractor shall get registered with the office of the Labour commissioner and inform Bank accordingly. Contractors shall follow all rules and regulations stipulated by the Labour Commissioner strictly.

33) Contractors shall quote consistent rates for the items of similar nature or analogous in specifications for the sections in schedule of quantities. If it is observed that the rates quoted for similar nature of items or analogous in specification under different sections, are inconsistent, then the Bank reserves his right to consider the lowest of rates for all such items and work out the final amount for payment, unless the competent authority finds that there is justifications for such inconsistent rates.

34) The contractor shall give a list of his relatives working with the Bank along with their designations and addresses.

35) No employee of the Bank is allowed to work as a contractor for a period of two years of his retirement from Bank service, without the previous permission of the Bank.The contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of the Bank as aforesaid before submission of the tender or engagement in the contractor's service.

THE CONDITIONS HEREINBEFORE REFERRED TO

1. Definition of terms/ interpretation:

In construction these conditions, the specification schedule of quantities and contract agreement, the following words shall have the meanings herein assigned to them expect where the subject or context otherwise requires.

(a) "Employer/ owner / Bank" shall mean" Union Bank of India, Government of India undertaking" having Central Office at 239, Vidhan Bhawan Marg, Nariman Point, Mumbai – 400 0021 and any of its employees' representatives authorized on their behalf.

(b) "Architect / consultant" – shall mean "M/s. _____having their Registered office at _____or in the event of his or their easing to be Architect/ Consultant for the purpose of this contract such other person as the Bank shall nominate for the Purpose.

(c) "Contractors" (in case of partnership) shall mean…….and ……trading as partners in the name and style of …….and shall include partners for the time being of the said firm and the legal representatives of a deceased partner.

"Contractors" (in case of individuals) shall mean…….and ……trading in the name and style of …….and shall include his / their heirs, legal representative assigns or successors.

"Contractors" (in case of company) shall mean……a company incorporated under …….and having its registered office at ……and shall include its successors and assigns.

(d) "Site" shall mean "Work Place located at _____ includes any building and erections thereon and any other land (inclusively), as aforesaid, allotted by the Bank for the contractor's use.

(e) Site Engineer / Engineer: The Engineer appointed by the Bank/ Architect/ Consultant for the management of the project.

(g) "The works" shall mean the work or works to be executed or done under this contract.

(h) "This Contract" shall mean Articles of Agreement, the special conditions, the general conditions of contract, the appendix, the schedule of quantities and specifications, attached hereto and duly signed.

(i) "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.

(j) "Act of Insolvency" shall mean any Act of Insolvency as defined by the Presidency Towns Insolvency Act, or the Provincial Insolvency Act or any amending such original.

(k) "The Schedule of Quantities" shall mean the schedule of quantities as specified and forming part of this contract.

(l) "Priced Scheduled of Quantities" shall mean the schedule of quantities duly priced with the accepted quoted rates of the contractor.

(m) "Net Prices" If in arriving at the contract amount, the contractor shall have added to or deducted from the total of the items in the Tender any sum either as a Item or otherwise, 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 a similar Item or proportion of the sum so added or deducted of the sum so added or deducted by the contractor the 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.

2. SCOPE OF WORK: (To be defined as per requirement of works to be executed)

The work consists of Renovation of Multipurpose Hall including dismantling of existing partitions, flooring, Ceiling, furniture & refixing in a new location after resizing/repairing the same in accordance with drawings, schedule of quantities. It also includes all the necessary allied work required such as Carpentry, Civil work, Flooring, False Ceiling, Painting, polishing, Electrical & Allied works, HVAC, Smoke Detection & Fire Alarm, Access Control, CCTV, or any other work, etc. as required on site.It includes furnishing all materials, labour, tools and equipment and management necessary for and incidental to the construction and completion of the work. It includes liasoning with Statutory bodies for execution of work & disposal of garbage/ Mosquito/ noise control, as per the local statutory rules & also all documentation & registration with all statutory bodies, central/ state such as Insurances, Labour commissioner, etc. All work, during its progress and upon completion shall conform to the lines, elevations and grades as shown on the drawings furnished by the employer/ architects. Should any detail essential for efficient completion of the work be omitted from the drawings and specifications it shall be the responsibility of the contractor to inform the Bank/ Consultant and to furnish and install such detail with Bank/ Consultant's concurrence, so that upon completion of the proposed work the same will be acceptable and ready for use.

The term the 'Architects/Consultants' in the said conditions shall mean the said M/s Design Ideas, Architects. 1, Girja Bhavan, 163/B, Dr Ambedkar Rd, Dadar East, Mumbai-400014 or in the event of the said Architect /Consultants ceasing to be

the Architect /Consultants for the purpose of this contract for whatever reason, such other person or persons as shall be nominated for that purpose by the Owner/Employer, provided always that no person subsequently appointed to be the Architect /Consultants under this contract shall be entitled to disregard or over rule any decision or direction or approval given or expressed in writing by the Outgoing Architect /Consultants for the time being if the same had been done under instruction from the Bank/ Employer.

3. CONTRACTOR'S RESPONSIBILITY

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 Consultant/Bank. The Consultant may in his absolute discretion and in consultation with the Bank (with prior approval from the Bank) and from time to time issue drawings and/or written instruction, details directions and explanations which are hereafter collectively referred to as "Consultant/Bank's Instruction".

In regard to:-

a. The variations or modifications of the design, quality or quantity of works or the additions or omission or substitution of any work.
b. Any discrepancy in the drawings or between the schedule of quantities and/or drawings and or drawings and or specification.
c. The removal from the site of any defective materials brought thereon by the contractor and the substitution of any other materials thereof.
d. The removal and/or re-execution of any works executed by the contractor.
e. The dismissal from the works of any person employed thereupon.
f. The opening up for inspections of any work covered up.
g. The amending and making good of any defects under clauses 18 hereof and those arising during the maintenance/ defect liability period.

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

4. VISIT TO SITE

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

5. AGREEMENT

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

6. PERMITS AND LICENSES

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

The contractor shall at his own cost arrange for storage shed adequate for taking delivery and storing of the quantity of controlled materials released by the authorities or supplied by the Bank.The costs of storing, transporting, etc. of all materials including those under Government control are to be included by the tenderer in his quoted rates.

The Bank / Consultant shall be indemnified against all Government or legal actions for theft or misuse of any controlled materials in the custody of the contractor.

7. GOVERNMENT AND LOCAL RULES

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

8. QUANTITY OF WORK TO BE EXECUTED

The quantities shown in the schedule of quantities are intended to cover the entire new structure indicated in the drawings but the Bank reserves the right to execute only a part or the whole or any excess thereof without assigning any reason therefore. The quantity may vary to any extent and even the same will be omitted. No separate payment/ compensation/ revision in the rates will be entertained.

9. VARIATIONS TO BE APPROVED BY THE BANK/ CONSULTANT

Not withstanding anything herein contained, the Consultant or his representative shall not, without prior concurrence in writing of the Bank, issue any instructions, verbal or in writing, the Consultant can get the work done upto an amount of Rs.10,000.00 (Rupees Ten thousand only) and all instruction issued to the contractor should forthwith be brought to the notice of the Bank. The contractor shall submit through the Consultant, a statement of variations giving rise quantity and rates duly supported by analysis of rates, vouchers, etc. The rates on scrutiny and final acceptance by the Bank shall form a supplementary tender. The Bank shall not be liable for payment of such variations until these statements are sanctioned by the Bank.

10. DRAWINGS AND SCHEDULE OF QUANTITIES AND AGREEMENT

The contractor on the signing hereof shall be furnished by the Consultant free of cost one copy of each of the said drawings and of the specifications and one copy

of all further Drawings issued during the progress of the works. Any further copies of such drawings required by the contractor shall be paid by him. The contractor shall keep one copy of all drawings on the works and the Consultant/ Bank or their representatives shall at all reasonable times have access to the same.

11. CONTRACTOR TO PROVIDE EVERYTHING NECESSARY

The contractor shall provide everything necessary for the proper execution of the works according to the intent and meaning of the Drawings, Schedule of quantities and Specification taken together whether the same may or may not be particularly shown or described therein provided that the same can be reasonably be inferred there from, and if the contractor finds any discrepancies therein, he shall immediately and in writings, refer the same to the Bank/ Consultant whose decision shall be final and binding. The contractor shall provide himself for ground and fresh water for carrying out of the works at his own cost. The Bank shall on account be responsible for the expenses incurred by the contractor for hired ground or fresh water obtained from elsewhere.

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

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

(iii) The Contractor shall also provide such temporary road on the site as may be necessary for the proper performance of the contract and for his own convenience but not otherwise. Upon completion, such roads shall be broken up and leveled where so required by the drawings unless the Bank shall otherwise direct.

(iv) The contractor shall at all times give access to workers employed by the Bank or any men employed on the buildings and to provide such parties with proper sufficient and if required, special scaffolding, hoists and ladders and provide them with water and lighting and leave or make any holes, grooves etc.,in any work, where directed by the Bank as any be required to enable such workman to lay or fix pipes, electrical wiring, special fittings etc. The quoted rates of the tenderers shall accordingly include all these above-mentioned contingent works.

12. AUTHORITIES NOTICES AND PATENTS

The contractor shall confirm to the provisions of any Act of the legislature relating to the works, and to regulations and bye-laws of any authority, and or any water electric supply and other companies and/or authorities with and whose the systems the structures is proposed to be connected, and shall, before making any variations from the drawing or specifications that may be associated to so confirming, give to the Architect written notice, specifying the variations proposed to be made and the reason for making it and apply for instructions thereon. In case the contractor shall not within ten days receive such instructions, he shall proceed with the work confirming to the provisions, regulations, or byelaws in questions, and variations so necessitated shall be dealt with under clause 29 hereof.

The contractor shall bring to the attention of the Consultant/ Bank all notices required by the said Acts, regulations or bye-law 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 said work, and lodge the receipt with the Consultant/ Bank.

The contractor shall indemnify the Bank against all claims in respect of patent rights, royalties, and damages to buildings, roads or members of public in course of execution of work and shall defend all actions arising from such claims and shall keep the Bank saved harmless and indemnified in all respects from such actions, costs and expenses.

13. CLEARING SITE AND SETTING OUT WORKS

The site shall be cleared of all obstructions, loose stone, and material rubbish of all kind. All holes or hollows either originally existing or produced by removal of loose stone or material shall be carefully filled up with earth, well rammed and leveled of as directed at his own cost. The contractor shall set out the works and shall be responsible for the true and perfect setting out of the work and for the correctness of the positions, dimensions, levels and the alignment of all the parts thereof. If at any time any error in this respect shall appear during the progress of any part of work or within the period of one year from the completion of the works, the contractor shall at his own expenses rectify such error to the satisfaction of the Consultant / Bank.

14. DATUM

The average ground level will be considered as the crown of the nearest road, which should be taken as “Datum” which is however, subject to final confirmation by the Bank/ Consultant. All levels shown in the drawings are to be strictly adhered to.

16. BENCHES

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

These benches will consist of salwood post of adequate length and minimum diameter 75mm to be driven in the ground at suitable distance as directed encased with brickwork. The wire nails will be driven on the top of salwood post on the center lines of columns, walls, inside and outside faces of foundation trenches, in order that lines may be stretched between the benches and accurate intersection of excavation. Centre line of walls, columns, etc. may be clearly indicated and checked at any time if it is so required.

17. CONTRACTOR IMMEDIATELY TO REMOVE ALL OFFENSIVE MATTERS

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

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

18. MATERIALS, WORKMANSHIP, SAMPLES, TESTING OF MATERIALS:

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

The contractor shall have to carry out test on materials and workmanship in approved materials testing laboratories or as prescribed by the Bank/ Consultant at own cost to prove the materials quality and test sample, confirm to the relevant I.S. Standard or as specified in the specifications.The necessary charges for preparation of mould (in case of concrete cube) transporting testing etc. shall have to borne by the contractors. No extra payment on this account should in any case be entertained.

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

The Contractor shall set up a field laboratory with necessary equipment for day to day testing of material like sand, brick, aggregate etc.

19. INCLEMENT WEATHER

During the inclement weather the contractor shall suspend concreting and plastering for such time as the Bank / consultant may direct and shall protect from injury all work when in course of execution. Any damage (during construction) to any part of the work for reasons due to rain, storm, or neglect of contractor shall be rectified by the contractor in an approved manner at no extra cost.

Should the work be suspended by reason of rain, strike, lockouts or any other cause, the contractor shall take all precautions necessary for the protection of work and at his own expenses shall make good any damage arising from any of these causes. The contractor shall cover up and protect from damage, from any

cause, all new work and supply all temporary doors, protection to window, and any other requisite protection for the execution of the work whether by himself or special tradesmen or sub-contractor and any damage caused must be made good by the contractor at his own expenses.

20. MATERIALS AND WORKMANSHIP TO CONFORM TO DESCRIPTIONS:

All materials and workmanship shall so far as procurable be of the respective kinds described in the schedule of quantities and/ or specifications and in accordance with the Consultant's instructions, and the contractor shall upon the request of the Consultant furnish him with all invoices, accounts, receipts and other vouchers to prove that the materials comply therewith.The contractor shall at his own cost arrange for and/ or carry out any test of any materials which the architects may require from Government approved laboratories.

21. CONTRACTOR'S SUPERINTENDENCE & REPRESENTATIVE ON THE WORKS.

The contractor shall give all the necessary personal superintendence during the execution of the works, and as long thereafter as the Bank/ Consultant may consider necessary until the expiration of the defects liability period stated in the Appendix hereto. The contractor shall also during the whole time the works are in progress employ;

a) An experienced qualified Civil Engineers (1 Nos., graduate engineer having experience of 10 years or more in field + 1 diploma holder having experience of 7 years) as required who shall be in constantly attendance at work while the men are at work. Any directions, explanations, instructions, or notices given by the Bank/ Consultant to such representative shall be held to be given to the contractor.

For non-compliance an amount of Rs.20,000/- pm/ per Engineer shall be deducted from the contractor for the period required engineers are not provided. However, deduction of payment shall not exonerate contractor for his responsibility for executing quality work.

22. DEPLOYMENT OF LABOURS

No labourer below the age of eighteen years shall be employed on the work.

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

23. FACILITIES TO BE PROVIDED TO WORKERS

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

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

24. DISMISSAL OF WORKMEN

The contractor shall at the request of the Bank/ Consultant immediately dismiss from the works, any person employed thereon by him who may in the opinion of the Bank/ Consultant incompetent or misconduct himself and such person shall not be engaged again. Such discharges shall not be the basis of any claim for compensation or damages against the Bank or any of their officer or employee.

25. ACCESS TO WORK

The Bank/ Consultant and their responsible representative shall at all reasonable times have free access to the works and/ or to the workshops, factories or other places where materials are being prepared or constructed for the work and also to any place where the materials are lying or from where they are being obtained the contractor shall give every facility to the Bank, the Consultant and their representative necessary for inspection and examination and test of the materials and the workmanship. No. persons not authorized by the Bank or the Consultant except the representatives of Public Authorities shall be allowed on the works at any time.

26. ASSIGNMENT/ SUB-LETTING

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 under-let the contract or any part share there of or any interest therein without the prior written consent of the Bank and no undertaking shall relive the contractor of the full and entire responsibility of the contract or from active superintendence of works during their progress. Central Govt./ State Govt. companies shall not be allowed to sublet the work on back to back basis/ labour basis without approval from the Bank. In case, in case contractor sub-let the work, the Bank will be entitled to deduct 10% of cost of work executed besides initiating other measures provided in the contract.

27. VARIATIONS

No alterations, omissions or variations shall vitiate this contract, but in case the Architect thinks proper at any time during, the progress of the works to make any alterations in, or additions to or omissions from, the work or any alteration in the kind or quality of materials to be use therein and shall give notice thereof in writing under his hand to the contractor, 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 deviations from any of the provisions of the contract, stipulation specifications or contract drawings without the previous consent in writing of the consultant /Architect / Bank and the values of such extras, alternations, additions or omissions shall in all cases be determine by the Consultant with the prior approval in writing of the Bank in accordance with the provision of the Clause hereof, and the same shall be added to, or deducted from the contract amount, as the case may be accordingly.

28. SCHEDULE OF QUANTITIES

The Schedule of quantities, unless otherwise stated shall be deemed to have been prepared in accordance with the standard method of quantity measurement.

Any error in description or in quantity or in omission of items from the Schedule of quantities shall not vitiate this contract but shall rectified and the value thereof

shall be added to or deducted, from the contract amount (as the case may be), provided that no rectification of errors, if any, shall be allowed in the contractor's Schedule of rates.

The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of this tender for the works and the prices stated in the Schedule or quantities and or the schedule of rates and prices which rates and prices shall cover all his obligations under the contract and all matters and things necessary for the proper completion of works.

The quantities of work may vary to any extent or may be omitted; the contractor cannot claim loss of profit/ overhead on this account.

29. MEASUREMENT OF WORKS

(i) The Consultant may from time to time intimate to the contractor and the Bank that he requires works to be measured, and the contractor shall forth with attend or send a qualified agent to assist the Consultant in taking such measurements and calculations and to furnish all the particulars or to give all assistance required by any of them.

(ii) The Engineer will take measurement of the work jointly with the contractor and enter the same in measurement books. Based on these measurements the contractor will raise the bill as per the prescribed format. Consultant to verify the bill/measurement and issue certificate stating that the work completed is as per the specifications and the measurement claimed for the works are actually executed at site. This certificate shall be issued within 14 days after bill submission by the Contractor. The Bank will release bill amount within 21 days. If for some reason checking of the bill/ measurement is not completed, 75% of the bill amount at least shall be released within 21 days and the balance within 30 days.

(iii) Should the contractor not attend or neglect or omit to send such agent then the measurement taken by the Architect or a person approved by him shall be final and binding on the contractors.

(iv) The contractor or his also supply without charge the requisite number of persons with means and materials necessary for the purpose of measurements or examinations at any time and from time to time of the work or counting weighting of the materials, etc.

(v) All authorized extra works, omissions and all variations made without the Consultant's knowledge, if subsequently sanctioned by him in writing (with the prior approval in writing of the Bank) shall be included in such measurement.

(vi) Measurements shall be recorded as per IS 1200 mode measurement and in metric system. Measurement shall be recorded in 100 pages bounded measurement book to be supplied by Union Bank of India. Such measurement shall be recorded by the Engineer or Bank's officer and not by contractor. M.B. shall be kept in the custody of the consultant / Bank.

30. PROCEDURE FOR MEASUREMENT AND BILLING OF WORK IN PROGRESS:

a. Advance against materials brought at Site:

Contractor may be allowed Secured advance on security for materials brought to site for execution on contracted item of work to the extent of 75% of the value of

the materials provided that the materials of the imperishable nature is safeguarded against losses due to the contractor postponing execution of the work or to the storage or misuse the materials and against the expenses entitled for their proper watch and safe custody. Recoveries of advances so made would be from running bills. The secured advance may be given against the following materials brought to the site and stored properly.

i) Cement
ii) Steel
(iii) Wood
(iv) Flooring / Wall tiles
(v) Aluminum steel / wooden window and door frame
(vi) Plumbing / Sanitary / Pipes and fittings.
(vii) Electrical items (one time only)
(viii) Any other item of non-perishable nature and as decided by the Bank

The Contractors will have to submit the bills for the materials purchased, in triplicate, to verify the cost of the materials purchased and brought at Site.

No advances against perishable materials purchased and brought at Site will be made.

The Contractors will have to keep the materials at Site under their safe custody and at their risk and cost.

The Bank is not responsible for damages and losses of such materials brought at site.
The contractor to submit undertaking marking lien on the material brought at site against which Bank has granted advance payment.

b. Running Account Payments to be regarded as Advances:
All running account payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed and accepted and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the due performance of the contract, or any part thereof, in this respect, or the accruing of any claim, nor shall it conclude, determine or effect in any way the powers of the Bank/ consultant under these conditions or any of them as to the powers of the Bank/ consultant under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise, or in any other way vary/affect the contract. The final bill shall be submitted by the contractor within two months of the date fixed for completion of the work; otherwise the Consultant/ Engineer-in-charge's certificate of the measurement and of the total amount payable for the work accordingly shall be final and binding on all parties.Interim Bill value to be minimum of **Rs.50 Lakhs.**

31. COMPLETION CERTIFICATE

(i) APPLICATION FOR COMPLETION CERTIFICATE

The Consultant /Engineer-In-Charge shall normally issue to the contractor the completion certificate within one month after receiving, an application thereof from the contractor and after verifying from the completion documents and

satisfying himself that the work has been completed in accordance with and as set out in the construction and erection drawing and contract documents.
The contractor, after obtaining the completion certificate, is eligible to present the final bill for the work executed by him under the terms of contract.

(ii) Completion Certificate

Within one month of the completion of the work in all respects, the Contractor shall be furnished with a certificate by the Consultant/ Engineer-In-Charge of such completion but no certificate shall be given nor shall the work be deemed to have been completed until all scaffolding, surplus materials and rubbish is cleared of the site completely. The work will not be considered as complete and taken over by the Bank, until all the temporary works, labour and staff colonies etc., constructed, are removed and the works site cleared to the satisfaction of the Consultant/ Engineer.
If the Contractor shall fail to comply with the requirements of this clause on or before the date fixed for the completion of the work, the Consultant/ Engineer-In-Charge may at the expenses of the contractor remove such scaffolding, surplus materials and rubbish and dispose off the same as he thinks fit and clean up the site and the contractor shall forthwith pay the employer for all expenses so incurred and shall have no claim in respect of any such scaffolding or surplus materials as aforesaid except of any sum actually realized by the sale thereof.

(iii) CERTIFICATE (to be issued by the consultant/ engineer)

It is certified that various items of works claimed in the …… RA Bill by Contractor …….. has been completed to the extent claimed and at appropriate rates and that the items are in accordance with and fully confirming to he standard and/or prescribed specifications and drawings. Quality and rates verified. The material supplied and work done conform tender specifications. We further certify that we have checked the measurement to the extent of 100 per cent of each item claimed in this bill. As net amount of Rs…… (Rupees ……) is recommended to be paid to the contractor making the total upto date payment of Rs……..……..
(Rs. ……..……)
Quality and rates verified. The material supplied and work done confirm

with the tender specifications.

DATE : **SITE ENGINEER / CONSULTANT**

The above certification shall be endorsed in the relevant Measurement Books also by the Consultant.

iv. FORMAT FOR RUNNING BILL

ON LETTER HEAD OF CONTRACTOR

Running Bill No. …….

Tender Amount		Rs. ……
Value of work done		Rs. ……
Less rebate	(-)	Rs. ……
Net Value of work done		Rs. ……
Extra variation items after settlement @100%		Rs. ……
Extra variation items without settlement @75%		Rs. ……
Total		
Add : Cost of material on site @ 75%		Rs. ……
Total payable		Rs. ……

Deductions

1.	Retention money		Rs. ……
2.	Recovery of advance if any		Rs. ……
3.	Income-tax		Rs. ……
4.	Any other		Rs. ……
5.	Total bill paid till last bill		Rs. ……
	Total deductions	Rs. ……	Rs. ……
	Net payable		Rs. ……
	Amount certified for payment		Rs. ……

Note : This page shall be signed and stamped by the Site Engineer, Contractor and Project Architect.

v. FORMAT FOR SECURED ADVANCE

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

Sno.	Name of the supplier	Quantity	Unit	Amount	Remarks
1	2	3	4	5	6
Face value of Materials at site					
Secured Advance …… % of above value.					

Date …….

……..
Signature of Site Engineer
Preparing the bill.

Date …….

Signature of Bank's
Consultants

Date …….

Signature of the Contractor

vi. FORMAT FOR RUNNING BILL (To be submitted by the contractor)

I	Name of the Contractor / Agency	:	
II	Name of the Work	:	
III	Sr.No. of the Bill	:	
IV	Sr.No. of the Previous Bill	:	
V	Reference to Agreement No.	:	
VI	Date of written order to commence	:	

VII	Date of Completion as per Agreement	:	
VIII	Date of Measurements	:	
XI	Present status of work	:	

Sno.	Items Description	Unit	Rate	Qty. as per measurement	Tender Amount Rs.
1	**2**	**3**	**4**	**5**	**6**

Up to previous RA Bill		Up to date gross		Present bill		remark
Qty	Amt.	Qty.	Amt.	Qty.	Amt.	
7	**8**	**9**	10	11	12	13

Note :

1. If part rate is allowed for any item, it should be indicated with reasons for the allowing such a rate.

2. If adhoc payment is made, it should be mentioned specially.

3. Consumption of Cement/Steel statement to be submitted along with each R.A. Bills.

vii. CEMENT CONSUMPTION STATEMENT

Code	**Description of item of work**	**Unit**	**Quantity of cement to be used per unit quantity of work (Bags)**
1	**2**	**3**	**4**
Cement Concrete (Cast-in-Situ)			
1.	1:1.5:3 (1 Cement : 1.5 sand : 3 graded aggregate)	Cu.M.	8.00
2.	1:2:4 (1 Cement : 2 sand : 4 graded aggregate)	Cu.M.	6.40
3.	1:3:6 (1 Cement : 3 sand : 6 graded aggregate)	Cu.M.	4.40
4.	1:4:8 (1 Cement : 4 sand : 8 graded aggregate)	Cu.M.	3.40

Burnt Brick Masonry			
5.	In CM 1:3 (1 Cement : 3 mortar)	Cu.M.	2.56
6.	In CM 1:4 (1 Cement : 4 mortar)	Cu.M.	1.90
7.	In CM 1:6 (1 Cement : 6 mortar)	Cu.M.	1.06
Half Brick Masonry			
8.	In CM 1:3 (1 Cement : 3 mortar)	100Sq.M.	28.56
9.	In CM 1:4 (1 Cement : 4 mortar)	100Sq.M.	21.28
Random Rubble Masonry			
10.	In CM 1:6 (1 Cement : 6 mortar)	Cu.M.	1.70
Course Rubble Masonry			
11.	In CM 1:6 (1 Cement : 6 mortar)	Cu.M.	1.50
Flooring			
12.	40 mm thick in PCC (1:2:4)	Sq.M.	0.34
13.	18 mm thick in Skirting	Sq.M.	0.32
Cement Plaster			
14.	12 mm thick in CM (1:3)	100Sq.M.	14.68
15.	12 mm thick in CM (1:4)	100Sq.M.	10.94
16.	15 mm thick in CM (1:4)	100Sq.M.	13.08
17.	15 mm thick in CM (1:6)	100Sq.M.	8.60
18.	20 mm thick in CM (1:4)	100Sq.M.	17.02
19.	20 mm thick in CM (1:6)	100Sq.M.	11.20
20.	6 mm thick in CM (1:3)	100Sq.M.	7.34
21.	6 mm thick in CM (1:4)	100Sq.M.	5.48

32. ENGINEER

The Site Engineer or any representative of the Architect/ Consultant, or the Bank shall have power to give notice to the contractor or to his representative, of non-approval of any work or materials and such work shall be suspended or the use of such materials shall be discontinued until the decision of the Architect is obtained. The work will be from time to time be examined by the Architect/ the Bank's Engineer or the Architect's representative, but such examination shall not in any way exonerate the contractor from the obligations to remedy any defects which may be found to exist at any stage of the works or after the same is complete. Subject to the limitations of this clause, the contractor shall take instructions only from the Architect/ Bank.

33. DUTIES OF ENGINEER

i. To make a thorough study of contract documents, Architectural/Structural drawings and other details so as to bring out ambiguities/discrepancies between them and to obtain clarification from the Competent Authority well in time to avoid delays.

ii. To render a certificate to the Competent Authority to the effect that he has studied the contract documents, drawings and specifications.

iii. To approve the centerline layout of building pegged out on site by the contractor and the benches for ground floor and other levels.

iv. To take charge of objects of value and antiquity found on site or in excavations, immediately, after their discovery, to hold them in safe custody and to hand them over to the Competent Authority of the Bank for further action.

v. To approve the foundation strata when the appropriate depth of excavation is reached in consultation with the architects.

vi. To ensure that the quality of materials and workmanship as laid down in the contract is maintained and the accuracy of dimension shown on drawings is attained in the construction.

vii. To watch the validity of the building permission issued by the Local Authority and to ensure that the revalidation, if necessary, is obtained well in time.

viii. To arrange periodical reconciliation of cement and steel account and ensure that proper recoveries are effected from contractor's running account bills.

ix. To maintain the undernoted records at the site of work, in addition to normal routine requirements of an office:

a. Daily Progress Record
b. Work Site Order Book.
c. Instruction by Bank's Officers.
d. Cement Statement (Receipt/Consumption/Balance).
e. Steel Register/any other costly Material Register.
f. Contract Pour Reports including Slump Test Record.
g. Concrete Cube Test Register.
h. Test Registers of other materials/fittings, fixtures, equipments as stipulated in the tender.
i. Register of Drawings and Working Details.
j. Log Book of Defects.
k. The Site Engineer should maintain in a Hindrance Register giving details of commencement and removal of each hindrance.
l. Dismantled Materials Account Register.
m. Supply and consumption register of scarce/costly materials like bitumen, lead, laminates, special paints etc.
n. Record of cement used/received: Day to day record of cement used/received shall be entered in the register and signed by the Site Engineer of the Bank as well as contractors representative at site.
o. Record of reinforcement bars received at site: Necessary entry for reinforcement bars of each category shall be made in the register for steel and signed by the site engineer of Bank and the contractor daily.

x. To study the quality of approved coarse and fine aggregate and get the design of the concrete mix in accordance with modern practice. The Site Engineer shall ensure that the mix design for RCC work shall be carried out by the Architect/Structural Consultant, if applicable.

xi. To record measurements of completed work jointly with the Contractor and to process them in running account bills.

xii. To receive running account bills from the contractor and to forward them after checking, to the Competent Authority with his comments and recommendations and accompanied by all supporting documents.

xiii. To submit to the Competent Authority the Progress Report fortnightly.

xiv. To watch that the concerned contract does not lapse for want of extension of time. Therefore, to keep it alive and in operation from point of consideration that "Time is the essence of contract".

xv. To ensure that progress on every contract is in accordance with the appropriate stage of its Time and Progress Chart.

xvi. To prevent contractor from proceeding with any work on which the contractor has got intentions of raising claims of extra/deviated items, until the Competent Authority approves the work to continue.

xvii. To receive the Final Bill from the contractor, to check it, and forward it with his comments and recommendations to the Competent Authority with all the supporting documents duly attached.

xviii. To submit the final summary of costs for the project to the Competent Authority.

xix. To submit the Competent Authority authentic information on and the under noted records pertaining to the completed work in order to enable the Competent Authority to finalize them in the due course:

a) Record i.e. as completed drawings.
b) Record of Standard Measurements for periodical services.
c) Inventory of fittings and fixtures.

To hand over to the Competent Authority a "first draft" of "A Note of Comprehensive Information to the User" containing detailed instructions on how to use and maintain the completed building to the best advantage of the Bank.

34. PRICES FOR EXTRAS ETC. ASCERTAINMENT OF NON-TENDER ITEMS

The contractor may, when authorized, and shall, when directed in written by the Architect / Consultant with the approval of the Bank, add to, omit from, or vary the works shown upon the drawings, or described in the specification or included in the schedule of quantities, but contractor shall make no addition, omission or variation without such authorization or direction. A verbal authority or direction by the Architect / Consultant shall, if confirmed by them in written seven days, be deemed to have been given in writing.

Any such extra is herein referred to as authorized extra and shall be made in accordance with the following provisions.

(a) (i) The net rates or prices in the original tender shall determine the valuations of the extra tender 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 therein.

(ii) Rates for all items, wherever possible, should be derived out of the rates given in the priced schedule of quantities.

(b) The net prices of the original tender shall determine the value of the items omitted, provided if omissions vary the conditions under which any remaining items of works are carried out, the prices for the same shall be valued under sub-clause C hereof.

(c) Where the extra works are not of similar character and /or executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items of works are carried out or if the amount of the whole of the contract works or to any part thereof shall be such that in the opinion of the Architect the net rate or price contained in the priced schedule of quantities or tender or for any item of the works involves loss or expense beyond that reasonably contemplated by the contractor or is by reason unreasonable or inapplicable, the Architect shall fix such other rate or price as in the circumstances he shall feel reasonable and proper, with the prior approval in writing of the employer.

(d) Where extra work cannot be properly measured or valued the contractor shall be allowed days work prices as the priced schedule of quantities or, if not so stated, then in accordance with the local day work rates and wages for the district; provided that in either case vouchers specifying the daily time (and if required by the Architect, the workman's name) and materials employed to be delivered for verification to the Architect, or his representative at to the Architect or his representative at or before the end of the week following that in which the work has been executed.

Actual cost of materials ……..Rs.

Add for Labour charges ……..Rs.

Add for Taxes, Transportation, If any. ……..Rs.

Add for Wastage of Materials (Upper Limit 5% wherever applicable)…….. Rs.

Add for water and electricity Charges if any

required, upper limit 2% of basic cost of materials. ……...Rs.

Add for 15% towards contractor's overheads and profit. …..…….Rs.

Final rate arrived. Rs.

35. UNFIXED MATERIALS WHEN TAKEN INTO ACCOUNT TO BE THE PROPERTY OF THE BANK

Where in any certificate (of which the contractor has received payment), the Architect has included the value of any unfixed materials intended for and/or placed on adjacent to the works, such materials shall become the property of the Bank and they shall not be removed except for use upon the works, without the written authority of the Architect/Bank.The contractor shall be liable for any loss of or damages to such materials.

36. REMOVAL OF IMPROPER WORKS

The Architect/Bank shall, during the progress of the works, have power to order in writing from time to time the removal from the work within such reasonable time or times as may be specified in order, of any materials which in the opinion of the Architect/Bank are not in accordance with the specifications or the instructions, the substitution of proper materials, the removal and proper re-execution of any work executed with materials or workmanship not in accordance with the drawings and specification instruction 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 such order, the Bank shall have the power to employ and pay other persons to carry out the same and all expenses consequent thereon, or incidental thereto, shall be deducted by the Bank from any money due or that may become due, to the contractor.

No certificate, which may have been issued by the Architect, shall relive the contractor from his liability in respect of unsound work of bad materials.

37. DEFECTS AFTER COMPLETION

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

38. CONCEALED WORK:

The contractor shall give due notice to the Bank/ architects whenever any work is to be buried in the earth, concrete or in the bodies of walls or otherwise becoming inaccessible later on, in order that the work may be inspected and correct dimensions taken before such burial, in default whereof the same shall,at the opinion of the Bank/ architect be either opened up for measurement at the contractor's expense or no payment may be made for such materials. Should any dispute or differences arise after the execution of any work as to measurements etc., or other matters which cannot be conveniently tested or checked, the notes of the employer/ architects shall be accepted as correct and binding on the contractor.

39. CERTIFICATE OF VIRTUAL COMPLETION & DEFECTS LIABILITY PERIOD

The work shall not be considered as completed until the Architect has certified in writing that they have been virtually completed. The defects Liability Period shall commence from the date indicated in the virtual completion certificate issued by the Architect.

40. NOMINATED SUB-CONTRACTORS

All specialist, Merchants, Tradesmen and others executing any work of supplying and fixing any goods for which prime cost prices or provisional sums are included in the Schedule of Quantities and/or Specifications who may be nominated or selected by the Architect/ Bank are hereby declared to be Sub-Contractors employed by the Contractors 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 (save where the Architect and Contractor shall otherwise agree) 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 within fourteen days of his receipt of the Architect's Certificates provided that before any certificate is issued, the contractor shall upon request furnish to the architect proof that all nominated Sub-Contractor's accounts included in the previous Certificate have been duly discharged; in default whereof the Employer may pay the same upon a Certificate or the Architect and deduct the amount thereof from any sums due to the Contractor. The exercise of this power shall not create privacy of Contract as between Employer and Sub-Contractor.

41. OTHER PERSONS ENGAGED BY THE BANK

The Bank reserves the right to execute any part of the work included in this contract by other agency or persons and contractor shall allow all reasonable facilities and use of his scaffolding for the execution of such work. The main contractor shall extend all co-operations in this regard.

42. INSURANCE

a. IN RESPECT OF DAMAGE TO PERSONS AND PROPERTY

(i) The contractor shall be responsible for all injury to the work or to persons, animals or things, and for all damages to the structural and / or decorative part of the property which may arise from the operation or neglect of himself or of any nominated sub-contractor or any of his / sub-contractor's employee, whether such damage/ injury arises from carelessness, accident or any other cause whatsoever in any way connected in the carrying out of this contract. This clause shall be held to include inter alias, any damage to buildings, whether immediately adjacent or otherwise, and any damage to the roads, streets, foot-paths, bridge or ways as well as damage caused to the building and work forming the subject of this contract by rain, wind or other inclement of the weather. The contractor shall indemnify the Bank and hold it harmless in respect of all and any expense arising from such injury or damage to persons or property as aforesaid and also in respect of any claim made in respect of injury and damage under any Act of any Legislature or otherwise and also in respect of any award of compensation or damage consequent upon such claims.

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

(iii) The contractor shall indemnify the Bank against all claims which may be made against the Bank by any member of the Public or third party in respect of anything which may arise in respect of the works or in consequence thereof and shall at his

own expense arrange to effect and maintain, until the virtual completion of the contract, with an approved office, a Policy of Insurance in the name of the Bank and the contractor against such risks and deposit such policies with the Bank from time to time during the currency of this contract. The contractor will also similarly indemnify the Bank of all claims which may be made upon the Bank whether under the Workmen's Compensation Act or any other statute in force during the currency of this contract or at common law in respect of any employee of the contractor or any sub-contractor and shall at his own expense effect and maintain, until the virtual completion of the contract, with an approved office, a Policy of Insurance in the joint name of the Bank and the Contractor against such risks and deposit such policy or policies with the Bank from time to time during the currency of the contract.

(iv) The contractor shall be responsible for any liability which may be excluded from the Insurance Policies above referred to and also for all other damages to any person animal or property arising out of incidental or defective carry in out of this contract. He shall also indemnify the Bank in respect of any cost, charges or expenses arising out of claims or proceeding and also in respect of any award of composition and damages arising there from.

(v) The Bank shall be entitled to deduct the amount of any damage, compensation, cost, charges and expenses arising from or accruing from, or in respect of, any such claims or damage from any or all sums due or to become due to the contractor without prejudice to the Bank's other rights in respect thereof.

b. FIRE INSURANCE

(i) The Contractor shall, within fourteen days from the date of commencement of works, insure the works at his cost and keep them insured until the virtual completion of the contract, against loss or damage by fire and/ or earthquake, flood with an office to be approved by the Architect in the joint name of the Bank and the Contractor (the name of the former being placed first in the policy), for the contract amount only. The Contractor shall deposit the policy and receipts for the premium with the owner within 21 days from the date of issue of work order, unless otherwise instructed by commencement of the works, unless otherwise instructed by the Architect. In default of the Contractor insuring as provided above, the Bank or the Architect on his behalf, may so insure the works and may deduct the premium paid from any money due or which may become due to the Contractor without prejudice to the other rights of the Bank in respect of such default. In case it becomes necessary to suspend the works, the Contractor shall as soon as the claim under the policy is settled, or work reinstated by the Insurance office should they elect to do so, proceed with all due diligence with the completion of the works in the same manner as though the incident had not occurred and in all respects under the same conditions of the Contract. The contractor in case of rebuilding or reinstatement after fire, shall be entitled to such extension of time for completion as the Bank/ Architect deemed fit.

(ii) The amount so due as aforesaid shall be the total value of the works duly executed and of the contract materials and goods delivered upon the site for use in works upto and including a date not more than seven days prior to the date of the said Certificate less the amount to be retained by the Employer (as hereinafter

provided) and less any installments previously paid under this clause. Provided that such Certificate shall only include the value of the said materials and goods as and from time to time as they are reasonably, properly and not prematurely brought upon the site and then only if properly stored and/or protected against weather.

c) The Contractors will have to take out following Insurance Policies:

1) Contractors All Risks Insurance Policy to cover-
Earthquake- Fire & Shock
Landslide/Rockslide/Subsidence.
Flood/Inundations.
Storm/Tempest/Hurricanes/Typhoon /Cyclone Collapse.
Theft/Burglary.
Damage to material brought at Site and to be subsequently used in the work.

2) Third party Insurance Policy
a. For accidental loss or damage caused to the property of other persons.
b. For fatal or non-fatal injury to any person other than insured own employees or work men of employees of the owner of the works any other construction work thereon, or member of the Insured's family or of any of the aforesaid; directly consequent upon of solely due to the construction of any property described in the Schedule.

3) Workmen's Compensation Insurance.

43. ACCOUNTS RECEIPTS & VOUCHERS:

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

45. LIQUIDATED DAMAGES/ DAMAGES FOR NON-COMPLETION

If the Contractor fails to complete the works by the date stated in the Appendix or within any extended time and the Architect certifies in writing that in his opinion, the same ought reasonably to have been completed, the Contractor shall pay the Bank liquidated damages @ 0.5% of the contract amount per week of delay subject to maximum deduction of 7.5% of the contract amount.

46. TOOLS, STORAGE OF MATERIALS, PROTECTIVE WORKS AND SITE OFFICE REQUIREMENTS

i) The contractor shall provide, fix up and maintain in an approved position proper office accommodation for the contractor's representative and staff which offices shall be open at all reasonable hours to receive instruction notices or communications and clear away on completion of the works and make good all work disturbed.

ii) All drawings maintained on the site are to be carefully mounted on Boards of appropriate size and covered with a coat of approved varnish. They are to be protected from ravages of termites, ants and other insects.

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

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

v) The contractor shall arrange for temporary washrooms for the use of workers and field staff and keep the same in a clean and sanitary condition to the satisfaction of the Public Health Authorities and shall cause such latrines and soil to be cleared away whenever necessary and shall make good all the works disturbed by these conveniences,.

vi) Every precaution shall be taken by the contractor to prevent the breeding of mosquitoes on the works during the construction and all receptacles, cisterns, water tanks, etc., used for the storage of water must be suitably protected against breeding of mosquitoes. The contractor shall indemnify the Employer against any breach of rules in respect of anti-malarial measures.

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

47. PROTECTIVE MEASURES

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

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

The contractor shall provide necessary temporary enclosures, gates, entrances, etc. for the protection of the work and materials and for altering and adoption the same as may be required and removing on completion of the works and making good all works disturbed.

Storage of materials: The contractor shall provide and maintain proper sheds for the proper storage and adequate protection of the materials etc. and other work that may be executed on the site including the tools and materials of sub-contractors and remove same on completion.

Cement godown shall be constructed for storing about six weeks' requirement of cement and stored as per norms with a stack of 10 bags each and 2 feet opening all around with 2 feet passage of each stack. Structure shall be water-proof from all the sides and top. Cement should be stored one feet above the ground level and have pucca raised floor.

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

Tools: Theodolite levels, prismatic compass, chain, steel and metallic taps and all other surveying instruments found necessary on the works shall be provided by the contractor for the due performance of this contract as instructed by the site engineer.
All measuring tapes shall be of steel and suitable scaffolding and ladders that may be required for safely taking measurement shall be supplied by the contractor.

The mistaries and the supervisors on the works shall carry with them always a one meter or two meter steel tape, a measuring tape of 30 meters, a spirit level, a plum bob and a square and shall check the work to see that the work is being done according to the drawing and specifications. The Site Engineer will use any or all measuring instruments or tools belonging to the contractors as he chooses for checking the works executed or being executed on the contract.

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

48. DATE OF COMMENCEMENT & COMPLETION

The Contractor shall be allowed admittance to the Site on the "Date of Commencement" stated in the Appendix hereto, or such later date as may be specified by the Architect / Consultant and he shall there upon and forthwith begin the works and shall regularly proceed with and complete the same (except the painting or other decorative works the Architect / Consultant may desire to delay) on or before the "Date of Completion" stated in the Appendix subject nevertheless to the provision for extension of time hereinafter contained. As the work is to be carried out in a running office, the contractor should take care so as not to disturb the day to day functioning of the office & should properly cordon off the section where the work is being carried out from the working section.

49. TIME OF COMPLETION, EXTENSION OF TIME & PROGRESS CHART

(i) Time of completion: The entire work is to be completed in all respects within the stipulated period i.e.**2 months.**The work shall deem to be commenced within 10 days from the date of acceptance of work order or date of handing over of site, whichever is later. Time is the essence of the contract and shall be strictly observed by the contractor. The work shall not be considered as complete until the Bank / Architects have certified in writing that this has been completed and the Defects Liability Period shall commence from the date of such certificate.

(ii) Extension of time: If in the opinion of the Architect / Consultant the work has been delayed

(a) By force majeure; or
(b) By reason of any exceptionally inclement weather or
(c) By reason of proceedings taken or threatened by or dispute with adjoining or Neighboring Owners or public authorities arising otherwise then through the Contractors own default or

(d) By the works or delay or the other Contractors or tradesmen engaged or nominated by the Bank or the Architect and not referred to in the Schedule of Quantities and/or specification or

(e) By reasons of the Architect's instructions as per clause 2 hereof or

(f) By reason of any combination of workmen or strike or lock-out affecting any of the building trades or

(g) in consequence of the Contractor not having received in due time necessary instructions from the Architect for which he shall specifically applied in writing or

(h) From other cause which the Bank may consider as beyond the control of the Contractor or

(i) In the event, the value of work exceed the value of the Priced Schedule of Quantities owing to variation, the architect may with the previous approval in writing of the Bank make a fair and reasonable extension of time for the completion of the Contract works.

In case of such strike or lockout, the Contractor shall as soon as give written notice thereof to the Architect / Consultant, but the Contractor nevertheless constantly use his endeavor to prevent delay and shall do all that may be reasonably required to the satisfaction of the Architect/Bank to proceed with the work and on his doing so that it will be ground of consideration by the Bank for an extension of time as above provided. The decision of the Bank as to the period to be allowed for an extension of time for completion hereunder (which decision shall be final and binding on the contractor) shall be promulgated at the conclusion of such strike or lock-out and the Bank shall then, in the event of an extension being granted, determine and declare the final completion date. The provision in clause with respect to payment of liquidated damages shall, in such case, be read and construed as if the extended date fixed by the Bank were substituted for and the damage shall be deducted accordingly.

(iii) **PROGRESS OF WORK:** During the period of construction the contractor shall maintain proportionate progress on the basis of a Programme Chart submitted by the contractor immediately before commencement of work and agreed to by the Bank / Architects. Contractor should also include planning for procurement of scare material well in advance and reflect the same in the Programme Chart so that there is no delay in completion of the project.

50. FAILURE BY CONTRACTOR TO COMPLY WITH ARCHITECT/CONSUSLTANT'S INSTRUCTION.

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

51. Idle labour:

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

52. Suspension:

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

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

53. TERMINATION OF CONTRACT BY THE BANK

If the Contractor being a individual or a Firm, commits any "act of insolvency" or shall be adjudged an Insolvent or being an Incorporate company, shall have an order for supervision of the court and the official Assignee or the Liquidator in such acts of insolvency and winding up, as the case may be, shall be unable within seven days after notice to him requiring him to do so, to show the reasonable satisfaction of the Architect that he is able to carry out and fulfill the Contract and to give security therefore, if so required by the Architect / Consultant.

OR if the Contractor (whether an individual, Firm or Incorporated Company) shall suffer execution or other process of court attaching property to be issued to the Contractor.

OR shall suffer any payment under this Contract to be attached by or on behalf of any of the creditors of the Contractors.

OR shall assign or sublet this Contract without the consent in writing of the Bank first obtained.

OR shall charge or encumber this Contract or any payment due or which may become due to the Contractor hereunder.

OR if the architect / consultant shall certify in writing to the Bank that the contractor:

i. Has abandoned the Contract, or

ii. Has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for fourteen days after receiving from the Architect notice to proceed, or

iii. Has failed to proceed with the works with such due diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or

iv. Has failed to remove materials from the Site or to pull down and replace work within seven days after receiving from the architect written notice that the said materials or work were condemned and rejected by the Architect under these conditions or,

v. 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 to observe or perform the same.

Then and in any of the said cases the Bank may, notwithstanding any previous waiver, after giving seven days notice in writing to the Contractor, determine the Contract but without thereby affecting the powers of the Architect/Bank or obligations and liabilities of the Contractor, the whole of which shall continue in force as fully as if the contract has not been so determined, and as if the work subsequently executed had been executed by or on behalf of the Contractor, And further, the Bank by his agent or servants may enter upon and take possession of the work and all plant, tools, scaffoldings, shed, machinery, steam and other power utensils and materials lying upon the premises or on the adjoining land or roads and use the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completing the works or by the employing any other contractor or person or persons to complete the works and the contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other contractor or other person or persons employed for completing or finishing or using the materials and plant for the work. When the work shall be completed or as soon as thereafter as convenient the Architect shall give a notice to the Contractor to remove his surplus materials and plant, and should the Contractor fail to do so within the period of fourteen days after receipt thereof by him, the Bank may sell the same by public auction, and give credit to the Contractor for the net amount realized. The architect shall thereafter ascertain and certify in writing under his hand what (if anything) shall be due or payable to, or by the employer, for the value of the said plant and materials so taken possession of by the Bank and the expense or loss which the Bank shall have been put to in procuring the works to be completed and the amount, if any, owing to the Contractor and the amount, which shall thereupon be paid by the Bank to the Contractor or by the Contractor to the Bank, as the case may be and the certificate of the architect shall be final and conclusive between the parties.

54. Certificates & payments:

The Contractor shall be paid by the Bank from time to time by installments under Interim certificates to be issued the Architect / Consultant to the Contractor on account of the works executed when in the opinion of the Architect, work to the approximate value named in the appendix as value of work for Interim Certificates (or less at the reasonable discretion of the Architect / Consultant has been executed in Accordance with this contract, subject, however, to a retention of the Item of such value named in the appendix hereto as “retention Item from Interim Certificate”, until the total amount retained shall reach the named in the Appendix as “Total Retention Money”, after which time the installments shall be upto the full value of the work subsequently so executed and fixed in the building. The Architect / Consultant may in his discretion include the Interim Certificate, such amount, as he may consider proper on accounts of material delivered upon the site by the contractor for use in the works. And when the works have been virtually completed

and the Architect/ Consultant shall have certified in writing that they have been completed, the contractor shall be paid by the Bank in accordance with the certificate to be issued by the Architect / Consultant the sum of money named in the Appendix "Installment after virtual completion" being a part of the said Total Retention Money. And the contractor shall be entitled to the payment of the Final Balance in accordance with the Final Certificate to be issued in writing by the Architect at the expiration of the period referred to as "The Defects Liability Period" in the appendix hereto from the date of virtual completion, or as soon after the expiration of such period as the works shall be finally completed and all defects made good according to the true intent and meaning and hereof whichever shall last happen, provided always that the issue of the Architect / Consultant of any certificate during the progress of the works or at or after the completion shall not relieve the contractor from his liability under clause 3 and 39 nor relieve the Contractor from his liability in case of fraud, dishonesty or fraudulent concealment relating to the works or materials or to any matter dealt with in the certificate, and in case of all the defects and insufficiencies in the works or materials which is a reasonable examination would not have disclosed. No certificate of the Architect shall of itself be conclusive evidence that any works or materials to which it relates are in accordance with the contract, neither will the contractors have a claim for any amounts which the Architect / Consultant might have certified in any interim bill and paid by the Bank and which might subsequently be discovered as not payable and in this respect the Bank's decision shall be final and binding.

The Architect/ Consultant shall have power to withhold any Certificate if the works or any parts thereof are not being carried out to his satisfaction.

The Architect/ Consultant may by any certificate make any correction in any previous certificate, which shall have been issued by him.

No certificate of payment shall be issued by architect if the contractor fails to insure the works and keep them insured till the issue of Virtual completion certificate.

All the interim payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the due performance of the contract, or any part thereof in any respect or the accruing of any claim nor shall it conclude determine or affect in any way the power of the Bank under these conditions or any of terms as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract.

55. EXCEPTED MATTERS / MATTERS TO BE FINALLY DECIDED BY THE BANK:

The decisions, opinion, direction, certificate with respect to all or any of the matters under this tender shall be final and conclusive and binding on the contractor and shall be without appeal. Any other decision, opinion, direction, certificate or valuation of the architect or any refusal of the architect to give any of the same, shall be subject to the right of arbitration and review. The Architect/ Consultant to give recommendations/ opinion in respect of interpreting the various clauses. However, the decision from the competent authority of the Bank shall be final and binding.

56. SETTLEMENT OF DISPUTES BY ARBITRATION

Wherever, in any of the documents forming part of the Contract, the Bank has been vested with the final powers, his decision, opinion, certificate or any other discretion shall be final conclusive and binding on the contractor and shall be without appeal. All other matters shall be subject to the right of arbitration.

All disputes or differences of any kind whatsoever save and except matters referred to in clause 1) arising out of or in connection with the Contract, whether during the progress of Work or after Completion and shall after written notice by either party to the contract to the other of them and to the Bank hereinafter mentioned be referred for adjudication to two Arbitrator, one each to be nominated by the Contractor and the Bank, who shall thereafter appoint an Umpire. The provisions of Indian Arbitration and Conciliation Act 1996 shall apply for the purposes.

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

The Arbitrator shall be deemed to have entered on the reference on the date he issued notice to both the parties fixing the date of the first hearing.

The Arbitrator may from time to time, with the consent of the parties, enlarge the time for making and publishing the award.

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

The fees, if any, of the Arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award including the fees, if any, of the Arbitrator who may direct to and by whom and in what manner, such costs or any part thereof shall be paid and may fix or settle and amount of costs to be so paid.

The award of the Arbitrator shall be final and binding on both the parties.

Subject to aforesaid the provisions of the Arbitration & Conciliation Act 1996 or any statutory modification or re-enactment thereof and the rules made there under, and for the time being in force, shall apply to the arbitration proceeding under this clause.
The Bank and the Contractor hereby also agree that arbitration under clause shall be a condition precedent to any right to action under the contract with regard to the matters hereby expressly agreed to be so referred to arbitration.

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

Jurisdiction: All matters arising out of or in any way connected with this contract shall be deemed to have arisen in Mumbai and only the courts in Mumbai shall have jurisdiction to determine the same.

57. RIGHT OF TECHNICAL SCRUTINY OF FINAL BILL

The Bank shall have right to cause a technical examination of the works and the final bill of the works and the final bill of the contractor including all supporting vouchers, abstracts, etc., to be made at the time of payment of the final bill. If as a result of this examination or otherwise any sum is found to have been overpaid or over certified, it shall be lawful for the Bank to recover the sum. The Bank reserves the right to alter / reduce amount certified by Consultant / Engineer, if noticed that certification is not proper.

The subject wok will be scrutinized by the Chief Technical Examiner's Office, a technical wing of Central Vigilance Commission and other Vigilance and Audit Authorities of the Bank. Decision of this Authority shall be binding on the contractor. Any discrepancy noted defected shall be rectified by the contractor free of cost or appropriate amount will be recovered from the contractor's payment.

58. BANK ENTITLED TO RECOVER COMPENSATION PAID TO WORKMEN:

The Bank is obliged, by the virtue of the provisions of the workmen's compensation Act, 1923, or any statutory modification or re-enactment thereof to pay compensation to a workman employed by the contractor in execution of the works, the Bank shall be entitled to recover from the contractor the amount of compensation so paid, and without prejudice to the rights of the Bank under said Act. The Bank shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due to the contractor under this contract or otherwise. The Bank shall not be bound to contest any claim made against it under the said Act, except on written request of the contractor and upon his giving to the Bank full security to the satisfaction of the Bank for all costs for which the Bank might become liable in consequence of contesting such claim.

59. ABANDONMENT OF WORKS:

If at any time after the acceptance of the Tender, the Employer shall for any reasons whatsoever not require the whole or any part of the works to be carried out, the Architect/ Bank shall give notice in writing to the contractor who shall have no claim to any payment of compensation or otherwise whatsoever on account of any profit or advantage which be might have derived from the execution of the whole works but which did not derived in consequence of the foreclosure of the whole or part of the work.

60. RETURN OF SURPLUS MATERIALS:

Not withstanding anything to the contrary contained in any or all the clauses of this contract, where any material for the execution of the contract is procured with the assistance of the Bank by purchase made under orders or permits or licenses issued by the Government, the contractor shall hold the said materials economically and solely for the purpose of the contract and not dispose of them without the prior written permission of the Bank, if required by the Bank, at the price to be determined by the Architect having due regard to the condition of the materials, the price to be determined not to exceed the purchase price thereof inclusive of Sales Tax, Octroi Duty and other such levies paid by the contractor in respect thereof. In event of the breach of the aforesaid condition, the contractor shall, in addition to being liable to action for contravention of the terms of license or permit and /or criminal breach of trust, be liable to Bank for all such moneys, advantage or profits resulting or which in the usual course would have resulted to him by reason of such breach.

61. RIGHT OF BANK TO TERMINATE CONTRACT IN THE EVENT OF DEATH OF CONTRACTOR IF INDIVIDUAL.

Without prejudice to any of the rights or remedies under this contract, if the contractor, being an individual dies, the Bank shall have the option of terminating the contract without incurring any liability for such termination.

62. Materials Having Basic Price

For materials for which a basic price has been stipulated in the tender, the variation in the actual cost of purchase from the basic price will be considered for adjustment (payment / recovery) in the tender cost due to incorporation of required quantity of such material in the works over different periods of time as per construction schedule. Rates should be however fair and competitive and verified by market enquiry by the Bank/ Consultant and the quantity purchased in every period should be reasonable and advantageous, if any due to bulk purchase may be also taken into account.

Reinforcement Steel (TOR)	As mentioned in the Bill of Quantity
Reinforcement Steel (MS)	As mentioned in the Bill of Quantity
Cement	As mentioned in the Bill of Quantity
Granite slab	As mentioned in the Bill of Quantity
Granite Tile	As mentioned in the Bill of Quantity
Marble	As mentioned in the Bill of Quantity
Ceramic tiles	As mentioned in the Bill of Quantity
Interlocking / paver blocks	As mentioned in the Bill of Quantity
Vitrified tiles	As mentioned in the Bill of Quantity

The amount of difference in actual price and basic cost will be paid by the Bank if the increase is on higher side or the amount will be recovered if there is decrease in the prices. The clause will be operated irrespective of any ceiling in terms of time frame as stipulated for price variation adjustment wherein the contractor is supposed to complete specific value of work during first six months within which they are not entitled for PVA relief.

63. Office accommodation for Site Engineer.

The contractor shall provide, erect, and maintain at his cost a separate simple watertight office accommodation for the Site engineer/ PMC. This accommodation shall be well lighted and ventilated and provided with windows, door with lock. The site engineer's / PMC office shall be minimum of 150 Sq.Ft. and the contractor shall provide a desk, chairs, drawers, for keeping drawing, a cupboard having proper lock and a tack board for displaying drawings. The accommodation shall be demolished when directed. The contractor has to provide one peon for the said office who shall keep the office neat and tidy. The contractor shall also make arrangement for toilet facilities and drinking water. The office shall be provided with fan / air-cooler / air-condition as required.

64. Security arrangement at Site

Upon taking possession of the site, the contractor shall make arrangement of security by posting required number of security guards and flood light arrangement.

APPENDIX / MEMORANDUM TO CONDITIONS OF CONTRACT

Estimated cost	**Rs.173.00 lakhs + GST as applicable**
EMD	EMD shall be **Rs.3,46,000.00 payable** in form of Demand Draft/Pay Order drawn from Scheduled Bank favoring Union Bank of India payable at Mumbai.
Initial security deposit	The amount of ISD shall be 2% of the accepted value of the tender.
Date of commencement	10th day from the date of acceptance of work order OR date of site possession, whichever is later.
Time for completion of work	As per time schedule given in tender document i.e. 2 months.
Retention money to be deducted from the bills.	8% of the certified gross value of each running bill, till accumulating total security deposit including ISD.
Security Deposit	5% of Contract amount
Defect Liability Period	Twelve months from the virtual completion. However, if all the works or more than one works awarded to one contractor the defects liability period will be reckoned from the date of virtual completion of last work.
Period of Final Measurement	2 months.
Liquidated damages	Shall be 0.5% of contact amount per week of delay subject to ceiling of 10% of the accepted contract amount.
Value of works for Interim Certificates	Value not less than Rs.50.00 Lakhs (Rs.Fifty Lakhs only) or as decided by the Bank.
Payment after virtual completion	50% of security deposit will be returned after (i) issue of virtual completion certificate by the project architect. (ii) Contractor's removal of his material, equipment's, cleaning of site and against Bank Guarantee. Balance 50% of retention money shall be released 15 days after satisfactory completion of defect liability period.
Period for honouring interim certificate.	75% of the bill amount shall be honoured within 14 days after getting certificate from project architect and submitting to the Bank.Balance 25% bill amount payable within 30 days after checking by the Bank.
Recovery towards taxes.	As per rules applicable from time to time.

SAFETY CODE

1. 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 wood or steel. The steps shall have a minimum width of 450 mm and a maximum rise of 300 mm. Suitable hand holds of good quality wood or steel shall be provided and the ladder shall be given an inclination not steeper than ¼ to 1 (¼ horizontal and 1 vertical).

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

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

iv. Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1 m.

Wherever there are open excavations in ground, they shall be fenced off by suitable railing and danger signals installed at night so as to prevent persons slipping into the excavations.

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

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

2. Other Safety Measure

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.

ix. 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.

3. **Excavation & Trenching**

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

x. The contractor shall take all measure on the site of the work to protect the public from accidents and shall be bound to bear the expenses of deference 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.

4. **Demolition**

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

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

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

c. 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.

5. **Personal Safety Equipment's**

xii. All necessary personal safety equipment as considered adequate by the Engineer should be kept available for the use of the person employed on the site and maintained in a condition suitable for immediate use, 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 injurious to the eyes shall be provided with protective goggles.

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

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

e. When workers are employed in sewers and manholes, which are in use, the contractor shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into manholes and the

manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public.

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

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

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

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

xiii. When the work done near any public place where there is risk of drawings 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.

6. Hoisting Machines

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

i.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.

i.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.

ii. 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 including any scaffolding winch or give signals to operator.

iii. 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.

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

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

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

Adequate washing facilities should be provided at or near places of work.

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

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

xix. Not withstanding the above clause from (i) to (xviii), there is nothing in these to exempt the contractor from the operation of any other Act or Rule in force in India.

ADDITIONAL CONDITIONS

1. **Tenderer to inspect Site:** The tenderer shall visit and examine the construction site and satisfy himself as to the nature of the existing roads or other means of communications, the character of the soil and the excavation, the extent of magnitude of the work and facilities for obtaining material and shall obtain generally his own information on all matters affecting the execution of the work. No extra changes made in consequence of any misunderstanding or incorrect information on any of these points or on grounds of insufficient description will be allowed. All expenses incurred by the contractor in connection with obtaining information for submitting this tender including his visits to the site or efforts in compiling the tender shall be borne by the Tenderer and no claim for reimbursement thereof shall be entertained.

2. **Access to Site:** The tenderer is to include in his rates for forming access to the Site with all temporary roads gangways required for the works.

3. **Setting out:** The tenderer shall set out the building in accordance with the plans. All grid/centre lines shall be pegged out to satisfaction of the Architects. The tenderer shall be responsible for the correctness of the lining out and any inaccuracies are to be rectified at his own expenses. He will be responsible for taking ground levels of the Site before setting out and recording them without any extra charge.

   The tenderer shall construct and maintain proper benches at the intersection of all main walls, columns, etc., in order that the lines and levels may be accurately checked at all times.

4. **Treasure Trove:** Should any treasure, fossils, minerals, or works of art of antiquarian interest be found during excavation or while carrying out the works, the tenderer shall give immediate notice to the Architects of any such discovery and shall make over such finds to the Employer.

5. **Attendance upon all Trades :** The general tenderer shall be required to attend on all the Tradesman or Sub-contractor/ contractors appointed by the Bank for Water-Supply & Sanitary, Electrical installation, Air-conditioning, Security Equipment, Hardware, Telephone and other special contactors. The rates quoted shall be inclusive of attendance and also allow the contractors and retain until such times the relevant Sub-contract works are completed.

6. **Gate-Keeper and Watchmen:** The tenderer from the times of being placed in possession of the Site must make arrangements for watching, lighting and protecting the work, all materials, workmen and the public by day and night on all days including Sundays and holidays at his own cost.

7. **Sheds for materials:** The contractor shall provide all necessary sheds of adequate dimensions for shortage and protection of materials like cement, lime, timber, and such other materials including tools and equipments which are likely to deteriorate by the action of sun, wind, rain or other natural causes due to exposure in the open.
   Cement godown shall be constructed for storing about six weeks' requirement of cement and stored as per norms with a stack of 10 bags each and 2 feet opening all

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

Reinforcement bars are to be stored above the ground level to prevent the same from getting rusted.

All such sheds shall be cleared away and the whole area left in good order on completion of the contract to the satisfaction of the Architects.

All materials which are stored on the site such as bricks, aggregate, etc. shall be stacked in such a manner as to facilitate rapid and easy checking of quantum of such materials.

8. **Cost of transporting:** The tenderer shall allow in his cost for all transporting, unloading stacking and storing or supplies of goods and materials for this work on the site and in the places approved from time to time by the Architects. The tenderer shall allow in his price for transport of all materials controlled or otherwise to the site.

9. **W.C and Sanitary accommodation and office Assessors and accommodation:** The tenderer shall provide at his own cost and expense adequate closet and sanitary accommodation complying in every respect to the rules and regulations in force of the local authorities and other public bodies, for his workmen of nominated sub-contractors and other contractors working in the building, the assistant engineer and other employer's agent connected with this building project and maintain the same in good working order.

The tenderer shall also provide at his own expense adequate office and shall maintain the same in a satisfactory condition and shall provide light, fan and attendant, etc… for the same and shall remove them after completion of works. He shall arrange to supply at his own expense, office furniture with drawing assessors for the official use of the assistance engineer and at all times maintain in good working order a dumpy level and a Theodolite at Site, to enable the Site Engineer to check the lines and levels of work.

10. **Materials, Workmanship & Samples:** Materials shall be of approved quality and the best of their kind available and shall generally conform to I.S. Specifications, The Contractor shall order all the materials required for the execution of work as early as necessary and ensure that such materials are on site well ahead of requirement for use in the work. The work-involved calls for high standard of workmanship combined with speed and to the entire satisfaction of the Architects.

11. **Rates for Non-Tender Items:** Rates of items not included in Schedule of Quantities shall be settled by the Architects as mentioned in the variation clause of the Contract Conditions.

12. **Rate to include:** The rates quoted shall be for all heights and depths and for finished work.

The contractor shall ascertain from other contractors as directed by the Architects all particulars relating to their work with regard to the order of its execution and

the position in which cases, holes and similar items will be required, before the work is taken in hand as no claims for extras will be allowed for cutting away work already executed in consequence of any neglect by the contractors to ascertain these particulars beforehand.

Before ordering materials, the contractors shall get the samples approved from the Architects well in time.

13. **Testing of work and material:** The contractors will have to carry out testing of the material at regular interval to proof quality, soundness and efficiency of the material. Expenditure required for testing and transportations shall be borne by the tenderer.

All the test should be as under:

LIST OF MANDATORY TESTS

MATERIALS	TEST	TEST ROCEDURE	MINMUM QUANTITY	FREQUENCY
1	2	3	4	5
Lime	Chemical and Physical Properties of lime	IS-6932	15 Mt.	10 mt or part thereof
Sand	a) Silt Content	Field	40 Cu.M.	40 Cu.M. or part thereof
	b) Bulking	Field	40 Cu.M.	50 Cu.M. or part thereof
	c) Particle size distribution	Field	80 Cu.M.	Every Cu.M. required in R.C.C. Work
Stone Aggregate	Particle size distribution		135 Cu.M.	Every 135 Cu.M. or part thereof for R.C.C. work. For rest of work as desired.
Cement	- Setting time - Strength - Soundness	IS-269 and other applicable I.S.		Every batch of Consignment and as directed wherever there is a change of source.

Cement Concrete or R.C.C.	1. Slump			Once a day or as desired.
	2. Cube strength		20 Cu.M. in slab beams & connected columns	Every 20 Cu.M. of a day's concrete.
			5 Cu.m.in column.	Every 5 Cum. In column concrete.
Bricks	1. Water		Designation-	One test for each

	absorption & Efflorescence		35	source of manufacture.
	2. Compressive strength		Designation-35	1,00,000 or part thereof. Two test for 1st lot of 1,00,000& One test later for every 2,00,000 & part thereof.
Timber	Moisture		1 Cu.M.	Every three Cu.M. & part thereof.
Aluminum doors or Windows fitting	Thickness of anodic coating	IS-5523	Rs.5000.00	Rs. 10000 or part thereof.
Mortice Locks	Testing of springs		50 os.	100 or part thereof.
Steel	a)TensilesStrength	IS-1529	20 ton	Every 20 Tonne or part thereof.
	b) Bend strength		-----do------	-----do------
Marble/Mosaic/ Terrazzo Tiles	1) Transverse strength	IS-1237	10000 tiles	10000 tiles or part thereof
	2) Water absorption	-----do------	-----do------	-----do------
	3) Abrasion test	-----do------	-----do------	-----do------
White glazed tiles	1) Water absorption	IS_777	10000 tiles	10000 tiles or part thereof
	2) Craxing		-----do------	-----do------
	3) Impact		-----do------	-----do------
Flush door	1) End Immersion		IS-2202	Destructive tests no.
	2) Knife			No. of shutters
	3) Adhesion		22-65	1
			66-100	2
			101-180	2
			181-300	3
			301-500	4
			501-above	5

- Cost of testing and transport will be borne by contractors.
- Any other materials will be tested by contractors at his own cost as per the instruction of Architect and Bank from time to time.
- Frequency stated above is minimum and the Contractor may have to test materials with any frequency or as instructed by Bank/Architects without any cost.

If after any such test the work or portion of works is found in the opinion of the Architect to be defective or unsound, the contractor shall pull down and re-do the same at his own cost. Defective materials shall immediately be removed from the site.

14. **Foremen and Tradesmen:** All tradesmen shall be experienced men properly equipped with suitable tools for carrying out the work of carpentry and joinery and other specialist trades in a first class manner and where the Architects deemed necessary, the contractor shall provide any such tools, special or ordinary which are considered necessary for carrying out the work in a proper manner.

All such tradesmen shall work under an experienced and properly trained foremen, who shall be capable of reading and understanding all drawings, pertaining to this work and the contractor shall also comply with other conditions set out in Clause 9 of the conditions of the contract.

15. Work Programmed/ weekly progress report:
The contractor shall prepare and submit to architects for approval, a bar chart showing the programme of construction of various items, fitted within the period stipulated for completion, within 15 days of the communication of the acceptance of the tender. The contractor shall also furnish necessary particulars to the site engineer for compiling weekly progress reports in the form furnished by the architects.

16. Photographs: The contractor shall at his own expense supply to the architects with triplicate copies of large photographs not less than 25cm x 20cm (10"x8") of the works taken from two approved portions of each building, at intervals of not more than three months during the progress of the work, or at every important stage of construction.

17. Clearing of Site: The contractor shall after completion of the work clear the site of all the debris and left over materials at his own expense to the entire satisfaction of the Architects and Municipal or other public authorities.

The whole of the work shall be thoroughly inspected by the contractor and all deficiencies and defects put right. On completion of such inspection, the contractor shall inform the Architects in writing that he has finished the work and it is ready for the Architects inspection.

18. Vouchers: The contractor shall furnish the Architects with vouchers on request, to prove that the materials are as specified and to indicate the rates at which the materials are purchased in orders to work out the rate analysis of the non-tender items which he may be called upon to carry thereafter.

19. Consultant's decisions are final & binding on both the parties:
For all matters not specifically provided for herein the provisions of General and Special Tender Documents shall apply and the rights and liabilities of the parties shall be decided accordingly. The decision of the Consultant in this regard shall be final and binding, provided that decision is based on contract clauses executed.

20. **settlement of dispute:**
Wherever, in any of the document forming part of the contract, the Consultant has been vested with final powers, his decisions, opinion, certificate or any other discretion shall be final, conclusive and binding on the parties and shall be without appeal. All other matters shall be subject to the right of arbitration.

21. TYPE OF CONTRACT:
The Contractor shall be paid for the actual quantity of Work done, as measured at Site, at the Item quoted by him in the Contract Bills.

22. Schedule of Quantities:

The schedule of Quantities given in the Contract Bill is provisional and is meant to indicate the intent of the Work and to provide a uniform basis for tendering. The Bank reserves the right to increase or decrease any of the quantities or to totally omit any item of Work and the Contractor shall not claim any extras or damages on these grounds.

23. Contract Sum (Consideration):

The rates and Items quoted by the Contractor in the priced bill of quantities (Contract Bills) shall be treated as firm and the contract sum shall be deemed to have been calculated with reference to the cost of execution of Works as set out in price bid of Contract Documents and shall not be adjusted or altered for any reason.

24. **Idle Labour/ Machinery:**

Whatever the reason may be,**no claim** for idle labour, additional establishment cost of hire and labour charges of tools & plants would be entertain under any circumstances, even if the work is delayed / abandoned for any reason.

25. **Provisional Completion of works:**

The Works shall deemed to have been provisionally accepted after fulfillment of all the following by the Contractor:

(a) Obtaining approvals from local Authorities as required for occupation and use of the Works and handing over such certificates to the Engineer as follows :-

(i) Sewer drainage approval up to drainage completion including required submission drawings, certificates and required follow up with Authorities/Authority – Concern Department of statutory authority.

(ii) Storm water drainage approval upto storm water drain completion including required submission drawings, certificate and required follow up with Authorities/Authority – Concern Department of statutory authority.

(iii) All required approval/permission for temporary structures, temporary water connection and temporary electrical connection for construction purpose from the authorities/authority – Concerned Government Authority.

(b) Submitting As-Built drawings (Contractor shall mark all the services on drawings issued by the Engineer), Catalogues, Brochures, Data Sheets, manuals as directed by the Engineer.

(c) Obtaining certificate of Completion from the Consultant.

(d) Handing over of the Works to the Bank as directed by the Consultant.

26. **Non-compliance of instructions:**

If within seven days after receipt of a written notice from the Consultant, requiring compliance with an instruction the Contractor does not comply therewith, then the Bank may employ and pay other persons to execute any Work whatsoever which

may be necessary to give effect to such instructions and all cost incurred with such employment shall be recoverable from the Contractor by the Bank as a debt or may be deducted by him from any monies due or to become due to the Contractor under this Contract.

Upon receipt of what purports to be instruction issued to him by the Consultant the Contractor may request the Consultant to specify in writing the provision of these conditions which empowers the issue of the said instructions.The Consultant shall forthwith comply with any such request, and if the Contractor shall thereafter comply with the said instruction, then the issue of the same shall be deemed for all purposes of this Contract to have been empowered by the provision of these Conditions specified by the Consultant in answer to the Contractor's request.

27. **Certification of Bills in absence of 'Claimant's Engineer:**
If the Contractor fails to attend or neglects or omits to send his agent at the time of taking measurement or for examining the records or drawings then the measurements so taken by the Consultant, the records and drawings as prepared by the Engineer shall be taken to be correct, final and conclusive.

28. **Interim payment as adhoc against final bill:**
All the interim payments shall be regarded as payments by way of advance against the final payment only and not as payments for Work actually done and completed, and shall not preclude the requiring of bad, unsound, and imperfect or unskilled Work to be removed and taken away and reconstructed, or re-erected or be considered as an admission of the due performance of the contract, or any part thereof in any respect or the accruing of any claim, nor shall, it conclude, determine or affect in anyway the power of the Bank under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract. The final bill shall be submitted by the Contractor within one month of the date fixed for completion of the Work or of the date of certificate of completion furnished by the Engineer and payment shall be made within six (6) weeks from the date of receipt of final Certificate from the Consultant.

29. **Cessation of Bank's liability:**
The Bank shall not be liable to the Contractor for any matter or thing arising out of or in connection with the Contract or the execution of the Works, unless the Contractor shall have made **a claim in writing** before the giving of Certificate of Final Completion.

30. **In respect of building cleaning:**
On completion the Contractor shall clean all windows and doors including the cleaning and oiling if necessary, of all hardware, inside and outside, all floors, staircases, and every part of the building. He will leave the entire building neat and clean and ready for immediate occupation and to the satisfaction of the Bank.

31. **In respect of extension and claims of contractor:**
The Contractor, in his application for grant of time shall clearly bring out the **financial effect** of extension of time requested by him. In case no financial effect is stated in the request for grant of extension of time, the same shall be taken as zero and it shall be presumed that the Contractor has mitigated whole of the losses due to the delays of all kinds.

32. **In respect of contractor cannot claim extra cost:**
Provided that the Contractor shall **not been titled to recover** any such extra cost unless he gives written notice to the Consultant of his intention to claim within twenty-eight days of the Consultant's order. The Consultant shall in consultation with the Bank settle and determine such extra payment and/or extension of time to be made to the Contractor in respect of such claim as shall, in the opinion of the Consultant, be fair and reasonable, and provided the Contractor has taken all steps to mitigate the losses.

33. **In respect of no compensation to contractor for increasing work progress:**
If for any reason, we doesn't entitle the contractor to an extension of time, the rate of progress of the works or any section is at any time, in the opinion of the Consultant, too slow to ensure completion by the prescribed time or extended time for completion.The Consultant shall so notify the contractor in writing and the contractor shall thereupon take such steps as are necessary and the Consultant may approve to expedite progress so as to complete the works or such sections by the prescribed time or extended time.The contractor shall **not be entitled to** any additional payment for taking such steps.

34. **In respect of no additional cost for scheduling and programming:**
The contractor shall mobilize or remobilize or adjust his resources according to the priorities set by the Employer **at no extra cost** to the Employer.

PROFORMA FOR APPLICATION FOR EXTENSION OF TIME PERIOD

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 give previously	:	
a)	Ist extension vide Architect's /Bank's letter	:	
	No. | Dated | Month | Days		
b)	2nd extension vide Architect's /Bank's letter	:	
	No. | Dated Month Days		
c)	3rd extension vide Architect's /Bank's letter	:	
	No. | Dated Month Days		
d)	4th extension vide Architect's /Bank's letter	:	
	No. | Dated Month Days		
	Total extension previously given	:	
9.	Reason's for which extensions have been previously given (Copies of the previous applications should be attached)	:	
10.	Period for which extension is applied for	:	
11.	Hindrances on account of which extension is applied for with dates on which 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 it is likely to last.		

e)	Period for which extension required for this particular hindrance		
f)	Over lapping period if any, with reference 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 the amount involved	:	
a)	Total value of extra work		
b)	Proportionate period of extension of time on estimated amount put to tender.		
14.	Total extension of time required for 11 & 12	:	

Submitted to the Architect/Bank …….

Date: Signature of Contractor

PARTICULAR SPECIFICATIONS
PART-I

SECTION I: DEMOLITION, DISMANTLING AND MODIFICATIONS DURING CONSTRUCTION OF BUILDING INTERIORS

GENERAL

SCOPE OF WORK

Work included:

This section covers the requirements of works involving demolition and/or dismantling parts of building interiors not involving the structure or any part of the building that contributes to the integrity and stability of the building

This section includes preliminary works in preparation for demolition such as obtaining permits; disconnection and/or controlled operation of building services; precautionary measures for the safety of the building, its occupants and workers.

This section includes demolition of non-load-bearing masonry and concrete walls; ally types of partitions and wall cladding; doors and windows; suspended ceiling; wall and floor finishes.

This section includes the dismantling of built-in cabinets, counters, Kitchen Platform,furniture and fixtures.

This section includes disconnection, dismantling and controlled operation of electrical systems, water supply, drainage and sanitary systems, HVAC systems and all other building services by skilled operatives competent in their respective fields.

This section includes the salvaging, retrieval and safe storage of all material as required by the contract and the transport and disposal of all unwanted material and debris.

Work excluded:

This section does not include structural demolition or modifications.

RELATED WORK SPECIFIED ELSEWHERE

Temporary works
Electrical
Water supply & drainage
HVAC

SUBMITTALS

The contractor shall submit the following to the architect for review and approval well before the commencement of work.

- Required approvals from all concerned authorities
- Proposed demolition and dismantling plan and day-to-day progress schedule showing clearly the sequence of operations for disconnection of building services, controlled operation of services to retain and safety precautions.This shall be accompanied by description of procedures proposed to be followed.
- Equipment proposed to be used for demolition and dismantling.
- Proposals for temporary works to partition and protect adjacent or nearby areas in use, including dust control and clean up procedures.
- Proposal for temporary storage of salvaged material and for debris to be transformed off site.

CONTROL OF PROCEDURES AND SAFETY

The contractor shall devise and be responsible for all procedures to ensure the safety of the building, the workers and the other occupants during the demolition and dismantling work. The work shall at all times be under the direct supervision of experienced foremen under the overall supervision of the contractor's site engineer.

HANDLING, STORAGE, TRANSPORTATION AND DISPOSAL

Handle and store materials retrieved from the demolition and dismantling in accordance with IS:7969. Whenever there is a conflict in the requirements of IS:7969 and the provisions herein, the more stringent of the specifications shall apply.

Store debris and salvaged material separately in designated places approved by the submittals procedure described above. All salvaged material shall be classified and stored separately by categories agreed upon prior to commencement of demolition.

Do not pile up material in a manner that will cause the structure to be over loaded. Stack material so that the stacks are stable and do not cause obstruction to movement.

Do not allow debris to accumulate beyond the capacity of the approved area for temporary storage. Do not dump debris in public rights-of-way, in private property without owners consent, in municipal garbage receptacles etc. The contractor shall dispose of debris only at dumping grounds approved by the local authority in manner not objectionable to the authority.

Transport debris to the approved dumping grounds at times permissible by law and acceptable by local practice. Take precautions to avoid spillage of debris from the transport vehicle en-route.

MATERIALS AND PRODUCTS

SCAFFOLDS AND LADDERS

Scaffolds and ladders used in the demolition and dismantling shall be in accordance with IS:3696 Part 1 and Part 2.

The scaffolding shall be designed and erected by the contractor in accordance with the requirements of the work, by experienced workers. All scaffolding material shall be in good serviceable condition and assembled to be stable in the conditions of the work being performed.

MECHANICAL EQUIPMENT

Do not use mechanical equipment without the prior approval of the architect.

Do not use gas cutting and electric welding or cutting without the prior approval of the architect. Take special precautions to prevent fire if permission is granted for gas and electrical cutting and welding.

EXECUTION

GENERAL

Survey and mark out clearly the portions that are to be demolished or dismantled. Proceed with demolition and dismantling strictly in conformance with the plans, sequence, schedules and procedures proposed by the contractor and approved by the architect.
Proceed with work only in the presence and under control of skilled supervisors.

Do not proceed with work if latent conditions contrary to expectations or assumptions are encountered as work proceeds. Do not proceed with work if any part of the building assumed to be non-structural and non-load-bearing is discovered or suspected to be structural and contributing to the stability of the building. Report to the architect and obtain approval to proceed further.

Maintain in a journal with serially numbered pages, inventories of all salvaged items as the work proceeds.

WATER SUPPLY AND SANITATION PIPES, FIXTURES AND FITTINGS

Dismantling of water supply, drainage and sanitary installation shall be carried out under the supervision of a licensed plumber, employing competent skilled workers.
Coordinate dismantling work with related permanent work to be installed, if any.
Shut off water supply and drainage pipes by closing valves or by providing plugs to isolate the systems to be dismantled from those to be retained. Ensure that areas in use are not disturbed during the progress of work by providing temporary service connections. If possible complete and protect proposed permanent modifications before commencing dismantling and demolition work.

Fixtures and fittings shall be removed only by skilled technicians to salvage them with minimum damage. Dismantle in the following sequence:
- Fittings such as faucets, showers, taps, valves, meters, gauges etc.
- Fixtures such as wash basins, WC’s, urinals, pumps etc.
- Pipes, tanks, and heavy equipment
- Brackets, supports, hangers and foundations

Complete dismantling of water supply, drainage and sanitary installation before commencing demolition of walls and partitions, flooring, ceiling etc. Closely coordinate the works if this is not practically possible.

ELECTRICAL

Dismantling of electrical installation shall be carried out under the supervision of a licensed electrical contractor, employing competent certified electricians.

Carefully survey the entire existing system and coordinate dismantling work with related temporary permanent works, if any. Modify the existing system, if required before commencing dismantling work to ensure that the functioning of systems outside the demolition areas is not affected.

Shut off and isolate electric supply to the demolition and dismantling area. Take precautions to ensure that the disconnected circuits may not be accidentally re-energized.

- Disconnect supply cables and isolate all distribution boards within the work areas. Disconnect and remove the distribution boards. Provide temporary service connections to the work areas from a temporary DB fed by an exclusive cable tapped from a board outside the work area with an isolation switch close to the temporary DB.Do not provide temporary services through any existing circuits in the areas to be demolished.
- If DB and circuits located within the demolition areas cannot be disconnected or diverted, they shall be clearly marked out and identified with cautionary signs to distinguish them from others that are to dismantled.
- Have a skilled electrician on standby.
- Fixtures and fittings shall be removed only by skilled technicians to salvage them with minimum damage.
- Complete dismantling of electrical installation before commencing demolition of walls and partitions, flooring, ceiling etc.

OTHER SERVICES

Carefully survey each of the existing systems in its entirety and coordinate dismantling work with related temporary and permanent works, if any. Modify the existing system, if required, before commencing dismantling work to ensure that the functioning of systems outside the demolition areas is not affected.

Systematically shut off and isolate each system from the demolition and dismantling area. Take precautions to ensure that the portions to be retained are clearly marked out and identified with cautionary signs to distinguish them from others that are to dismantle.

Follow a sequence of dismantling by which valuable equipment, fittings and other material are recovered with minimum damage.

Complete dismantling of all services before commencing demolition of walls and partitions, flooring, ceiling etc.

SECTION II: CAST IN PLACE PORTLAND CEMENT CONCRETE

GENERAL

SCOPE OF WORK

Work included

This section cover the requirements for supply of materials, mixing, forming, placing, compacting, finishing, jointing, curing and all other works as required for cast-in-place concrete.

The scope of work includes testing of concrete as required by this specification.

Work not included

Concrete reinforcement

RELATED WORK SPECIFIED WORK ELSEWHERE

Concrete reinforcement

Metal decks

QUALITY CONTROL

The contractor shall be fully responsible for quality control inspection and testing.All concreting operations shall be at all times under the supervision of a qualified and experienced engineer.

The quality control supervisor shall be responsible for the following regular tests and inspection:

- Consistency measurements such as slump, air-content, temperature, cement content etc.
- Taking and testing of specimens from concrete pours and having them tested in accordance with the codes and standards.
- Inspection and approval of framework and reinforcement.
- Inspection and approval of batching and mixing facilities.
- Inspection and approval of concrete placement, consolidation, finishing and curing operations.
- Inspection and approval of form removal.
- Maintaining complete, up to date records, throughout the contract of all concreting operations, inspection, tests etc.
- The standard age of concrete for tests is 28 days, but seven day test may be used to predict probable 28-day strength, provided that the relation between 7-day and 28-day test strength is established and the 28-day tests are subsequently performed for confirmation. The acceptance criteria for concrete shall be as set out in NBC, Part VI, section 5, table 5.
- Any concrete, which is deemed by the architect not to comply with this specification shall be broken and replaced, including all reinforcement.

TRANSPORTATION, HANDLING AND STORAGE

Cement and dry admixtures shall be stored in dry, water proof, well ventilated housing or silos. Liquid admixtures shall be stored in clean, isolated containers.

Packaged cement
Packaged cement shall be delivered to the mixing site in original moisture proof, sealed packages, which shall be labeled with the weight, name of manufacturer, brand and type specified. Cement received in broken or damaged packages shall not be used.

Packages of cement, which vary in weight by +/- 3% shall not be accepted.

Bulk cement
Bulk cement shall be stored separately from packaged cement. Bulk cement shall be stored in dry, weather tight, well ventilated bins with provisions for prevention of moisture absorption or the intrusion of foreign matter.

Facilities for sampling of cement shall be proved at the weighing hopper, or at the feed line immediately before entering the hopper.

Different brands of cement, or the same brand of cement from different sources, shall not be used without prior notification by the contractor.

Aggregates
Aggregates shall be transported and stockpiled separately according to their sources and gradations. Aggregates shall be handled in a manner, which will prevent segregation and contamination with earth or foreign materials.

If the aggregates show segregation, or if the different grades become mixed, the aggregates shall be re-screened before placing in the proportioning bins. Contaminated aggregates shall not be used.

Aggregates shall not be transferred directly from trunks, railroad cars or barges to the proportioning bins when moisture content or/and water absorption is such that it will affect the accuracy of the proportioning of the concrete mixture. In such cases, the aggregates shall be stockpiled until the excess moisture drains off.

Muddy or oil-leaking equipment shall not be allowed to operate on the stockpiles.

Formwork

All formwork materials that may be affected by moisture or whether shall be stored in dry, weatherproof, well ventilated housing.

All formwork material shall be handled and stored to prevent damage.

FORMWORK

Forms are designed by the contractor to have sufficient strength to carry the hydrostatic head of the concrete as a liquid without deflecting beyond acceptable limits. Besides the weight of concrete and reinforcement, the formwork shall be designed for loads and lateral pressures due to construction operations.

Maximum deflection of facing materials which reflect in concrete surfaces exposed to view shall be not greater than 1/240 of the span between structural supports.

Where necessary to maintain the tolerances indicated, the framework shall be cambered to compensate for anticipated deflections due to the weight and pressure of the fresh concrete and also due to any other construction loads.

The surface of forms is to be designed to provide the correct finish, as specified in the subsection herein.

CURING:-

Exposed Surfaces of concrete shall be kept continuously in a damp or wet condition for at least seven days from the date of placing of concrete.

Approve curing compounds may be used in lieu of moist curing with the permission of the Architect/Engineer-in-charge. Such compounds shall be applied to all exposed surfaces of the concrete as soon as possible after the concrete has set.

COVER:-

To maintain the specified amount of concrete cover to the reinforcement small precast concrete blocks of grade similar to that of concrete to be placed shall be used as indicated hereunder unless otherwise specified in the drawings.

a) At each end of reinforcing bar, not less than 25mm, nor less than twice the diameter of bar.
b) For a longitudinal reinforcing bar in a beam, not less than 25mm, nor less than the diameter of the bar.
c) For a longitudinal reinforcing bar in a column, not less then 40mm nor less than the diameter of the bar.
d) For tensile, compressive, shear or other reinforcement in a slab, not less than 15mm, nor less than the diameter of the bar.
e) For Vertical or horizontal reinforcement in concrete walls not less than 15mm nor less than the diameter of the bar.
f) For reinforcement in footings, pile caps and raft foundations not less than 50mm.

ADMIXTURES:-

Plasticizers may be used in the concrete work to achieve better workability admixtures or cement containing additives (Such as accelerators, retarders, water proofing agents etc) shall not be used unless specified or otherwise directed or approved by the Architect/Engineer-in-charge.

COARSE Aggregate:-

The Coarse aggregate for the reinforced concrete work shall consist of crushed gravel, black trap, granite or other stone to the approval of the Architect/ Engineer-in-charge and shall be free from dust. If considered necessary by the Architect / Engineer-in-charge the aggregate shall be washed specially until an approved cleanliness is obtained. The use of laminated stone, flat or flaky material will not be permitted. The combined coarse aggregate shall in all respects be so graded as to allow 95% to 100% by weight to pass a 20mm BIS Sieve; 25% to 55% by weight to pass a 10mm BIS Sieve and 0% to 10% by weight

to pass a 5mm BIS Sieve. The aggregates of different sizes shall be stored in separate stacks in clean state and free from all dirt.

The coarse aggregate where absorption of water after 24 hours immersion is more than 5% by weight shall not be used.

When required by the Architect/Engineer-in-charge tests indicated in BIS 383 shall be carried out by contractor at this cost to show the acceptability of the materials.

Stored piles of aggregate shall have good drainage, preclude inclusion of foreign matter and preserve the gradation.

FINE AGGREGATE:-

Sand shall conform to BIS: 383 and relevant portion of BIS: 515. It shall pass through a BIS: Sieve 4.75mm (3/16-B.S.) test sieve, leaving a residue not more than 5%. It shall be from natural source or crushed stone screenings, chemically inert, clean, sharp, hard, durable, well graded & free from dust, clay, shale, large pebbles, salt, organic matter, loam, mica or other deleterious matter. The sum of percentage of all deleterious materials in sand shall not exceed 5% by weight. It shall be washed, to reduce the percentage of deleterious substances to acceptable limits. Sand shall not contain any trace of salt and it shall be rejected.

The fine aggregate for concrete shall be graded within limits as specified in BIS: 383 and the Fineness modulus may range between 2.60 to 3.20.

The fine aggregate shall be stacked carefully on a clean hard dry surface so that it will not get mixed up with deleterious foreign materials. If such a Surface is not available, a platform of planks or iron sheets or brick floor or a thin layer of lean concrete shall be prepared.

The sand for plaster shall be screened & washed.

WATER PROOFING:-

The cement based waterproofing work shall be carried out through approved contractor with 10 years guarantee as per their specifications under the supervision of the contractor.

Terrace, Canopy, Refuge area, roofs, Tops of balconies, lift machine rooms, water tank, pump room and watchman's cabin roof: These shall be finished with water proofing treatment as per the approved agencies specifications and as approved by architect with a guarantee of 10 years. Water proofing treatment will include necessary waterproof brickbat coba of required minimum thickness 75mm laid to required slope. Top of brickbat will be finished with waterproofing treatment and china mosaic flooring of approved colour by Architects finished smooth made watertight including 300mm round vata at junction of slab and parapet wall complete.

Toilets: This shall be as per approved agency's specifications with 10 years guarantee. Water proofing treatment to sunk portion including waterproof brickbat coba filling. Before filling brickbat coba, the walls upto 600mm above general finished floor level will be finished with waterproof treatment as per waterproofing agency's specifications.

TESTING:-

All G. I. pipes and fittings may be tested to a pressure of 10.5 Kg/cm2 to ensure that pipes have proper threads and that proper materials (such as white zinc and spurnyarn) have been used in jointing. All leaky joints must be made leak- proof by tightening or redoing at contractors expense.

MATERIALS AND PRODUCTS

CEMENT

Cement shall be ordinary Portland conforming to IS: 269 and shall meet the following additional requirements:

Compressive strength
At 3 days ------- 160 Kg/Cm2 minimum
At 7 days ------- 220 Kg/Cm2 minimum

Time of setting (vicat):
Initial set ------- 30 minutes minimum
Final set ------- 5 hours maximum

COARSE AGGREGATES

Coarse aggregates shall comprise clean crushed or uncrushed gravel, crushed stone or a combination of the tree free from adherent coatings deleterious materials, organic impurities and salts in accordance with IS:383.

The coarse aggregates shall be selected, screened to various particle sizes and rinsed as necessary to meet the acceptance criteria.
The normal size of coarse aggregates used for different purposes shall be as given below:

Reinforce concrete – 20mm maximum; 4.75 mm minimum
Floor screed upto 75mm th over existing concrete slab – 8mm maximum, 1mm minimum
Un-reinforced mass concrete – 40mm maximum; 4.75mm minimum

The coarse aggregates shall comply with the requirements set forth below:

Slake durability index using distilled water as slake fluid – 99.0% minimum
Clay lumps and friable particles – 1.0% maximum
Water absorption – 2.5% maximum
Sodium chloride – 0.03% maximum

FINE AGGREGATES

Fine aggregates shall comprise clean natural sand with rounded or sub rounded particles free of adherent coatings, deleterious materials, organic impurities and salts in accordance with IS :383.

Fine aggregates shall be selected, screened and rinsed as necessary to meet acceptance criteria.

The aggregates shall comply with the requirements set forth below
Clay lumps and friable particles – 1.0% maximum
Material finer than 75 micros – 2.0% maximum
Water absorption – 1.0% maximum
Sodium chloride – 0.05% maximum

WATER

Water for rising aggregates, for in Company in the concrete and for curing shall be clean potable water free from injurious amounts of oils, acids, salts, alkalis, organic matters and other potentially deleterious substances when examined in accordance with IS:3025 and when compared with the limits specified in this specification.

The maximum permissible concentrations of chemicals and organic and inorganic solids shall be in accordance with NBC, Part VI, Section 5, paragraph 4.1.3.2. The pH value of water shall generally be between 6 and 8.

FORM MATERIALS

The selection of materials suitable for formwork shall be made by the contractor unless specified otherwise based on maximum quality consistent with the specified finishes and safety.

The use of proprietary forming systems is recommended and should be used where possible.

MISCELLANEOUS MATERIALS

Water stops to the used in water tight concrete construction joints shall be polyvinchloride (pvc) of the size and type shown on the drawing.

Other inserts and embedment shall be as shown on drawing.

Form release agents to prevent concrete adhering to formwork shall be non-staining, non-reactive, rust preventive and guaranteed to be compatible with subsequent surface applications to concrete.

CONCRETE GRADES AND MIXES

General

Controlled concrete or designed concrete mix is concrete of which the constituted proportions have been determined by preliminary tests to meet the acceptance criteria of the grade of concrete required.

Ordinary concrete or normal concrete mix is concrete of which the constituent proportions ar based on nominal mixes without preliminary tests.

Only controlled concrete shall be permitted for use in reinforced concrete and concrete used in building structures. Ordinary concrete shall generally not be used except by written approval of the architect preceded by a written request for use of ordinary concrete by the contractor giving reasons why he wishes to do so.Concrete in this specification shall always mean controlled concrete.

Grades of concrete are denoted by a designation consisting of the letter ‘M’ followed by a numeral indicating the 28-day cube compressive strength in Kg/cm2.

Each grade of concrete may consist of one or more ‘mixes’ determined by cement content, quantity and gradation of aggregates, water cement ratio, slump, type of admixtures etc.

Each mix within a grade shall be considered a specific type given an appropriate distinctive nomenclature and will require approval by the architect. The contractor shall use the approved the approved mix for approved uses.

Strength requirements of concrete.

The strength requirements of concrete for the various grades of concrete shall be as given below, determined on the basis of the compressive strength of 150mm cubes at 28 days after mixing in accordance with IS: 516

Grade of concrete	Preliminary test Comp. Strength in Kg/sqcm (min)	Works test Comp. Strength in (Kg/sqcm (min
M100	135	100
M150	200	150
M200	260	200
M250	320	250
M300	380	300
M350	440	350
M400	500	400

For explanation refer NBC, Part VI, section 5, table 1.

Concrete mix proportions for ordinary concrete:
The concrete mix proportions for ordinary concrete shall be as given below:

Grade of Concrete	Total quantity of dry aggregate by volume per 50 Kg of cement being the sum of individual volumes of fine and coarse aggregates (max in ltrs)	Proportion of Fine aggregates to coarse aggregates in ltrs)	Qty of water per 50Kg of cement (maximum
M100	300	Generally 1:2 but subject to an upper limit of 1:1 ½ and lower limit of 1:3	34
M150	220		32
M200	160		30
M250	100		27

For explanation refer NBC, Part VI, section 5, table 3and 4.

SECTION III: BURNT CLAY BRICK MASONRY

SCOPE OF WORK

Work included
This section covers the requirements for the supply of materials and workmanship for the construction of load bearing and non-load bearing burnt clay brick masonry including all types of mortar, grouting and masonry accessories.

This section includes architecturally exposed burnt clay brick masonry in association with stone masonry.

RELATED WORK SPECIFIED ELSEWHERE

Stone masonry
Cast-in-place Portland cement concrete
Concrete reinforcement
Plastering

QUALITY CONTROL

The contractor shall be responsible for the quality of the burnt clay brick masonry. The masonry work shall at all times be under the direct supervision of an experienced foreman under the overall supervision of the contractors site engineers. The bricks shall comply with I.S.1077.

EXECUTION

GENERAL

The setting and layout of masonry shall be the contractor's responsibility and shall be in strict conference with the drawings.

The contractor shall accurately locate openings, returns, offsets etc. in accordance with the drawings.

The contactor shall layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to properly locate openings. Use of less than half size bricks at corners, jambs and other locations shall be avoided.

Cut bricks carefully to prevent disintegration and to obtain clean, sharp, un chipped edges. Cut-bricks may be used not more than twice in a straight-run course.

COORDINATION WITH OTHER WORK

The contractor shall coordinate and schedule the masonry work with other related work and trades to avoid cutting and breaking of masonry after erection and for proper sequencing.

ACCURACY AND TOLERANCES

Erect walls and columns true to line and plumb, with courses level with joints of uniform thickness and spacing. Corners, returns, jambs etc. shall be square or true to angles shown on drawings.

Acceptable tolerances are as given below:

Variation from means plan: Walls shall be constructed as true planes. When tested with a 3 meter straight edge, placed anywhere on the wall in any direction, the maximum deviation from a true plane shall be within 5mm.

Variation from plumb: Variation from plumb shall be within 5mm in 3meters height.

Variation from level: Variation from the level for any masonry course shall not exceed 6mm in any 6mtere bay.

Variation from positions: Variation from positions shall not exceed 6mm from the designated position shown on the drawing.

CONCRETE WORK
All concrete work associated with masonry shall proceed keeping pace with masonry.
Concrete lintels, sills, and stringer course etc. shall be flush with the masonry surfaces, unless otherwise indicated.

CURING
Cure the masonry construction by continuously keeping moist for at least 7 days

SECTION – IV - JOINERY

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

2. **Flush Door shutters:** Door shutters shall be 35 mm thick flush door shutters/solid core type non decorative factory made confirming to IS- 2202 and ISI marked with block

board core (confirming to the requirements as per IS-1659 1969) with internal hard wood clippings and both faces commercial ply veneered. Adhesive used shall be phenyl form aldehide synthetic resin conforming to BWP types specified in IS-848-1974.

3. Contractor shall obtain the approval for the name of the manufacturer of the flush door shutters from the Site Engineer/Architect before placing the supply order. While asking for the approval, copy of the "Bureau of Indian Standard" letter under which manufacturer has been authorized to mark the product with ISI marking should be attached. Site Engineer and Architect before giving the approval shall ensure that the validity date of license has not expired.

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

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

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

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

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

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

10. Glazing to windows/doors shutters shall be as follows of quality as approved by Project Engineer &Architect.

(a) Fan light of Doors shutters : 4 mm thick plain sheet glass.
(b) Door Shutters fully glazed : 5.5mm thick plain sheet glass.
(c) Windows (openable & fixed) except for toilets: 4 mm thick plain sheet glass.
(d) Windows openable and fixed of toilets : 4 mm thick pin head glass.

NOTE: On all toilet door shutters, aluminum sheet 18 gauge bent to U shape shall be provided at the bottom of the flush shutters. This sheet shall be upto 30cm height on the inner face of the shutters and upto 20cmheight on the outer face of the shutters. This shall be fixed with 12mm steel Nails.

Section – V - Aluminium Doors, Windows & Ventilators.

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

2. The Aluminium Doors, Windows, Ventilators and Glazing sections shall be anodized (anodic coating shall conform to IS 1868) as per colour approved by the Architect and Site Engineer.

3. The fabrication shall be carried out having mechanical joints, accurately machined and fitted to form hair-line joints, with the vertical and horizontal sections at the corners to meet in 45 degrees mitered. The jointing shall be either with accessories such as cleats and cleating screws or by crimping with Hydraulics Press on to heavy duty extruded Aluminium cleats. The relevant arrangement shall be got approved by the Architects. The Glazing shall be fabricated and anchored to withstand wind pressures as per the Indian Standards.
4. Before proceeding with any manufacture, Shop Drawings for each typical elevation shall be submitted for the approval of the Architect and no work shall be performed until the approval of the shop Drawings is obtained.
5. All Glazing shall be airtight and watertight, using appropriate extruded EPDM gaskets/as manufactured by Anand Lescuyer Pvt.Ltd., or equivalent; and sealant which shall be of high quality and performance requirements.

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

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

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

9. The perimeter gap between the outer frame and the masonry shall be sealed with poly sulphide sealant as per the make approved by the Architect.

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

SECTION VI - BUILDERS HARDWARE

1. Manger shall be provided to all doors/windows/ventilator/shutters with necessary matching screws of suitable size

2. Fittings and fixtures to all doors window and ventilators etc.shall be Aluminum anodized Matt finish ISI marked of make as specified. These shall be ISI marked where manufacturer contractor shall obtain the approval of the name of the manufacturer and brand of fittings from page of Director/Architect before placing the supply order. While asking for the approved copy of bureau of Indian Standard letter under which the manufacturer has been issued the license and authorized to make the items of builder hardware with ISI marking should be attached and one sample of each fillings of the particular brand duly ISI marked shall be given by contractor.

3. Butt hinges for doors shall be ISI marked cold rolled mild steel heavy quality of size as specified with mild steel pin and shall be oxidized finish. These shall be welded to pressed steel frames as specified.

4. Handles for window shutters shall be 75mm long & door shutters shall be 125 mm D-Type Aluminum anodized.

5. Link chain and sliding channel shall be sturdy of CP brass and shall be provided to main entrance door of all units as specified.
6. Magic eye for entrance door shall be wide-angle best quality.This shall be fixed at 1400mm height from finished floor level.

7. One sample piece of each fitting shall be produced for approval of Site Engineer /Architect. The bulk supply order shall be placed by the contractor only after approval is accorded by Site Engineer/Architect.

Schedule of Builder's Hardware: Schedule of Hardwares/fittings to door,window and ventilator shutters shall be as per drawing.

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

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

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

NOTE:

i) It shall insure that all builder's hardware are from one manufacturers only for the entire work, However, if due to any reason contractor progress to provide part quantity from other manufacturer approved in Para 2 above, then he may be permitted but he will have to obtain specific approval of Project Engineer/Architect for this change in brand. This will be subject to that all items and fixtures in any particular blocks shall be always of one manufacturer only. In no circumstances items of two manufacturers shall be used in all of the particular blocks.

ii) Project Engineer before giving the approval of the name of the manufacturer and brand shall ensure that the validity date of license for making the fittings, as ISI marked has not expired.

iii) Those fittings which are not manufactured, as ISI marked shall also be of the one brand of which the ISI marked fittings are approved by Project Manager.

SECTION VII: CERAMIC WALL AND FLOOR TILING

SCOPE OF WORK

The tiles will be selected by the owner and the cost of tiles delivered at site will be adjusted against the allowance for this item provided in the contract documents.
The scope of work under this specification section covers the unloading of materials at site, storage and safekeeping, furnishing of all other materials, accessories, labour, tools, equipment and the installation of tiles.

RELATED WORK SPECIFIED ELSEWHERE

Stone masonry
Burnt clay brick masonry
Cast-in place Portland Cement concrete
Lath and plaster
Structural wood work

QUALITY CONTROL

The tiling shall be carried out under the direct supervision of an experienced tiller foreman who shall continuously check the work of the tiling teams to ensure stringent quality control.

COORDINATION WITH OTHER TRADES AND CONTRACTORS

The tiling work shall be coordinated with other trades and contractors. The contractor shall check and ensure that all work preceding tiling is complete before commencing the work

PROTECTION

Protect other finished work during tiling work to prevent damage and protect the finished tiling work from any damage after completion.

FLOOR AND WALL TILING AND PAVING

SCOPE OF WORK

This section covers the furnishing of all materials (other that those supplied at site by the owner) equipment and labour for floor and wall tiling and paving including but not limited to:
Marble to floors and walls
Polished granite to floor and walls
Granolithic flooring with surface hardener
Cast-in-place Portland cement concrete pavement –external.
Polished granite and marble steps & risers
The owner will provide at site the following material against allowances in the contract documents:
Marble for floors and walls cut to sizes as determined by the contractor according to site conditions.

RELATED WORK SPECIFIED ELSEWHERE

Cast-in place Portland cement concrete
Ceramic wall and floor tiles
Stone masonry

TILES

The tiles will be selected by the owner and the cost of tiles delivered at site will be adjusted against the allowance for this item provided in the contract documents
The contractor shall order take delivery and arrange for the transportation of the tiles to the site from the suppliers nominated by the owner. Costs for ordering, transportation etc. upto delivery at site will be adjusted against the allowance.

EXECUTION

LAYOUT OF TILES

Plan the layout of tiles on all continuous surfaces to ensure that:
The horizontal joints of tiles on walls are all in line.

The layout of tile pattern is in accordance with the design intent.
As far as practicable, jambs, sills and heads of windows, doors and other opening correspondent to tile joints.
Cut tiles will not be less than half tile.
At external corners the tiles may be joined with 45 degree mitered joints.
When required, floor and wall tile joints are aligned.
When floor tiles continue through adjacent rooms the joints are continuous.
At jambs, sills and heads of windows, doors and other openings the finished surface of tiles should match the construction details of the windows and doors and other openings.

PREPARATORY WORK FOR LAYING TILES OVER MASONRY OR CONCRETE

Ensure that all sub-surface installation is in place, tested and approved. Plan ahead, in coordination with all trades involved, so that the requirements of the checklist will be met.
Roughen concrete surfaces, wet the surface and apply a bond coat of rich cement-sand slurry.

Wet masonry surfaces.

Apply a leveling coat of cement or cement lime plaster as specified for plastering in a single coat to a minimum thickness of 15mm and score the surface as a bond for subsequent application. Allow the surface to set and proceed with the application of tiles.

QUALITY CONTROL

The contractor shall be responsible for the quality of materials supplied by him and all workmanship. The work shall be executed under the direct supervision of competent foreman and the quality control staff of the contractor. All defective work shall be replaced by the contractor.

COORDINATION WITH OTHER TRADES AND CONTRACTORS

The contractor shall schedule and coordinate the work under this specification with other trades and contractors to prevent avoidable cutting and patching after installation.

MATERIALS AND PRODUCTS

MARBLE

The marble slabs for use in flooring shall be un-polished 3.4" uniformly thick slabs selected by the owner / architect against the allowance in the contract documents. The sum allowed in the contract shall be inclusive of taxes for delivery within the municipal limits of Mumbai.
The marble slabs for use in wall cladding shall be tin-oxide polished ¾" uniformly thick slabs selected by the owner / architect against the allowance in the contract documents. The sum allowed in the contract shall be inclusive of taxes for delivery within the municipal limits of Mumbai.
The contractor shall place orders and take delivery from the owners nominated supplier and arrange for the transportation and delivery to site. All costs for ordering, taking delivery and transportation from within the municipal limits of Mumbai to the site shall be adjusted against the contractors rate outside the allowance in the contract.
The contractor shall cut the basic slabs to the sizes and shapes required.

POLISHED GRANITE TILES AND SLABS

The granite tiles and slabs for use in flooring shall be polished ½" or ¾" uniformly thick slabs selected by the owner / architect against the allowance in the contract documents. The sum allowed in the contract shall be inclusive of taxes for delivery within the municipal limits of Mumbai.
The granite slabs for use in wall cladding shall be polished ¾" uniformly thick slabs selected by the owner / architect against the allowance in the contract documents. The sum allowed in the contract shall be inclusive of taxes for delivery within the municipal limits of Mumbai.
The contractor shall place orders and take delivery from the owners nominated suppliers and arrange for the transportation and delivery to site. All costs for ordering, taking delivery and transportation from within the municipal limits of Mumbai to the site shall be adjusted, against the contractors rate outside the allowance in the contract.

The contractor shall cut the basic tiles and slabs to the sizes and shapes required.

GRANOLITHIC FLOORING

Cement shall be ordinary Portland cement.
Coarse and fine aggregate shall be clean washed quartz of grading between 6mm and 100 microns.
Water shall be clean potable water free of salts, organic, mineral or other deleterious material.
Surface hardener and sealer shall be of an approved manufacturer specializing in the manufacture of concrete additives and treatment materials,

CAST-IN-PLACE PORTLAND AND CEMENT CONCRETE PAVEMENT

Concrete shall be as specified in the specifications in the specification section titled 'CAST-IN-PLACE PORTLAND CEMENT CONCRETE'.

Steel reinforcement shall be as specified in the specification section titled 'CONCRETE REINFORCEMENT'.

SETTING BED FOR FIXING TILES AND SLABS

Setting bed for fixing tiles and slabs shall be cement / sand mortar as specified in specification section titled 'STONE MASONRY'

JOINT GROUT

Joint grout shall be finely ground marble dust mixed with White Portland Cement and colour pigment to match colour of tile or as directed by the architect.

CUSHIONING

Cushioning below setting bed shall be clean river sand.

EXECUTION

CONSTRUCTION AND EXPANSION JOINTS

Floors shall be laid with construction joints cut through the setting bed to the base at regular intervals in every third joint in both directions.

Expansion joints shall be provided at intervals varying between 5 meters to 6 meters directions as indicated on drawings or instructed by the architect on site.

Granolithic and cast-in-place concrete paving shall be installed in preplanned alternatively bays of approx 4 meters x 4 meters as indicated on drawing or instructed by the architect at site.

Expansion joints shall be filled with a flexible joint grout and finished neatly.

INSTALLATION OF MARBLE FLOORS

Install as per details given on drawings.

Spread sand cushion to obtain the required slopes and lightly moisten by sprinkler water.

Install the setting bed of cement / sand mortar to an even thickness and dab on a thin coating of neat cement paste.

Place the pre-soaked title and firmly tamp into position with a wooden mallet, level the surface with respect to the adjacent tiles and the required finish level. Adjust joint thickness by means of spacers. Cut through setting bed, to bed at construction joints as previously explained.

Clean off excess cement paste from joints as required for grouting.

Trim tiles to suit junctions with walls and other trimming lines.

After the setting bed has reached final set, clean the surface with a damp cloth without excess water. Rake and clean joints in preparation for grouting.

Grout the joints with thick slurry of a grouting and ensure that the joints (except expansion joints) are filled completely with grout.

Cure the installation with clean water by ponding for a period of 7 days.

After the grout has been cured and hardened; commence grinding of the surface, to level out all unevenness of joints. Use a mechanically operated rotary grinder polishing machine using abrasive stones of appropriate grade.

After the surface has been ground level, clean the surface by flushing with water two or three times to clean the surface of all grinding slurry. When excess water has dried off and the surface is in a moist condition, reapply grout, rub into the entire surface and build up an even thickness throughout. Cure for minimum period of four days by ponding.

After the grout has hardened, polish the surface with a mechanically operated rotary grinder / polisher using finer abrasive stones until the surface is smooth and even, to receive sealer and polish. During the final grinding operation, sprinkle the surface lightly with powdered oxalic acid crystals to remove minor score and scratch marks. Clean of all traces of acid by through flushing with water.

Project the floor from on-going construction activities until final sealing and polishing.
Prior to substantial completion and handling over, apply an approved sealer and then polish and buff the surface to a fine sheen using a silicon wax polish.
Tolerance: The finished surface when tested with a 3-meter-long straight edge placed anywhere in any direction shall not show a gap of more than 3mm. Provided that no abrupt differences are discernible.

INSTALLATION OF POLISHED GRANITE FLOORS

The flooring shall be from pre-polished granite tiles or slabs cut to size and shape required with their edges ground smooth.
Spread sand cushion to obtain the required slopes and lightly moisten by sprinkling water.

Install the setting bed of cement / sand mortar to an even thickness and dab on a thin coating of neat cement paste.
Place the pre-soaked title and firmly tamp into position with a wooden mallet, level the surface with respect to the adjacent tiles and the required finish level. Adjust joint thickness by means of spacers. Cut through setting bed, to bed at construction joints as previously explained.
Clean off excess cement paste from joints as required for grouting.
Trim tiles to suit junctions with walls and other trimming lines.
After the setting bed has reached final set, clean the surface with a damp cloth without excess water. Rake and clean joints in preparation for grouting.
Grout the joints with a thick slurry of the grouting mix and ensure that the joints (except expansion joints) are filled completely with grout. After the grout has dried, thoroughly clean the surface to remove all traces of grout from the surfaces.
Project the floor from on-going construction activities until final sealing and polishing.
Prior to substantial completion and handling over, apply an approved sealer and then polish and buff the surface to a fine sheen using a silicon wax polish.
Tolerance: The finished surface when tested with a 3-meter-long straight edge placed anywhere in any direction shall not show a gap of more than 3mm, provided that no abrupt differences are discernible.

INSTALLATION OF POLISHED MARBLE AND KOTAH STONE WALL CLADDING

The cladding shall be form pre-polished marble or granite slabs cut to the size and shape required with their edges ground smooth.
Cladding shall be installed using dabs of neat cement paste behind the cladding.
Align surfaces and joints accurately using temporary plaster of Paris dabs to keep tiles or slabs in place till the setting dabs are fully set and hardened. Grout the voids behind the tile with cement / sand slurry. When the slurry has set, remove the excess slurry and plaster of Paris dabs and clean the surface and lightly rake the joints in preparation for grouting.
Grout the joints and point to a neat finish and thoroughly clean the surface to remove all traces of grout from the tile surfaces.
Apply surface sealer and polish prior to handover.

INSTALLATION OF GRANOLITHIC FLOORING

The installation of granolithic flooring shall generally be in according with the specification section titled ‘CAST-IN-PLACE PORTLAND CEMENT’
The finish shall be unformed finish type U3.
The surface hardener and sealer shall be applied in accordance with the manufacturer’s specifications.

PROTECTION AND CLEANING

All work covered by this specification shall be protected after installation and handed over in good condition after thorough cleaning.

SECTION – VIII- WALL FINISHES

1. **General**

a) **Scope:** This section shall cover internal and external plastering/rendering works as shown in the drawings.

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

c) **Scaffolding:** Stage scaffolding shall be provided for plastering work as per standard practice and as directed by Architect/Site Engineer. This shall be independent of the walls.

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

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

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

2. **Internal Surfaces**

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

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

(a) 12mm thick plaster in cement mortar 1:6 (1 cement: 6 parts 75%: fine sand & 25% coarse sand) mixed with 10% of lime water over brick and concrete surfaces.

Dubbing out wherever required (i.e. bringing up the undulation on the rough face of brick work in level with proudest points) shall also be executed in the same mix along with rendering coat.

(b) 6 thick plaster in cement mortar 1:3 (1 cement: 3 fine sand) on soffits of RCC slabs, chajjas, lintels and kitchen platforms and alround of shelves and para golas.

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

(d) 12mm thick plaster in cement mortar 1:4 (1cement: 4 parts 75% fine sand & 25% coarse sand) mixed with water proofing compound CICO-1 (liquid) as per manufacturer's instruction to be done on the inside face of the book shelves and cupboards.

(e) 15mm thick plaster in cement mortar 1:4 (1 Cement: 4coarse sand) mixed with water proofing compound CICO-1(liquid) as per manufacturer's instruction to be done on the internal surfaces of parapet walls including dubbing wherever required.

(f) Before plastering it should be ensured that brick masonry joints are raked out (at least on even surfaces) to a depth of 12mm and all concrete surfaces are rough enough for proper adhesion of plaster. If not they shall be made rough by hacking or bush hammering at intervals of 2". Efflorescence if any and dust/dirt shall be removed. The surfaces shall be wetted adequately before plastering.

(g) G.I. Chicken wire mesh of 24 gauge and 20mm mesh shall be fixed all along RCC Surface adjoining brick work given 150mm lapping on either side of the junction in double fold or as called for using nails etc and cement slurry before plastering. Ensuring equal thickness of plaster on both sides of the mesh.

(h) Sand used in plaster shall be within the grading zones as stipulated in the IS silt contents shall not exceed 4% by weight. Brick surface shall be raked out at the end of day brick work to afford key to plaster. Plaster surface shall be hard and even without patchy appearance. If they flake or show scratch marks if rubbed by appointed nail the plaster shall be rejected, dislodged and redone.

SECTION – IX - WHITE WASH, DISTEMPER AND PAINTING

GENERAL

SCOPE OF WORK

Work Included: This section covers the surface preparation, field priming and field painting or finish coating of all wood, plaster, concrete and metal surface, (both interior and exterior) as called for in the finish schedule. In addition, all surface, schedule or not, such as piping, tanks, equipment and machinery shall be painted when called for in the finish schedule or in their respective section of these specifications. Contractor shall finish all labour materials, tools and equipment required to complete the work.
Surface not to be painted: The following surface shall not be painted stainless steel, aluminum, brose, copper, lead, brass, factory pre-finished surfaces and installed surfaces. In addition surface of steel member which ate to have concrete cast against them or are to be fully embedded in concrete shall be pointed.

Shop primed Equipment: Final field painting or touch-up of manufacturer's shop primed or shop painted equipment shall not be done until operational testing has been complete and certified.

RELATED WORK SPECIFIED ELSEWHERE

Quality Control
Structural Steel
Lath and Plaster
Architectural woodwork
Cast-in-place Portland Cement concrete.
MOCK-UPS

In addition to the requirement for submitting colour samples, the contractor shall, prior to proceeding with paint application, provide mock-up or field samples, for each substrate to be painted. The mock-ups or field samples shall be painted to demonstrate method of application, finish texture, colour and quality of workmanship. The size and location of the mock-up or field samples shall be determined by the architect.

PRODUCTS

ACCEPTABLE MANUFACTURES

All coating material (paints) shall be furnished be a manufacture, regularly engaged in the manufacture of coatings shall be the manufacturer's best-grade for the intended substrate.

MATERIALS
Coating materials are listed herein by generic type (vehicle) for various substrates. A1 materials proposed will be subject to review and acceptance by the architect.

Coating accessory materials such as linseed oil, shellac, turpentine and other materials not specifically indicated herein but required to achieve the finished specified shall be of high quality and as far as possible from the manufacturer of the coating material.
Coating shall be ready-mixed, expect for field-catalyzed coatings. Pigments shall be fully ground maintaining a soft past consistency, capable of being readily and uniformly dispersed to a complete homogeneous mixture for brush, roller or airless spray application, as recommended by the manufacturer.
Coating shall have good flowing properties and be capable or drying or cutting free of streaks, runs or sags.
Colours, texture and degree of gloss shall be as shown on the finish schedule. Tint, prime and intermediate coats shall be approximately to the shade of the final coat but with sufficient variation to distinguish them from the preceding coat. Use products of the same manufacturer for succeeding coats. Where red lead primer is used, subsequent coats may be the produce of another manufacturer.
If ferrous metals are shop primed, the contractor shall make every effort to determine the type of primer used. If this is not possible or the primer is not compatible with the proposed finish coat as recommended by the coating manufacturer may be required prior to application of finish coat

PAINTS SELECTION GUIDE

Exterior Surface

Ferrous Metals (unprimed)

First Coat	Organic Zinc rich primer
Top Coat	Chlorinated Rubber

Ferrous Metals (Unprimed)

First coat	Chlorinated rubber Modified Alkyd.
Second Coat	Acrylic Epoxy Enamel
Top Coats	Acrylic Epoxy Enamel

Concrete

First Coat	Acrylic primer/ Sealer.
Second Coat	Acrylic or Vinyl Emulsion
Third Coat	Acrylic or Vinyl Emulsion
Top Coats	Acrylic or Vinyl Emulsion

Cement Plaster

First Coat	Acrylic Latex.
Second Coat	Acrylic Latex.
Top Coats	Acrylic Latex.

Wood Designated Painting.

First Coat	Alkyd Primer
Second	Alkyd Enamel.
Top Coats	Alkyd Enamel.

Galvanized Steel:

First Coat	(Where not passivating coat as recommended by coating shop Bonderized) manufacture followed by a Zinc chromate Primer
First Coat	(Where Galvanized Iron primer Bonderised)
Second Coat	Alkyd Enamel.
Top Coats	Alkyd Enamel.

Interior Surfaces.

Ferrous metals (Unprimed)

First Coat	Red Oxide Primer
Second Coat	Alkyd Enamel
Top Coats	Alkyd Enamel.

Concrete:

First Coat	Acrylic primer/Sealer
Second Coat	Acrylic or Vinyl Emulsion.
Top Coats	Acrylic or Vinyl Emulsion

Gypsum Plaster :

First Coat	Latex Sealer.
Second Coat	Acrylic Latex.
Top Coats	Acrylic Latex.

Cement or Cement lime Plaster

First Coat	Alkali resistant primer.
Second Coat	Acrylic Latex.
Top Coats	Acrylic Latex.

Gypsum Board :

First Coat	Acrylic primer / Sealer (Note required on Moisture resistant board)
Second Coat	Acrylic or Vinyl Emulsion.
Top Coat	Acrylic or Vinyl Emulsion.

Wood Designated for painting :

First Coat	Alkyd primer
Second Coat	Alkyd Enamel.
Top Coats	Alkyd Enamel.

Wood designated for staining and polishing:

First Coat	Alkyd standing Sealer
Second Coat	Modified Polyurethane.
Top Coats	Modified Polyurethane.

Galvanized Steel :

First coat	(Where passivating Coat as recommended by Manufacture followed by a Zinc)
First Coat	(Where Galvanized iron primer Bonderized)
Top Coats	Alkyd Enamel.

SECTION – X - INTERNAL PLUMBING WORK (INTERNAL WATER SUPPLY PLUMBING, INTERNAL DRAINAGE)

GENERAL

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

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

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

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

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

Water supply.

(a) All GI/CPVC/UPVC pipes and fittings from over head tank to all taps, wall mixers, wash basins, cisterns, sinks, geyser points, washing machine and showers as shown on drawings.
(b) Provision of hot and cold water supply lines in all toilets and kitchen.

4. **MATERIALS**

5. All GI pipes shall be galvanized steel tubes medium grade conforming to IS-1239 and ISI marked of makes Jindal Hissar/Prakash. All CPVC/UPVC pipes shall conform to the relevant IS standards.

6. All GI fittings shall be conforming to IS-1879 and ISI marked.

7. Valve shall be heavy Gun metal full way confirming to IS-778-1971 class I and ISI marked.

LAYING, FIXING AND FITTINGS OF GI PIPES

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

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

10. All pipes with necessary fittings wherever they are laid on internal faces of the walls shall be concealed in chase. On external faces they will be laid on walls fixed with clamps or on M.S. angle iron brackets as shown in drawings.

11. In the concealed portion of plumbing no joints shall be provided in the pipe lines except in the fittings i.e., bends, elbows, tees and nipples where required.

12. All pipes for water supply (Hot or cold) within toilets and kitchen shall be laid on walls only. No pipe shall be laid in sunken portion of toilets/kitchen.

13. For each unit the size of down comers, branch pipes from the ring (at terrace) from over head tank and branch pipes from down comers shall be of sizes as shown on drawing.
14. Pipes and fittings shall be jointed with screwed fittings, care shall be taken to remove burrs from the end of the pipe after cutting by a round file. Genuine white/red lead and a few strands of cotton thread shall be applied. All pipes shall be fixed in accordance with layout shown on the drawings. Care shall be taken to avoid air pockets. Pipes inside toilets shall be fixed in wall chases at least 30cm above the floor.

15. Pipes in shafts and other locations shall be supported by clamps of design as indicated in the typical detail. Pipes in wall chases shall be anchored by iron hooks.

16. **Unions:** Contractor shall provide adequate number of unions on all pipes to enable dismantling later. Unions shall be provided near each gun metal valve, stop cock, or check valve and on straight runs as necessary at appropriate locations.

17. **Puddle Flanges:** Puddle flanges shall be provided to all connection i.e. inlet overflow, and scour of the over head tank wherever required.

18. **Pipe Protection:** All pipes in chase or under floors or below ground shall be protected against corrosion by applying two coats of bitumen paint, covered with polythene tape and finished with a final coat of bitumen paint.

19. **Painting:** All exposed pipes shall be painted with two coats of oil paint over one coat of primer. Pipes shall be painted to standard colour code as approved by Project Engineer/Architect.

20. **Over Head Tanks**

a. The tanks shall be of molded HDPE and shall be one of the following make.

i) Unitank, ii) Polycon iii) Sintex

b. These tanks shall be located on the roof terrace as shown on drawing. Placed on supports as per details shown on drawings.

c. Each over head water tank shall be complete with the following.

(i) Lid and cover with locking arrangement.

(ii) Inlet, outlet, over flow (25mm), scour pipe (20mm) and Air vent pipe with all fittings.

(iii) Mosquito proof coupling shall be provided to overflow and air vent pipes.

(iv) The inlet pipe to the over head tank shall be provided with ISI marked 25mm brass body ball valve with polythene ball.

(v) The inlet pipe to the over head tank shall be provided with 25mm ISI marked full way gunmetal brass valve and each outlet pipe shall be provided with ISI marked full way gunmetal valve of size of outlet pipe.

(vi) The over flow pipes shall be brought down up to the finished terrace level and laid up to nearest khurra on terrace.

d. The water tank will rest over 100 mm thick RCC 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20mm nominal size) platform with nominal reinforcement of 8mm dia 6"c/c both ways, supported over ISMBs resting on brick wall supports over terrace and finished with cement plaster 1:6 all around as shown in drawings.

21. **Vent pipes:** Each down take pipe shall be provided with a vent pipe. The height of the vent pipe shall be 150mm above the top of the water tank.

22. **Testing of pipes :**

a) All pipe lines shall be tested hydraulically to pressure of 7 kg/Sq.cm for a minimum period of 24 hours for check for leakage.

b) The pipe line in chase or under floors/ground shall be covered up only after the testing is carried out satisfactorily and passed by Architect/Site Engineer.

c) The instrument, equipment and water for testing shall be arranged by the contractor without extra charges. (i.e. Hydraulic testing machine with pressure gauge)

d) A test register shall be maintained by the Site Engineer and all entries shall be signed and dated by contractor, Architect and Site Engineer.

23. **Insulation**: 24 Hot water lines in chases shall be provided with 20 mm thick insulation by wrapping 6 mm dia asbestos rope and finishing with a coat of 85% magnesia.

24. **Approval of layout of pipes and position of fixtures at site:** The contractor shall mark the location of all fixtures and fittings and layout of GI pipes on the terrace walls/ ground at site and take approval of Site Engineer/Architect before commencement of cutting chases for GI pipes within the building and digging trenches outside the building.

25. Sanitary Fixture and CP Fittings and Accessories
All sanitary ware shall be first quality white-vitreous china and shall be inclusive of all fixing devices nuts, bolts and hangers/Brackets.

These shall be from one of the following manufactures:-
(a) Hindustan Sanitary Ware
(b) Parry Ware
(c) CERA (Madhu Sudan Ceramics)
(d) NEYCER Ceramic

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

26. **Kitchen sink and draining Board:** Kitchen sink and draining boards shall be of stainless steel (Salem stainless steel ISI-304) 1.0mm thick. The sink and draining board shall be in one piece of following sizes with rectangular compartment/bowl. Each sink shall be provided with one CP brass waste and PVC waste pipe.

Overall size (LxW) = 1060x510mm
Bowl size (LxWxD) = 500x400x200mm

27. The Stainless steel sink and draining board shall be of one of the following makes:-

(a) NIRALI.

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

29. All bib cocks, stop cocks, angle-valves, pillar taps, mixtures, showers rose & arm, bottle traps, CP waster and inlet connections and other minor fittings shall be brass chromium plated. These shall be ISI marked where manufactured. Contractor shall obtain the approval of the name of the manufacturer and brand of CP brass fittings from Site Engineer/Architect before placing the supply order. While asking for the approval, copy of the Bureau of Indian Standard letter under which the manufacturer has been issued the license and authorized to mark the five items of CP brass fittings as listed in hereinafter below with ISI marking should be attached

and one sample of each fittings of the particular brand duly ISI marked shall be given by contractor. The fittings shall be of CONTINENTAL range from Jaguar Make.

30. Project Engineer before giving the approval of the name of the manufacturer and brand shall ensure that the validity date of license for marking the fittings as ISI marked has not expired.

31. Those CP brass fittings which are not manufactured as ISI marked shall also be of the same brand of which the ISI marked CP brass fittings are approved by Site Engineer as per para above.

32. It will be ensured that all CP fittings are from one manufacturer only for the entire work i.e. for all units in D'unit blocks/other buildings. However, if due to any reason contractor proposes to provide part of quantity from other manufacturer approved in para hereinafter then he may be permitted, but he will have to obtain specific approval of Site Engineer/Architect for this change in the brand. This will be subject to that all items and fittings in any particular block/other buildings shall be always of one manufacturer only. In no circumstances items of two manufacturers shall be used in any of the toilets of particular block/other buildings.

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

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

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

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

Schedule of Sanitary and CP Brass fittings in all buildings shall be as under:-

(a) Kitchen

(i) Stainless steel Sink with drain board
(ii) CP Brass waste
(iii) Sink Mixer
(iv) GI Waste pipe 40mm dia from CP Waste to floor drain grating

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

(A) **Wash Hand Basin**

(i) Vitreous china first quality wash basin 550 x 400mm wall mounting type on MS Angle brackets.
(ii) Same as above but Oval Shape under counter WB.
(i) CP Brass waste 32mm dia with over flow
(ii) CP Brass bottle trap with CP brass pipe to wall with CP cast brass wall flange
(iii) Brass pillar taps 15mm
(iv) CP Brass Basin Mixer

(v) CP Brass angle valves with CP copper
(vii) Connecting pipes with nuts and washers.
(viii) CPVC waste pipe 32 mm dia

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

(B) Water Closets and Cisterns

(1.) European type white vitreous china ware and cistern with S-trap without vent horn

(2.) White10.00 Litre capacity low level HIP flushing cistern water bird "COMMANDER MODEL"ISI marked complete with Delrin valve and float, fittings and specials of standard make & 40mm white flush bend, over flow with mosquito proof coupling, all washers and rubber bed etc. complete including fixing accessories

(3.) CP brass angle valve with CP copper connecting pipe with nut and washer

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

(C) **Urinals**

(i) Range of one and three urinals
(ii) Chinaware cistern
(iii) Bottle trap
(iv) CP brass angle valve with CP copper connecting pipe with nut and washer.

(D) Shower and Taps

i. CP brass wall mixer with bend for over head shower with central control knob for three positions, for supply to spout, second to stop and third for supply to shower.
ii. 125mm dia CP brass shower rose 15mm with ball joint and 230mm long CP brass extension pipe.

(E) Towel Rail : CP brass towel rail 20mm dia 16 guage600mm long including brackets.

(F) Towel Ring: CP brass towel ring 200 mm dia with CP brass brackets fixed to wall with Flanges & CP brass screws.

(G) Mirror of size as specified in the items and 5mm thickness over every wash hand basin. The mirrors shall be of make Modifloat or Atul Brand made from Tata Ashi float glass. The mirror shall have marine ply backing 6mm thick mounted on kail wood frame ¾" x $1\frac{1}{2}$" with Aluminum angle 30 x 15 x2mm alround & hung on to wall with key hole hooks.

(F) Peg Sets: Aluminum Anodized with 3 hooks

(J) Gratings:
(i) All floor traps (FT) and floor drains (FD) shall be provided with 125mm and 100mm round stainless steel gratings respectively of approved design and shape. The

weights of 125mm dia and 100mm dia gratings shall not be less than 130gms and 100 gms respectively.

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

37. **Geysers:** Scope for arrangement of fixing of Geysers included in this contract is as under:

(a) Arrangement for fixing electric geyser vertical type one each in toilets and kitchen.

(b) In all the units from the provision of common hot water supply shall be made.

(c) Hot water supply of all units shall be from the respective Geysers/Solar heater installed therein.

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

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

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

38. Installation of Sanitary Fittings:

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

(b) Wash hand basins shall be fixed firmly to wall with MS angle iron brackets. The brackets shall be given two coats of white enamel paint over a coat of primer. In addition the wash basin shall be securely fixed to walls with a pair of 25x3mm MS clips screwed with raw plugs to walls (placing of basin over the brackets without secure fixing on wall shall not be accepted).

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

(d) Urinals: Urinals shall be lipped type half stall (small) white glazed vitreous china of first quality and size 610x 400 x 380 mm size.

(i) Half stall urinal shall be provided 15 mm dia spreader, 32 mm dia CP domical waste and C.P. cast brass bottle trap with pipe and wall flange, and shall be fixed to wall by one CI bracket and two CI wall clips complete as recommended by manufacturer's directives/Site Engineer.

(ii) Half stall urinals shall be fixed with C.P. brass screws.

(iii) Flushing cistern for urinals shall be automatic type vitreous china as given in the schedule of quantities. Each flushing cistern shall have a copper siphon and inlet nozzle cock to control the flow. Flushing cistern shall be fixed to wall with R.S. or C.I. brackets painted with two coats of white enamel paint.

(iv) Flush pipes shall be G.I. pipes concealed in wall chase but with chromium plated bends at inlets and outlets.

(v) Urinals may be flushed with flush valves as described in the item.

(vi) Waste pipes for urinals shall be any of the following.

a. G.I. pipes. b. Rigid PVC

Waste pipes may be exposed on wall or concealed chase as directed by the engineer-in-charge. Specifications for waste pipes shall be same as given in Section II.

(e) **Urinal Partitions**: Urinal partitions shall be white glazed vitreous chinaware marble or stone of size specified in the schedule of quantities. Porcelain partitions shall be fixed at proper heights with C.P. brass screws with anchor fasteners and MS clips as recommended by the manufacturer and directed by engineer-in-charge.

(e) All fixtures shall be fixed at proper heights, as shown in drawings and workmanship which shall be of acceptable standards.

39. **Internal Drainage:** Scope of internal sewage disposal and drainage system for all buildings/blocks included in Schedule A part I under this contract will include the following and shall be provided as per the layout/locations shown on drawings:

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

Note: SWG sewerage lines from Gully Trap and nearest manholes onwards shall be measured and paid separately under schedule A part III (External sewerage)

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

41. All cast iron pipes fittings like bends, branches, floor traps, tees 'Y' junctions, in waste, soil and vent pipes shall be sand cast iron comply with IS 1729 of 1979 and shall be ISI marked. These shall be spigot and socket "Access door shall be made up with 3mm thick insertion rubber washer and white lead. The bolts shall be lubricated with grease or white lead for easy removal later. The fixing shall be air and water tight".

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

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

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

PVC pipes & fittings: PVC pipes for drainage system shall be rigid upvc pipes conforming to I.S. 13592 Type B.

i. Fittings for the pipes shall be injection moulded with approved type of sockets and 'O' rings joints.

ii. Jointing shall be done as per the manufacturer's recommendation. The pipes and fittings must have matching dimensions for a perfect joint. Loose or excessively tight joints in the system shall not be accepted. Fittings must have sufficient gap (approx. 10 mm) for permissible thermal expansion of pipes.

Fittings

i. Fittings shall conform to the same Indian Standard as for pipes. Contractor shall use pipes and fittings of matching specifications.

ii. Fittings shall be of the required degree of curvature with or without access door of rear, LH or RH .

SECTION XI: GYPSUM BOARD PARTITIONS AND CEILING

GENERAL

It is intended that these specifications cover principal requirement of new gypsum board partition and ceiling construction.
To prevent weakening due to calcimine, gypsum wallboard should not be exposed to temperature over 125F (52 C) for extended periods of time.
The Contractor shall furnish all materials, labour and scaffolding required to complete satisfactorily of all gypsum board partitions and ceiling work shown on the Drawings and / or specified.

MATERIALS

All materials shall be of an approval manufactures (India gypsum or equivalent) and shall comprise of the following:
G.I Framing for suspended ceiling
G.I Framing for partition and wall cladding.
G.I. corner beads and edge trims.

Dry-wall screw.
Regular gypsum wall board shall be ½" thick. Long edges shall be squire. Joint treatment materials shall be.
Joint Tape
Joint compound to be ready-Mixed
Fast hardening joint compound.
Topping compound to be ready-mixed.
Adhesive materials shall be joint compound for board application and wallboard /panel adhesive for board for framing application as recommended by manufacturer.

INSTALLATION

Preparation of work:
Commerce gypsum board and ceiling only after all work are complete.
Examine and inspect materials to which gypsum board is to be applied. Remedy all defects prior to installation of drywall. Any defects in the finished installation due to misaligned framing or the work performed under that section of the specification and such defects shall be remedied under that section of the specification.
Installation of wallboard:
Gypsum wallboard shall be applied to wall. Board of maximum practical length shall be used so that an absolute minimum number of end joints occur. Board edges shall be brought into contract with each other but shall be forced into place.
Wallboard joints at opening shall be located so that no end joint will align with edges of opening unless control joints will be installed at these points. End joints shall be staggered, and joint on opposite sides of a partition shall not occur on the same stud.
Gypsum wallboard shall be held in firm contract with framing member while fasteners are being driven. Fastening shall proceed from center portion of the wallboard toward the edges and ends. Fasteners shall be set with the heads slightly below the surface of the wallboard in a dimple formed by the hammer or power screwdriver. Care shall be taken to avoid breading the face paper of the wallboard. Improperly driver nails or screws shall be removed.

SECTION XII: ARCHITECTURAL WOODWORK

SCOPE OF WORK

Work included

This section covers the furnishing of all materials, equipment, accessories and labour for architectural woodwork, including but not limited to:

Wall paneling
Staircases
Railings and balustrade
Wood flooring and decks
Built-in-cabinetry, including plastic emulsion
Miscellaneous finished woodwork

Rough carpentry and framing associated with the above
Preservative treatment of wood
Metal fasteners, accessories and adhesives

Work not included

The following work is not included in this section and is covered elsewhere:

Structural woodwork
Wood doors
Wood windows

RELATED WORK SPECIFIED ELSEWHERE

Structural woodwork
Wood doors and windows
Painting and finish coatings

QUALITY CONTROL

The contractor shall be responsible for the quality of all work and material used in the work and shall implement a programme for inspection and testing to monitor the quality of work.

Wood shall be of the best select grade free of defects in accordance with IS:1629

COORDINATION WITH OTHER TRADES AND CONDITIONS
The contractor shall schedule and coordinate the structural woodwork with other trades and contractors whose work may be affected by the Architectural woodwork.
MATERIALS AND PRODUCTS

WOOD

Generally wood for all architectural wood work shall be teak, except for parquet flooring for which the wood shall be Laurel.
The moisture content of wood shall be in conformance to IS:287 and shall generally be between 12% to 14%.
All wood shall be heartwood from mature trees, of the best grade, with minimum sapwood, free of defects, selected for goods finished appearance.
All grades of wood with the following defects shall be prohibited for use:
Timber with loose grain, splits, compression wood in coniferous timber, heartwood-rot and sap rot and wraps.
Worm holes and pitch knots
Wood, that has been badly stored and damaged.

LAMINATES

Plastic laminates shall be from an approved manufacturer, shall conform to IS: 2046 and shall be of new stock & 1.0-1.5mm in thickness.

PLYWOOD

Plywood shall be of new stock from an approval manufacturer, complying IS:303 BWR (and preservative treated respectively)
Plywood having the following defects shall be prohibited for use:
Damaged surfaces
Loose joints between ply
Badly stored

FASTENER AND ACCESSORIES

Screws shall be of Mild steel, complying to IS:451
Mild steel wire nails shall be in compliance with IS:723
Copper wire nails shall be in compliance with IS:725

ADHESIVES
Adhesive shall be synthetic resin adhesives complying with IS: 851, Fast setting glues such as Rubber solutions/ "Zat Pat" shall not be used.
IRON MONGERY

Flanges, bolts, hasps, screws and other hardware shall be brass of the best quality approved by the architect.
Locks and architectural finish hardware such as handles and knobs will be selected by the owner against the allowance made in the contract documents.

The contractor shall order, take delivery and arrange for the transportation of the hardware from the supplier nominated by the owner. The costs for ordering, transportation etc. upto delivery at site will be adjusted the allowance.

EXECUTION

GENERAL

The preservative treatment of wood shall be performed after conversion of lumber to the required sizes in construction so as to keep subsequent working on them to a minimum.
Brush supply two heavy coats of the same wood preservative chemical to any surfaces which were exposed by cutting, sawing, drilling etc.
Set out all architectural woodwork accurately in accordance with the contract drawings or approved shop drawings, true to line, angles, slopes and panes.
All members shall be in continuous lengths between supports without any immediate joints or splices unless otherwise shown on the drawings.
All sizes shown on the drawings are the finished dimensions and shall be within the tolerances given below:

- For measurement upto and including 100mm in width or thickness +/- 0.5mm.
- For measurement above 100mm in width and thickness +/- 0.1mm

All bearing surfaces shall be constructed to achieve full contract between surfaces over the entire bearing area.
All joints shall be worked to achieve accurate and tight fit with full contract between surfaces.
As far as possible grain and of wood shall be matched for adjacent pieces.

PANELING

Install the wall paneling in accordance with the design and details shown on the drawings.
Check alignment, plumb, plane and dimensions of the backing which is to receive paneling. Make necessary corrections prior to commencing paneling.
Layout paneling in accordance with actual dimensions obtained at site location. Adjust detailed dimensions to obtain the intent of the design.
Install sub-frames and grounds and secure them firmly to the backing, tree to line, plumb, alignment and plane to avoid adjustment while installing paneling.
The panel frames shall be true to dimensions, sections, profiles, mouldings etc. as shown on the drawings. Members shall be in one piece between joints.
Panels shall be of the thickness and profiles shown in the drawings. When a large panel is required to be built up from two or more pieces, the joints shall be tongue and grooved flush joints, glued and drawn tight by means of vices, clamps or other means to obtain permanently indiscernible joints. The colour and grain of the wood shall be matched to conceal the joints.

The frames and panels shall be planed and sanded smooth to remove all tool marks before assembly.
The panel frames shall be joined by 'all wood' joints without metal fasteners by means of the most appropriate glued mortise-and-tenonned joints and wood pins. Mortises and tennons shall be tooled to obtain intimate contact between their surfaces and shall be fully glued with glue.
Joints shall be tightened with vice, clamps, draw straps or other means to obtain tight, indiscernible joints. The grain of wood pins shall match the surface grain of the frames.

Mouldings shall be mitered at 45 degrees to obtain a perfect match of lines, edges and profiles between abutting pieces.
After assembly the joints shall be tooled and sanded to remove minor unevenness at joints.
Planted mouldings and architects shall be fixed by means of headless-nails, neatly punched below the surface of wood.

Tolerances:
- Plane surfaces when tested with a straight edge placed anywhere, in any direction shall not show a gap of more than 1mm between the surface and the edge in any 2 meter length, provided that there is no noticeable abrupt differences in smaller areas.
- Straight lines and edges when tested with a 2 meter long straight edge shall not show a variation of more than 2mm, provided that there are no noticeable abrupt differences.

WOOD VENEERS AND PLYWOOD

Wood veneered plywood shall be 4mm. thick of an approved manufacture. Veneered plywood shall be selected from the best quality new stock for grain and colour appearance.
Plywood shall comply with IS: 5509 and IS: 5539

ADHESIVES AND FASTENERS

Adhesives shall be synthetic resin adhesive complying with IS: 851
Screw shall be of brass.
Copper wire nails shall be in compliance with IS:725

TREATMENT AGAINST DECAY AND INSECT ATTACK

Treatment against and insect attack shall be by means of an approved proprietary product, proven to have outstanding durability under any conditions of exposure, to provide long-lasting protection against decay producing fungi and insects.
The material used for treatment shall be clean, oil-free. Odorless and harmless to people, planes and animals, evens when exposed to fire.
The material shall be spray or brush applied for deep-penetration, fiber- fixed to prevent leaching.
The treated wood shall be capable of being subsequently painted or stained without being discolored.
No coal –tar based products shall be used for preservative treatment.
The material used for preservative treatment shall be compatible with the material used for fire retardant treatment.

HARDWARE

All hardware for wood doors and wood windows will be selected by the owner.
The Contractor shall order, take delivery and arrange for the transportation of the hardware from the supplier nominated by the owner. The costs for ordering, transportation etc up to delivery at site will be adjusted against the Allowance.

GLASS

Glass All shall be float glass of glazing quality conforming to BS:952 part 1 or other acceptable standard.

Wired glass: All wired glass shall be polished both sides with square pattern stainless steel wire mesh complying to BS:925, part 1 or other acceptable standard
Insulating glass insulating glass units shall consist of one exterior pane of tinted glass and one pane of clear glass, separated by a 15mm. Thick spacer filled with moisture absorbing desiccant. Each unit shall be hermetically sealed with primary butyl rubber sealant completely covering the unit's edge.
Glass and sizes and thickness shall be as shown on the contract Drawings.
All glass shall bear the label of its manufacturer and the standard to which it is manufactured.

Glazing gaskets : All glazing gaskets shall be 'U' shaped of flexible vinyl or synthetic rubber (Neoprene) to fit the glass thickness.
Setting blocks: All setting blocks shall be of synthetic rubber to provide the necessary edge clearance from frames for the glass.
Glazing components: These shall be clear silicone sealant.

WEATHER STRIPS

The weather strip to seal the perimeter gaps between sashes and frames shall be flexible vinyl or synthetic rubber suitable for heavy-duty application.
Sealant caulk for sealing joints between frames and structural opening shall be a one –part polysulphide sealant suitable for application by a caulking gun

List of Material
Of
Approved Maker/Brands: Civil Works

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

S. No	Materials		Manufacturers
1.	Plywood		Signature /Anchor / Archid / Century / Kenwood / Samrat / Green Mayur (6mm, 9mm, 12mm, 19mm).
2.	Laminates		Signature/Formica /Greenlam / Century / Signature / Heritage / Archid / Newmica / Amulya, Sunmica (1.0 / 1.5mm thick)
3.	Block board		Anchor / Century / Archid / Kenwood / Samrat / Mayur
4.	Soft Board (pin up board)		Jolly board, Western India plywood
5.	Gyp. Board		India gypsum
6.	Metal ceiling		Luxelon, Superseal, Trident, Armstrong
7.	Vertical blinds		Vista, Universal
8.	Screws		GKW / Mettle fold
9.	Brass hinges		Reliance / Punit heavy duty
10.	Hardware		Shalimar, Everite / Reliance (brass powder coated)

11.	Drawer shutter lock		Vijayan / Godrej (3 set of keys)
12.	Ball catch		Magnetic (M-2) / Brass
13.	Door lock / handles		4-C ACME, Golden, Godrej, Ultra
14.	Veneer		Anchor / URO / Durian / Century
15.	Adhesives		Fevicol (SH), Mowicoll, Mahacol, Araldite
16.	Wood preservatives		Woodguard, PCI, Black Japan
17.	Door closure		Yale / Efficient gazets, Everite Hyper
18.	Glass		Modi / Triveni / Hindustan Palington / Asahi / Saint Gobain
19.	Glass tinted		Same as above.
20.	Melamine Polish		Asian paint, MRF, Nerolac, French / Zinc oxide
21.	Paint		ICI, Burger, Nerolac, Asian.
22.	AC grill		Air products, Omicron, Patrawala
23.	Vitrified tiles		Marbonite, / Navin / Orient Bell / Spartek,Kajaria
24.	Ceramic tiles(Non-Skid)		Jhonson & Jhonson, Kajaria, Nitco, Regency
25.	Alu. Door & window sections		Ajit India / Jindal / Indal / Bhansali of 25 microns.
26.	Floor springs		Everite / Hemco / Hyper
27.	Wood preservative		Asian paint / British paint
28.	Grey Cement (43 or 53 Grade) White Cement Putty		A.C.C, L&T, AMBUJA, Jaypee Birla White, J.K. Birla White Putty
29.	Sun control film		Garware
30.	Stainless steel sink		Nirali / Diamond
31.	Carpet		Hitkari / Modi / Trans Asia
32.	Rubber foam		34 density mm foam
33.	WC seat cover		Commander / Patel / Supreme
34.	Toilet paper holder		Parryware / Hindustan / Nycer
35.	Steel (Thermo MechanicallyTreated Steel) High strength deformed bars or mild steel reinforcement		TATA, SAIL, RINL
36.	Clay Bricks		Good quality locally available material approved by Engineer / Architect
37.	Pressed Steel frames for Doors		Fabricated P.S. frames approved by Engineer/Architect.
38.	Pressed Steel frames for Aluminium- Windows, Ventilators.		Indal / Jindal of 25 microns approved by Engineer/Architect.
39.	Flush Door Shutters		Century/ Anchor / Archid / Green / Samrat / Kenwood ,Signature

40.	Aluminum Hardware/fittings		Argent / Classic / Shalimar
41.	Brass Mortice Locks & Latches		Godrej
42.	Latches with Internal locks		Godrej / Ultra
43.	Floor Type Hydraulic door closer (Floor spring)		Everite / Hypper / Hemco
44.	Aluminum door, window and ventilator sections.		Jindal / Indal / Hindalco
45.	Water proofing material / compound.		CICO – I / Roff
46.	Glazed Tiles		Johnson & Johnson / Naveen / Nitco / Regency / Spartek
47.	Cement Concrete (Chequred) Tiles		Nitco / Bharat
48.	Glass Mosaic Tiles		Italia
49.	Synthetic Enamel Paint		Jenson & Nicholsan / Asian / Nerolac /Berger
50.	Oil Bound Distemper		Jenson & Nicholsan / Asian / Burger / Nerolac
51.	Plastic Paint		Jenson & Nicholsan / Burger / Nerolac
52.	Panelled Doors		National / Century / Swastik / Kitply
53.	P.V.C. Doors		Sintex / Mihir / Fixopan
54.	Rolling Shutter & Grills		Good quality locally available material.
55.	Hardeners		"Ironite".
56.	Red Oxide		"Asian"
57.	Waterproof cement paint / acrylic paint		Snocem India, Nerolac, Nitcocem
58.	Glazing		"Hindustan Pilkington" Tiveni, Modi
59.	Water seal (Epoxy-sterarate) compound		As approved by Architect / Engineer
60.	Medium density fibre-board in lieu of partitions paneled doors and flush doors.		Nuwood, mangalam
61.	Ironmonjires and brass fittings		Jiranna / CIEF/ Shalimar / Everite.
62.	Drawer sliding fitting		Earl bhihari
63.	Veneer		Achor / Kitply / Uro / Durian / Century
64.	Polish		French/Zinc Oxide / Melamine (Asian)
65.	Polyure than foam		'U' foam

PLUMBING WORK

S.No	Materials		Manufacturers
1.	Vetreous china sanitary ware (ISI mark)		Hindustan sanitary ware/ parryware/ Cera

2.	Seats & Covers solid (W.C.)		Commander/ Admiral/ Supreme
3.	PVC Low level flushing cisterns		Commander / Parryware / Hindustan
4.	C P Fittings / Toilet Accessories ISI Marked		Jaquar / Aquel / ESS ESS / Marc
5.	UPVC Pipes (S/W/R Pipes)		Diplast / Supreme / Finolex / Prince
6.	Centrifugal cast CI Pipes & Fittings		RIF / Neco
7.	G.I. Pipes (B-Class)		ITC / Tata / Zenith
8.	G.I. Fittings (ISI Brand)		Unik / AMCO
9.	Gunmetal valves (Full way, check and globe valves)		Leader / Zoloto (with ISI mark) / Sant
10.	S.W. Pipes / Fittings & Gully traps		Perfect / Tirmurti / Bharat
11.	Ball valves		Voltec / Zoloto
12.	Stainless steel sinks		Nirali / Neelkanth
13.	HDPE Tanks		Sintex / Polycon / Unitank
14.	Mirrors		Modiguard
15.	C.I. Manhole Cover		RIF / BIC / Neco
16.	Concrete Man holes SFRC		CICO
17.	Hydropneumatic Systems		Grund Fos / Crompton
18.	Water lifting Pump		Grund Fos / Crompton
19.	Submersible Pump		Grund Fos / Crompton
20.	Chemical Doser		Asia Lmi / Prominent / Ion Exchange
21.	Pressure Gauge		H. Guru
22.	Level Indicator		RM Approved Make
23.	Air Relief Valves		RB / Zolto
24.	Water Meter		Dasmesh / Capstain / Kaycee
25.	PVC Encapsulated footrest.		KGM approved make
26.	C.I. Sluice valves		Kirloskar, Leader with ISI mark on the boAsst.
27.	A.C. Pipes		Everest Ramco
28.	R.C.C. Pipes		Indian Hume pipe
29.	Brass & Gun metal globe, gare		Leader NETA with ISI marking on the boAsst.

	valves, feet valves		
30.	Sanitary Fixture		Hindware / Parryware / Cera
31.	Storage Heaters		Recold, Spherehot
32.	Fire Hydrant		Approved by local fire Bridges Authority
33.	Sand cast soil pipes and fittings		NECO sand cast / B.I.C.
34.	Bracket supports		Hi-tech/MS brackets as per drawings
35.	Towel rail / ring		Jaquar / ESS ESS
36.	Connection pipe-PVC		Kohinoor/Viking
37.	Butterfly valve		Intervalve
38.	PVC Fittings (Moulded)		Clarion / Finolex / Prince
39.	Non-return valve		Intervalve
40.	UV filter		Alfa-level
41.	Stainless Steel		Salem Steel
42.	Marble Mosaic Tiles		Nitco / Bharat / Himalayan
43.	Fire Door		RDG / Shakti / Metdor
44.	RCC pipe		Indian Hume Pipe Co. / Spun Pipe Co.
45.	Stoneware Pipe and fittings		Trimurti / Perfect Potters / Bharat

MODE OF MEASUREMENTS FOR INTERIOR FURNISHING WORKS :

1. DOORS, WINDOWS AND GRILLS.
   Clear area over one face inclusive of frame shall be measured. Hold fasts and portion embedded in masonry or flooring shall not be measured.

2. PARTITIONS IN WOOD WORK
   The partition height shall be measured up to bottom of false ceiling and framing members / ply going above shall not be measured

3. DECORATIVE PANELLING OVERWALL OR OVER PARTITIONS
   The actual area of cladding shall be measured in square meter.

4. CARPETS
   The actual area covered by the carpet shall be measured. No extra shall be allowed for wastage. No deduction shall mad e for columns up to 0.5 sq. meter.

5. PAVING AND TILE WORK
   The work mentioned in this section shall be measured in square meter and shall be priced per unit of square meter. In all paving work, the slabs shall be touching the walls and go well under the plaster, but the measurements shall be the clear measurements of the rooms or areas finished. No allowance shall be made for portions going under the plaster.

6. ALUMINIUM SLIDING WINDOWS
The measurement of aluminum sliding windows shall be taken only after the frame going with shutter is fixed in its final finished position in line level and plumb. Width and height shall be measured net between the out to out portion of the aluminum window frames.

7. FALSE CEILING
For false ceiling work, the measurement shall be for the actual area covered. No deductions shall be made for the cutouts, for light fittings, speakers, AC grills and column up to 0.5 sq. meters.

8. WOODWORK
For conversion of centimeters to meter the resultant figure shall be taken upto two digits after decimal point. Third digit shall not be taken into account.

LIST OF INDIAN STANDARDS FOR CIVIL FURNISHING WORKS

IS 4081: Safety code for blasting and related drilling operation

IS 6313: Code of practice for anti termite measures in building

Part 1: Constructional measures.

Part 2 Code of practice for ant termite measures in buildings: Pre-constructional chemical treatment measures

CONCRETE

IS 456: Code of practice for plain and reinforced concrete.

MASONRY WORK -BRICK WORK

IS 1077: Specification for common burnt clay building bricks.

IS 2212: Code of practice for brick work

IS 2250: Code of practice for preparation and use of masonry mortars.

PLASTERING AND POINTING

IS 412: Specification for expanded metal steel sheets for general purposes

IS 1635: Code of practice for application of cement and cement-lime plaster finishes

IS 2402: Code of practice for external rendered finishes.

IS 1542 Specification for sand for plaster (Class A grading)

FLOORING

IS 1443: Code of practice for laying and finishing of cement concrete flooring tiles.

IS 4457: Specification for ceramic unglazed vitreous acid resisting tiles.

DOORS AND WINDOWS

IS 287: Recommendation for maximum permissible moisture content for timber used for different purposes in different zones

IS 848: Specification for synthetic resin adhesive for plywood (Phonetic and amino plastic)

IS 1141: Code of Practice for seasoning of timber

IS 2202: Specification for wooden flush door shutters (solid core type)

Part I: Plywood face panels

Part II: Particle board panels and hard board faced panels

GLAZING

IS 1081; Code of practice for fixing and glazing of metal, (steel and aluminium) doors, windows and ventilators.

IS 2553: Specification for safety glass

IS 2835: Specification for flat transparent sheet glass

IS 3548: Code of practice for glazing in building

PAINTING AND POLISHING

IS 1477: Code of Practice for painting of ferrous metals in building

Part I: Pre-treatment

Part II: Painting

IS 2338: Code of Practice for finishing of wood and wood based materials

Part I: Operation and workmanship

Part II: Schedule

IS 2395: Code of Practice for painting, concrete, masonry and plaster surfaces

IS 3537: Specification for ready mixed paint, finishing interior, for general purposes to IS colors

IS 5410: Specification for cement paints colour, as required

IS 6278: Code of Practice for white washing and colour washing

TECHNICAL SPECIFICATIONS ELECTRICAL, FIRE FIGHTING, SECURITY SYSTEM & NETWORKING

The Electrical installation work shall confirm to the following I.S. Standards (latest additions), Local Supply Authorities Rules and Regulations, Indian Electricity Act & rules, National Building code and Fire Safety Norms.All equipment including cables, wires & components thereof should be manufactured & installed as per standards specified by Bureau of Indian Standards (BIS) Where such standards do not exist, then the covered items should be approved from Architects/ Consultants /Clients prior to purchase & delivery to site.

- IS: 732 Code of Practice for Electrical wiring installation (System Voltage not exceeding 650V)
- IS: 1646 Code of Practice for fire safety of buildings (General Electrical Installation)

- IS: 9537 PART-II 1981 Rigid steel conduits for electrical wiring.
- IS: 2667 Fittings for rigid steel conduits for electrical fittings.
- IS: 2509 rigid non-metallic conduits for electrical installations.
- IS: 1293 Pin Plugs and Sockets.
- IS: 694 PVC insulated cables with copper conductors for voltages up to 1100 Volts
- IS: 9532 Specification for conduits for Electrical Installation
- IS: 3854 5A & 15A Switches.
- IS: 3043 Earthing.
- Indian Electricity Act, 1956 and Rules and Fire Insurance Regulations.
- IS: 2026 Specification for power transformer------ Not applicable.
- IS: 2099 Specification for high voltage porcelain bushings. ------ Not applicable
- IS: 355 Specification for insulating oil. ------ Not applicable
- IS: 3639 Specification for fittings and accessories for power transformer. ------ Not applicable
- IS: 2274 Electrical wiring installations (System voltage exceeding 650 volt)
- IS :7752 Guide for improvement of power factor consumer's installations
- IS: 5216 Guide for safety procedures & practices in electrical work
- IS: 3072 Installation & maintenance of Switch gear
- IS: 2551 Guide for danger notice plates
- IS: 8923 warning symbols for dangerous voltages
- IS :13947 Specification for low-voltage switchgear & Control gear
- IS :1777 Industrial luminaries with metal reflectors
- IS :1913 General & safety requirement of luminaries
- IS :116 Circuit Breakers for AC system
- IS :3427 Metal enclosed switchgear & Control gear
- IS: 3837 Accessories for rigid steel conduits.
- IS: 4047 Heavy duty Air break switches & composite switch fuse units for voltage exceeding 100 volts.
- IS :4237 General requirements for switchgears not exceeding 1000 Volts
- IS :4615 Switch socket outlets
- IS:159: Busbars & busbars connections
- IS: 415 marking & arrangement for switchgear board's main connections & auxiliary wiring.
- IS: 415 Tungsten filament lamp
- IS: 722 Three phase watt hour meter with MDI
- IS: 1248 Directing acting electrical indicating instruments
- IS: 1293 three pin plugs & sockets outlets.
- IS :1947 Floods lights
- IS: 2147 Degree of protection provided for enclosure for switchgear
- IS: 2418 Tubular fluorescent lamps for general lighting services
- IS: 2509 PVC electrical Conduits
- IS: 2075 Current Transformer
- IS: 2834 LT Capacitors
- IS: 3106 Code of practice for installation & maintenance of switchgear.
- IS: 2607 Air break isolators for voltage not exceeding 1000 Volts
- IS: 1753 aluminium Conductors for insulated conductor
- IS: 3961 Recommended current ratings for cables
- IS: 3480 Flexible steel conduits for electrical wiring
- IS: 1646 Code of fire safety of building (General Electrical installation)
- IS: 1913 General & safety requirements for electric lighting fitting.
- IS: 1239 Mild steel tubular & other wrought steel pipe fitting
- IS: 6381 Specifications for construction & testing of electrical apparatus.
- IS: 1818 Isolator & Earthing switches
- IS: 3106 Code of practice for selection
- IS: HRC Cartridge fuse unit up to 650 Volts
- IS: 10332 Part I to Part V Specification of Luminaries

SPECIFICATIONS FOR ELECTRICAL WORKS
SPECIAL CONDITIONS OF CONTRACT

1. COMPLETENESS OF TENDER:-

All sundry fittings, assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections as required, and all other sundry items which are useful and necessary for proper assembly and efficient working of the various components of the work shall be deemed to have been included in the tender, whether such items are specifically mentioned in the tender documents or not.

2. RATES: -

The rates tendered shall be for complete items of work inclusive of Cost of material, erection, connection, testing, labour, supervision, tool & plants, storage, contingencies, breakage, wastage, execution at any level & height, all taxes (including works contract tax, if any), duties, and levies etc. and all charges for items contingent to the work, such as, packing, forwarding, insurance, freight and delivery at site for the materials to be supplied by the contractor.

3. WORKS TO BE DONE BY THE CONTRACTOR :-

The scope of internal and external electrification under this contract shall include the design, engineering, manufacture, assembly, testing, delivery, erection and commissioning of electrical system including supply of all material, labour, T&P etc for followings –

- Main Switches, Main L T Panels, meter board and external cable connection.
- 11 KV HT Panel.
- 11 KV / 0.433 KV Transformers.
- D. G. Sets with fuel tank, piping, fuel pump, exhaust piping with lagging and supports, cooling system complete.
- Sub and branch distribution boards, MCB's and RCCB's etc.
- Mains and Sub mains between various panels, meter boards and distribution boards.
- Point wiring with Conduits for all type of wiring including circuits, sub mains, light, fans, power and AC etc.
- Switches and socket outlets for light, fans, plug, power, Tel, TV, computer network etc with suitable MS/GI boxes with accessories complete.
- Earthing and Lightning Protection with earth leads/strips.

- Conduits and wiring for Telephone, EPABX, TV system, PA system, Music system and Computer networking, fire alarm, broad band etc.
- Cables and other allied works.

- Provision of emergency electrical supply and distribution for complete light, fans and other specified points are also included in the scope of work. For the purpose of emergency distribution separate DB's shall be installed for Light/fans **and fax machines & staircase** lighting at every place, so that these can be separated.

- Lighting Fixtures fans and exhaust fans. (If these are supplied by the client, then the contractor will erect the fixture as required without any extra payment beyond the contract)

- External lighting including underground cables and connection with the external cables and earthing.

- Feeder pillars with circuit breakers.

- Underground cables.

All the above work shall be complete in all respects up to the satisfaction of architect, consultant, Client and Engineer in charge as per the details mentioned in BOQ and drawings supplied time to time.
Unless and otherwise mentioned in the tender documents the following scope of works shall be done by the contractor, and therefore their cost shall be deemed to be included in their tendered cost:

a) Furnishing of all labour, skilled and unskilled, supervisory and administrative personnel, erection tools and tackles, testing equipment, implements, supplies, consumables like welding rods and gas, oil and grease, cleaning fluids, insulating tape, anti corrosive paints, jute cotton waste etc., and hardware for timely and efficient execution of the erection work.

b) Transport vehicles necessary for efficient transportation of equipment from Owner's stores to site of erection and excess materials back to owner's stores.

c) Complete assembly, erection and connection, testing and commissioning, putting into successful and satisfactory commercial operations of above equipment.

d) The items of work to be performed on all equipment and materials shall include but not limited to the following:

   (i) Receiving, unloading and transportation at site. (To Owner or Contractor's stores and from their upto actual place of erection).

   (ii) Opening, inspecting and reporting all damages and short supply items.

   (iii) Arranging to repair and/or re-order all damaged and short supply items.

   (iv) Storing at site with suitable all weather protection.

   (v) Assemblies, erection and complete Installation.

   (vi) Necessary coordination between work done by other Contractors.

   (vii) Final check-up, testing and commissioning in presence of Owner's

representative.

(viii) Obtaining Owner's written acceptance of satisfactory performance.

4. INFORMATIONS REQUIRED FROM CONTRACTOR

i. Typical GA drawing of all equipment to be supplied and disposition of various fittings and loading.

ii. All Annexure of this specification duly filled in and signed by the contractor.

iii. Catalogue of all equipment and components explaining construction features.

iv. Transportation/shipping dimensions and weights, space required for handling parts for maintenance.

v. Type test certificates for all equipment on similar type of equipment.

vi. Final Single line diagram complete with cable sizes etc.

vii. Bill of Materials, Control & schematic line diagram for meter & relay panel, terminal connection/Master Terminal box diagram, wiring diagram with physical location of components for all equipment.

viii. Detailed cabling layout showing cable trench / tray layout, earthing layout.

ix. Detailed lighting layout showing position of fixtures / type of fixtures, circuiting and route of wires / cables / fixing details, DB details.

x. Protections relay settings.

xi. Cable schedule & interconnection chart.

xii. Foundation details and plan, loading details for all equipment.

xiii. Test certificates.

xiv. Instruction manuals of all major equipment.

xv. Test Procedures at sites.

xvi. Test reports of all tests carried out at site.

xvii. 'AS BUILT' drawings (2 sets of soft copies on CD and six sets of hard copies duly wound).

xviii. All layout drawings shall be made in scale of 1:50 or 1:100 unless until agreed by the Owner/ Consultant.

4. PRICES

a) The price quoted for supply items shall include all packing, crating, excise duty, sale tax / Works Contract tax, insurance, freight, loading/ unloading, handling & all other charges.

b) The price quoted for erection & commissioning shall include cost of all consumables, taxes & duties. (if any). No additional taxes/duties shall be payable by Owner.

c) Prices quoted shall be firm and no variation shall be allowed during contract period.

d) Contractor shall furnish prices separately for spare parts for two (2) year's trouble free operation of the equipment and shall furnish the list of the same.

6. ELECTRIC POWER SUPPLY AND WATER SUPPLY :-

Unless and otherwise specified, power supply and water supply as may be required shall be arranged by the contractor for installation and testing of the equipment's at the site of work.

8. PROVISIONS AGAINST ACCIDENTS AND SAFETY MEASURES

a) All safety rules and codes as applicable to work including rules applicable as per factory inspector shall be followed during execution of above work.

b) All safety appliances and protective devices including hand gloves, aprons, helmets, shields, goggles, safety belts etc. shall be provided by Contractor for his personnel.

c) The Contractor shall arrange to provide guards and prominent display caution notices if access to any equipment/ area is considered unsafe and hazardous.

9. SPECIFICATIONS

In the absence of specifications for any work or materials, relevant Indian Standard Specifications shall be applicable. If such codes for a particular subject have not been framed, the decision of the Employer/ Consultant will be final and binding.

10. VARIATION IN QUANTITY

a) The Owner shall have right to delete or increase/ decrease quantity specified in this specification as specified in preamble to Bill Of Materials.

b) Quantities indicated in Bill of Materials are based on engineering status of the project as on date. It is necessary that proper engineering is carried out by the contractor before procurement of material.

c) For procurement of any material & sequential delivery at site from point of view of erection etc. Contractor shall take prior approval from the employer.

d) All left over material for which payment has been made by the employer, has to be taken back by the contractor. The employer shall make necessary deduction from the bills of contractor.

11. SITE VISIT

It is recommended that contractor shall visit site before submission of his offer. Time and date shall be fixed with employer.

11. TOOLS FOR HANDLING AND ERECTION :-

All tools and tackles required for handling of equipment and materials at site of work as well as for their assembly and erection and also necessary test instruments shall be the responsibility of the contractor.

12. CO-ORDINATION WITH OTHER AGENCY: -

The contractor shall co-ordinate with all other agencies involved in the building work so that the building work is not hampered due to delay in his work. Recessed conduit and other works, which directly affect the progress of building work, should be given priority.

13. CARE OF BUILDINGS :-

Care shall be taken by the contractor to avoid damage to the building during execution of his part of the work. He shall be responsible for repairing all damages and restoring the same to their original finish at his cost. He shall also remove at his cost all unwanted and waste materials arising out of his work from the site, from time to time as designed by the Engineer-in-charge.

14. STRUCTURAL ALTERATIONS TO BUILDINGS:-

i. No structural member in the building shall be damaged/altered, without prior approval from the competent authority through the Engineer-in-charge.

ii. Structural provisions like openings, cutouts if any, provided by the department for the work, shall be used. Where these require modifications, or where fresh provisions are required to be made, such contingent works shall be carried out by the contractor at his cost.

iii. All such openings in floors provided by the department shall be closed by the contractor after installing the cables/conduits/rising mains etc. as the case may be, by any suitable means as approved by the Engineer-in-charge without any extra payment.

iv. All chase required in connection with the electrical works shall be provided and filled by the contractor at his own cost to the original architectural finish of the buildings.

15. WORK IN OCCUPIED BUILDINGS: -

i. When work is executed in occupied buildings, there should be minimum of inconvenience to the occupants. The work shall be programmed in consultation with the Engineer-in-charge and the occupying department. If so required, the work may have to be done even before and after working hours.

ii. The contractor shall be responsible to abide by the regulations or restrictions set in regard to entry into, and movement within the premises.

iii. The contractor shall not tamper with any of the existing installations including their switching operations or connections there to without specific approval from the Engineer-in-charge.

16. STATUTORY REGULATION AND APPROVALS :-

All electrical works shall be carried out only by those Contractors who are licensed by the concerned local authorities to execute this type of work. Only "A" Class government approved electrical contractor shall execute the job.

It shall be the responsibility of the Contractor to comply with the regulations laid down by the Indian Electricity Rules and local authorities. The Contractor shall also be responsible for obtaining all the statutory approvals/certificates for the work from the concerned Departments and these certificates shall be handed over to the Architects/Clients at the completion. All coordination with the local electric supply authorities, submitted of application, getting the desired load sanctioned shall be in the scope of contractor. The fees required to obtain the desired load sanctioned and other legal and miscellaneous charges by local electric supply authority / undertaking shall be given by the client but all follow-ups etc. shall be the contractor's responsibility.

On completion of the work, the contractor shall obtain the certificates of final inspection and approval by the local electric supply authority and deliver these certificates to the Owner/Architects in original. The contractor shall bear all expenses and fees required to obtain these certificates without which the work shall not be taken over and shall not be considered complete.

17. STANDARDS AND CODE OF PRACTICE:-

The work shall be carried out as per the enclosed Specifications of work and the construction drawings to be issued from time to time. These specifications shall be read in conjunction with National Building Code, National Electrical Code 1985, Relevant Codes of Practices and Standards as issued by ISI and Indian Electricity Rules, CPWD specifications for electrical works (all with the latest amendments). The installation shall confirm in all respects to Indian Standard code of Practices. Following BIS codes shall be referred -

a) National Electrical Code

b) IS: 694 – 1977: PVC insulated cables for working voltage up to and including 1100 volts

c) IS: 732 -1989: Electrical wiring installation

d) IS: 1225 -1938: Installation and Maintenance of power Cables up to and including 33 KV Rating

e) IS: 1554: PVC insulated heavy-duty electrical cables.

f) IS: 1860: Installation operation and maintenance of passenger and goods elevator.

g) IS: 2309 -1989: Protection of building and allied structures against lightning.

h) IS: 3043 -1987: Earthing

i) IS: 3646 (Part-1) -1992: Interior Illumination

j) IS: 3661 (Part-2) -1967: Current rating for cable

k) IS: 3661 (Part-5) -1968: Current rating for cable

l) IS: 5216 (Part-1) -1982: Recommendations on safety procedures and practices in electrical work.

m) IS: 7098 (1 & 2): XLPE insulated cables

n) IS: 10028 (Part-1) -1985: selection, Installation and Maintenance of Transformers

o) IS: 10118 (Part-1) -1982: Selection, Installation and Maintenance of switchgear and Control gear

18. MATERIAL SAMPLES AND SHOP DRAWINGS:-

It shall also be the responsibility of the Contractor to submit without any extra charge the samples of the materials/equipment as and when asked by the Architect/Consultant. If the Contractor wishes to use an alternative make due to non-availability of the approved one, he should take the prior approval of the Architect/Consultant. Under such situations the Contractor shall show such promptness as not to hamper the progress of the work.

The Contractor shall submit for Architect/Consultant's approval the shop drawings at approved scale indicating the custom built equipment, L.T. Panels, run of cables and conduits he proposes to install.

19. ELECTRICAL DRAWINGS: -

i) The electrical drawings issued from time to time to the contractor are diagrammatic but shall be following as closely as actual construction and work will permit. The Contractor at his own expenses shall make any deviation from the drawings required to conform to the building construction. The architectural drawings shall take precedence over the electrical drawings as for as the civil and other trades works are concerned.

ii) If there is any discrepancy due to in-complete description, ambiguity or omission in the drawings and other documents relating to this Contract found by the Contractor either before starting the work or during execution or after completion, the same shall be immediately brought to the attention of the Architect/Consultant and his decision would be final and binding on the Contractor.

20. TESTING AND COMMISSIONING: -

The Contractor shall be responsible for testing and commissioning the entire electrical installation described in these specifications and relevant IS specifications and will demonstrate the operation of the systems to the entire satisfaction of the Architect/Consultant and to the Client approval.

21. GUARANTEE

At the close of work and before issue of final certificate of virtual completion by Owner / Consultant, the contractor shall furnish a written guarantee indemnifying the owner against defective materials and workmanship for a period of one year after commissioning. The contractor shall hold himself fully responsible for reinstallation or replacement of defective material free of cost to the owner.

22. COMPLETION DRAWINGS

The contractor shall submit, after the completion of the work, one set of originals and two sets of prints of the As-Fitted drawings/Completion drawings, giving the following information:

a. Run and size of conduits, inspection, junction and pull boxes.

b. Size of conductor in each circuit.

c. Location and ratings of sockets and switches controlling the light/fan and power outlets.

d. Location and details of distribution boards, mains, switches, switchgears and other particulars.

e. A complete wiring diagram as installed and schematic drawings showing all connections in the complete electrical system.

f. Location of telephone outlets, junction boxes and sizes of various conduits.

g. Location of all earthing stations,route and size of all earthing conductors etc.

h. Layout and particulars of all cables.

i. Location of all equipments with dimensions and connections.

23. INSPECTION

All equipment / material covered under this specification is liable for inspection by the Owner/ his representative. The vendor shall inform two weeks in advance for inspection to be carried out at the manufacturer's works.The contractor shall furnish data Sheets & other details. Additional information, if desired by the bidder can also be furnished separately.

GENERAL & TECHNICAL

1 POINT WIRING:-

1.1. DEFINITION:-

A point (other than socket outlet point) shall include all work necessary in complete wiring to the following outlets from the controlling switch or MCB. The scope of wiring for a point shall, however, include the wiring work necessary in tapping from another point in the same distribution circuit.

i. Ceiling rose or connector (in the case of points for ceiling/exhaust fan points, pre wired light fittings and call bells).

ii. Ceiling rose (in the case of pendants except stiff pendants)
iii. Back plate (in the case of stiff pendants).
iv. Lamp holder (in the case of goose neck type wall brackets, batten holders and fittings which are not pre wired).

1.2. SCOPE:-

Following shall be deemed to include in point wiring.

i. Conduit/casing and capping as the case may be, accessories for the same and wiring cables between the switch box and the point outlet.

ii. All fixing accessories such as clips, nails, screws, Phil plug, rawl plug etc as required.

iii. Metal switch boxes for control switches, regulators, sockets etc, recessed or surface type, and phenolic laminated sheet covers over the same.

iv. Outlet boxes, junction boxes, pull-through boxes etc, but excluding metal boxes if any, provided with switchboards for loose wires/conduit terminations.

v. Any special block required for neatly housing the connector.

vi. Control switch or MCB, as specified.

vii. 3 pin or 6-pin socket, ceiling rose or connector as required.

x. Connections to ceiling rose, connector,socket outlet,lamp holder,switch etc.

ix. Interconnecting wiring between points on the same circuit, in the same switch box or from another.

x. Protective (loop earthing) conductor from one metallic switch box to another in the distribution circuits, and for socket outlets. (The length of protective conductor run along with the circuits/sub mains is excluded from scope of points)

xi. Bushes conduit or porcelain tubing where wiring cables pass through wall etc.

1.3 **MATERIAL :-**

The system of wiring shall consist of ISI marked single core PVC insulated flexible copper conductor wires as per IS: 694 amended up to date.

2. MEASUREMENT:-

i. Contractor shall measure the work jointly with the site engineer and prepare measurement sheets in triplicate. Three copies of measurement sheets shall be submitted along with running account bills. Bills received without proper measurements of work shall not be considered submitted.

ii. Should the contractor neglect to measure the work, then the measurement taken by Engineer/Architect or a person approved by the Bank shall be final and binding to him.Such measurements shall be taken in accordance with the mode of measurements wherever specified or as per actual executed quantities.

iii. All authorized extra works, omissions and all variations made without the Engineer/Architect/Bank's knowledge, or subsequently sanctioned

by him in writing (with the prior approval of the contractor in writing) shall be included in such measurement.

iv. All bills for the work shall be submitted in the tender price bid format.

2.1. POINT WIRING (OTHER THAN SOCKET OUTLET POINTS) :-

i. Unless and otherwise specified, there shall be no linear measurement for point wiring for light points, fan points, exhaust fan points and call bell points. These shall be measured on unit basis by counting.

ii. No separate measurement will be made for interconnections between points in the same distribution circuit and for the circuit protective (loop earthing) conductors between metallic switch boxes.

2.2 POINT WIRING FOR SOCKET OUTLET POINTS :-

i. The light plug (5A/6A) point and power (15A/16A) point wiring shall be measured on linear basis, from the respective tapping point of live cable, namely switch box, another socket outlet point, or the sub distribution board as the case may be, up to the socket outlet.

ii. The metal box with cover, switch/MCB socket outlet and other accessories shall be measured and paid as a separate item.

v. The power point outlet will be 15A/5A or 16A/6A six-pin socket outlet.

2.3 GROUP CONTROL POINTS WIRING:-

i. In the case of points with more than one point controlled by the same switch, such point shall be measured in parts i.e.(a) from the switch to the first point outlet as one point, and (b) for the subsequent points each shall be treated as separate point.

ii. No recovery shall be made for non-provision of more than one switch in such cases.

2.4 TWIN CONTROL LIGHT POINT WIRING: -

i. A light point controlled by two numbers of two way switches shall be measured as two points from the fitting to the switches on either side.

ii. No recovery shall be made for non-provision of more than one ceiling rose or connector in such cases.

2.5 MULTIPLE CONTROLLED CALL BELL POINTS WIRING:-

i. In the case of call bell points with a single call bell outlet, controlled from more than one place, the point shall be measured in parts i.e. (a) from the call bell outlet to one of the nearest ceiling roses meant for connection to bell push, treated as one point and (b) from that ceiling rose to the next one and so on, shall be treated as separate point(s).

ii. No recovery shall be made for non-provision of more than one ceiling rose or connector for connection to call bell in such cases.

3. CIRCUIT AND SUBMAIN WIRING:-

3.1. CIRCUIT WIRING:-

Circuit wiring shall mean the wiring from the distribution board up to the tapping point for the nearest first point of that distribution circuit, viz. up to the nearest first switch box.

3.2. SUB MAIN WIRING:-

Sub main wiring shall mean the wiring from one main/distribution switchboard to another and from Distribution Board to Power Outlet/ AC Outlet.

4. MEASUREMENT OF CIRCUIT AND SUBMAIN WIRING:-

i. Circuit and sub main wiring shall be measured on linear basis along the run of the wiring. The measurement shall include all length from end to end of conduit or casing and capping as the case may be, exclusive of interconnections inside the switchboard etc. The increase on account of diversion or slackness shall not be included in the measurement.

ii. The length of circuit wiring with two wires shall be measured from the distribution board to the first nearest switch box in the circuit irrespective of whether the neutral conductor is taken to switch box or not.

iii. When wires of different circuits are grouped in a single conduit/casing and capping, the same shall be measured on linear basis depending on the actual number and sizes of wires run.

iv. When circuit wires and wires of point wiring are run in the same conduit/casing and capping, circuit wiring shall be measured on linear basis depending on the actual number and sizes of wires run in the existing conduit/casing capping.

v. Protective (loop earthing) conductors, which are run along the circuit wiring and the sub main wiring, shall be measured on linear basis and paid for separately, if not included in item.

vi. Except as specified above for point wiring, circuit wiring and sub main wiring, other types of wiring shall be measured separately on linear basis along the run of wiring depending on the actual number and sizes of wires run.

5. SYSTEM OF DISTRIBUTION AND WIRINGS:-

i. Main distribution board shall be controlled by the circuit breaker. Each outgoing circuit shall be controlled by a circuit breaker on the phase or live conductor.

ii. The branch distribution board shall be controlled by a circuit breaker. Each outgoing circuit shall be provided with a MCB of specified rating on the phase or live conductor.

iii. The load of the circuits shall be divided, as far as possible, evenly between the number of ways of the distribution boards, leaving at least one spare circuit for future extension.

iv. The neutral conductors (incoming and outgoing) shall be connected to a common link (multi way connector) in the distribution board and be capable of being disconnected individually for testing purposes.

vi. Wiring shall be separate for essential loads (i.e those fed through stand by supply) and non-essential loads throughout.

6. BALANCING OF CIRCUITS:-

The balancing of circuits in three wire or poly phase installations shall be arranged up to
the satisfaction of the Engineer-in-charge.

7. WIRING SYSTEM :-

j. Unless and otherwise specified the wiring shall be done only by the "Looping system". Phase or live conductors shall be looped at the switch boxes and neutral conductors at the point outlets.

ii. Lights, fans and call bells shall be wired in the 'lighting' circuits. 15A/16A socket outlets and other power outlets shall be wired in the 'Power' circuits. 5A/6A socket outlets shall also be wired in the "Lighting" circuit both in residential as well as non-residential buildings.

iii. The wiring throughout the installation shall be such that there is no break in the neutral wire except in the form of linked switchgear.

iv. Surface wiring shall run, as far as possible, along the walls and ceiling so as to be easily accessible for inspection.

v. In no case, the open wiring shall be run above the false ceiling without the approval of Engineer-in-charge.

vi. In all types of wiring, due consideration shall be given for neatness, good appearance and safety.

8. PASSING THROUGH WALLS OR FLOORS:-

i. When wiring cables are to pass through a wall, these shall be taken through a protection (steel/PVC) pipe or porcelain tube of suitable size such that they pass through in a straight line without twist or cross in them on either end of such holes. The ends of metallic pipe shall be neatly bushed with porcelain, PVC or other approved material.

ii. Where a wall pipe passes outside a building so as to be exposed to weather, the outer end shall be bell mouthed and turned downwards and properly bushed on the open end.

9. JOINTS IN WIRING:-

i. No bare conductor in phase and/or neutral or twisted joints in phase, neutral, and/or protective conductors in wiring shall be permitted.

ii. There shall be no joints in the through-runs of cables. If the length of final circuit or sub main is more than the length of a standard coil, thus necessitating a through joint, such joints shall be made by means of approved mechanical connectors in suitable junction boxes.

iii. Termination of multi-stranded conductors shall be done using suitable crimping type thimbles.

10. CONFORMITY TO I.E. ACT, I.E. RULES AND STANDARDS:-

i. All electrical works shall be carried out in accordance with the provisions of the Indian Electricity Act, 1910 and Indian Electricity Rules 1956 amended up to date.

ii. The work shall also conform to relevant Indian Standard codes of practice for the type of work involved.

iii. In all electrical installation works, relevant safety codes of practice shall be followed.

iv. The complete wiring installation shall confirm to IS: 732 amended up to date.

11. GENERAL REQUIREMENTS OF COMPONENTS:-

11.1 QUALITY OF MATERIALS :-

All materials and equipment supplied by the contractor shall be new. They shall be of such design, size and material as to satisfactorily function under the rated conditions of operation and to with stand the environmental conditions at site.

11.2 RATING OF COMPONENTS:-

i. 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.

iii. All conductors, switches and accessories shall be of such size as to be capable of carrying the maximum current, which will normally flow through them, without their respective ratings being exceeded.

11.2 CONFORMITY OF STANDARDS:-

All components shall conform to relevant Indian Standard specification, wherever existing. Materials with ISI certification mark shall be preferred. However for conduits, wiring cables, piano/tumbler switches and socket outlets, ISI marked materials shall only be permitted.

11.4 INTERCHANGEABILITY: -

Similar parts of all switches, lamp holders, distribution fuse boards, switch gears, ceiling roses, brackets, pendants, fans and all other fittings of the same type shall be interchangeable in each installation.

SWITCHES & RECEPTACLES (Modular Type)

1. CONTROL SWITCHES FOR POINTS:-

i. The switch box or regulator box shall be made of metal on all sides, except on the front. In the case of cast boxes, the wall thickness shall be at least 3 mm and in case of welded mild steel sheet boxes, the wall thickness shall not be less than 1.2 mm (18 gauge) for boxes up to a size of 20 cm x 30 cm, and above this size 1.6 mm (16 gauge) thick MS boxes shall be used. The metallic boxes shall be duly painted with anticorrosive paint before erection.

ii. Where a large number of control switches and/or fan regulators are required to be installed at one place, these shall be installed in more than one outlet box adjacent to each other for ease of maintenance.

iii. An earth terminal with stud & 2 metal washers shall be provided in each MS box for termination of protective conductors and for connection to socket outlet/metallic body of fan regulator etc.

iv. Clear depth of the box shall not be less than 50 mm, and this shall be increased suitably to accommodate mounting of fan regulators in flush pattern.

v. The fan regulators can also be mounted on the switch box covers, if so directed by the Engineer-in-charge.

vi. Control switches (single pole switches) carrying not more than 16 A shall be of Modular type, as specified, and the switch shall be "ON" when the nob is down.

vii. Only MCB’s shall be used for controlling industrial type socket outlets.

viii. Control switch shall be placed only in the live conductor of the circuit. No single pole switch or fuse shall be inserted in the protective (earth) conductor, or earthed neutral conductor of the circuit.

ix. All switches, regulators, outlets & other accessories shall be white colour with matching white cover plate. In no case ivory or off-white switches shall be accepted.

2. SOCKET OUTLETS: -

i. Socket outlet shall be of the same type, white Modular type as their control switches. These shall be rated either for 5A/6A or 15A/16A. Combined 5A/15A or 6A/16A six pin socket outlet shall be provided in Rs.power' circuits.

ii. In an earthed system of supply, socket outlets and plugs shall only be of 3 pin type, the third pin shall be connected to earth through protective (loop earthing) conductor. 2 pin or 5 pin sockets shall not be permitted to be used.

iii. Every socket outlets shall be controlled by a switch or MCB, as specified. The control switch/MCB shall be connected on the Rs.live' side of the line.

iv. Outlet boxes for socket outlets (both15A/16A and 5A/6A) points shall be of size 175 mm x 100mm.

v. Unless and otherwise specified, the control switches for the 5A/6A and 15A/16A socket outlets shall be kept along with the socket outlets.

3. SWITCH BOX COVERS :-

Phenolic laminated sheets of approved white shade shall be used for switch box covers. These shall be of white 3 mm thick synthetic phenolic resin bonded laminated sheet as base material and conforming to grade P-I of IS:2036-1974, Secured to the box with counter sunk C.P. Brass Screws. The corners of cover plates shall be at right angle.

SWITCHES & BOXES (Modular Type)

i. The switch box or regulator box shall be made of metal on all sides, except on the front. Since Modular type switches are to be used in the project, hence the boxes shall also be used of the same make and model. The size of box shall be governed by the number of switches/outlets/regulators on the respective board. The boxes shall be with zinc plating and yellow passivation to complies with the rust test as per IS 3854. The boxes should have slotted holes for level adjustments. The boxes shall be fitted with riveted brass earth terminals for earth connections.

ii. Clear depth of the box shall not in a range of 50 mm to 65 mm depending upon the size of board and manufacturer.

iii Control switch shall be placed only in the live conductor of the circuit. No single pole switch or fuse shall be inserted in the protective (earth) conductor, or earthed neutral conductor of the circuit. The switches shall be provided with silver contacts. The neutral should make first and breaks last.

iv. Socket outlet shall be rated either for 5A/6A or 15A/16A. 5/6 Amp sockets shall be of 5 pin type with shutters. Combined 5A/15A or 6A/16A six pin shuttered socket outlet shall be provided in Rs.power' circuits. The earth pin shall be connected to earth through protective (loop earthing) conductor. All sockets shall be provided with safety shutters to allow easy entry of two pin plugs without the need to force the earth terminal by unsafe means. All sockets shall confirm to IS: 1293.

v. Every socket outlet shall be controlled by a switch, as specified. The control switch shall be connected on the Rs.live' side of the line.

Vi The switches and sockets shall be manufactured using engineering plastic to make it fire retardant and highly resistant to impact.

vii. The fan speed regulators shall be of electronic and stepped type

viii. The RJ-45 data socket shall be suitable for cat5/cat 6 data cables.

ix. Gold plated contacts shall be provided in all communication jacks to enhance data and voice transmission.

SWITCHGEAR AND CONTROLGEAR

1. GENERAL ASPECTS:-

i. All items of switchgear and distribution boards (DB's) shall be metal clad type.

ii. The types, rating and/or categories of switchgear and protective gear shall be as specified in the tender schedule of work.

iii. RCCB's, ELCB's and RCBO's where specified, shall conform to the requirements of current rating, fault rating, single phase or three phase configuration and sensitivity laid down in the tender documents.

v. While each outgoing way of distribution board (D.B.) shall be of miniature circuit breaker (MCB) as specified, and of suitable rating on the phase conductor, the corresponding earthed neutral conductor shall be connected to a common neutral terminal block and shall be capable of being disconnected individually for testing purpose.

v. **Independent earth terminal block.**

Every distribution board (single phase as well as three phase) shall have an earth terminal block identical to, but independent from neutral terminal block, to enable termination of protective (loop earthing) conductors (incoming as well as out goings) individually by screwed connection and without twisting.

vi. Earthing terminal (1 for single phase and 2 for three phase) shall be provided on the metal cladding of switches and D.B.'s for body earthing. These shall be suitably marked.

vii. Knock out holes, with or without end plates as per standard design of manufacturers, shall be provided in the metal cladding of switches and D.B.' s for termination of conduits/cables.

vii. Each distribution board shall be provided with a circuit list giving details of each circuit, which it controls, and the current rating of the circuit, and the size of the fuse element.

2. MCB TYPE DISTRIBUTION BOARDS (MCB DB):-

i. MCB DB' s may be of single phase, three phase (horizontal type) suitable for feeding single phase loads or 3 phase (vertical type) suitable for feeding single phase as well as three phase loads, each phase isolation type three phase DB in which each phase can be isolated by a separate circuit breaker or RCCB, as specified. These shall be complete with accessories, but without MCB' s, which shall be specified as a separate item in the tender documents.

ii. The current ratings and the number of ways shall be as specified. Blanking plates shall be provided to close unused ways. These shall be indicated as a separate item in the Schedule of work.

iii. MCB DB's shall be of surface/flush mounting pattern according to the requirement of their location, and shall be suitable to accommodate MCB' s and MCB type isolators and RCCB (ELCB) at incoming in single pole or multi pole configuration, as required.

vi. MCB DB's shall be double door type; dust and vermin proof conforming to IP 42, and shall be fabricated out of CRCA sheet steel, 1.6 mm thick, with stove enameled paint finish.

v. In case of Concealed / Recessed D.B.'s, cutting of brick work, providing suitable lintel, making good the wall including plastering etc. with necessary civil work including all Civil material shall be included in contractor's scope for proper completion of work.

vi. MCB DB's shall have removal type end plates with knockouts at the bottom and top, and shall have hinged covers with locking arrangement.

vii. Only the knobs of the MCB's shall protrude out of the front covers through openings neatly machine made for the purpose.

viii. The bus bars used shall be solid electrolytic copper of appropriate sections.

ix. Din bar(s) shall be provided for mounting the MCB's.

x. The complete board shall be factory fabricated and shall be duly pre-wired in the works, ready for installation at site.

xi. The board shall be fully pre wired with single core PVC insulated copper conductors/insulated solid copper links, and terminated on to extended type terminal connectors, suitable for connections to the sizes of the respective conductors.

xii. All incoming and outgoing wiring to the pre wired MCB DB's shall be terminated only in the extended terminal connectors to be provided within the DB. The terminal connectors shall therefore be so provided as to facilitate easy cable connections and subsequent maintenance.

3. MCCB TYPE DISTRIBUTION BOARDS (MCCB DB) :-

i. All MCCB DB' s shall be of three phase suitable for feeding single phase loads or 3 phase loads through SP/TP MCB's, IP 42 enclosure, sheet steel, double door with tinned copper bus bar, neutral bar, earth bar, knock outs etc. The DB's shall be original factory fabricated of approved make.

ii. The current ratings of Incomer MCCB shall be upto 250 amp and the number of ways shall be as specified. Blanking plates shall be provided to close unused ways.

iii. MCCB DB shall be of surface/flush mounting pattern according to the requirement of their location, and shall be suitable to accommodate Four pole MCCB at incomer and SP/TP MCB's at outgoings, as required.

vii. MCCB DB's shall be dust and vermin proof conforming to IP 42, and shall be fabricated out of CRCA sheet steel, 1.6 mm thick, with stove enameled paint finish.

v. In case of Concealed / Recessed D.B.'s, cutting of brick work, providing suitable lintel, making good the wall including plastering etc. with necessary civil work including all Civil material shall be included in contractor's scope for proper completion of work.

vi. MCCB DB' s shall have removal type end plates with knock-outs at the bottom and top, and shall have hinged covers with locking arrangement.

viii. The bus bars used shall be solid electrolytic copper of appropriate sections.

viii. Din bar(s) shall be provided for mounting the MCB's.

4. WORKMANSHIP:-

i. 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.

iii. The work shall be carried out under the direct supervision of a first class licensed foreman, or of a person holding a certificate of competency issued by the state Government for the type of work involved, employed by the contractor, who shall rectify then and there the defects pointed out by the Engineer-in-charge during the progress of work.

5. COMMISSIONING ON COMPLETION: -

Before the workman leaves the work finally, he must make sure that the installation is in commission, after due testing.

6. COMPLETION PLAN AND COMPLETION CERTIFICATE:-

i. For all works completion certificate after completion of work shall be submitted to the Engineer-in-charge.

ii. Completion plan drawn to a suitable scale in tracing cloth with ink indicating the following, along with three blue print copies of the same shall also be submitted.

a) General layout of the building.

b) Locations of main switch board and distribution boards, indicating the circuit numbers controlled by them.

c) Position of all points and their controls.

d) Types of fittings, viz. fluorescent, pendants, brackets, bulkhead, fans and exhaust fans etc.

e) Name of work, job number, accepted tender reference, actual date of completion, names of Division/Sub-Division and name of the firm who executed the work with their signature.

7. ADDITION TO AN INSTALLATION:-

An addition, temporary or permanent, shall not be made to the authorized load of an existing installation until it has been definitely ascertained that the current carrying capacity and the condition of the existing accessories, conductors, switches etc affected, including those of the supply Authorities, are adequate for the increased load.

CIRCUIT BREAKERS

A. MINIATURE CIRCUIT BREAKERS (MCB):-

Miniature Circuit Breaker shall comply with IS-8828-1996/ IEC898-1995 amended upto date.
Miniature circuit breakers shall be quick make and break type for 240/415 V AC, 50 Hz application with magnetic thermal release for over current and short circuit protection.

The breaking capacity shall not be less than 10kA at 415V AC.
MCBs shall be DIN mounted.

MCBs shall be current limiting type (class-3).

MCBs shall be C-curve.

MCBs shall have minimum power loss (watts) per pole defined as per the IS/IEC and the manufacturer shall publish the values.

MCBs shall be of self-extinguishing ULV0 grade thermoset plastic material. The housing shall be heat resistant and having high impact strength. The terminals shall be protected against finger contact to IP20 Degree of protection.

All DP, TP, TPN and 4pole MCBs shall have a common trip bar independent to external operating handle.

Mechanical Life shall be 20000 operations and Service life at rated load for In below 32A shall be 20000 and for In above 32A shall be 10000 operations.

B. Earth Leakage Circuit Breaker / Residual Current Circuit Breaker - Current Operated Type (ELCB / RCCB / RCBO)

- **System of operation**

ELCB/ RCCB/RCBO shall work on the principle of core balance transformer. The incoming shall pass through torroidal core transformer. As long as the currents in the phase and neutral shall be the same, no electro motive force shall be generated in the secondary winding of the transformer. In the event of a leakage to earth, an unbalance shall be created which shall cause a current to be generated in the secondary winding, this current shall be fed to a highly sensitive miniature relay, which shall trip the circuit if the earth leakage current exceeds a pre-determined critical value. ELCB/RCCB/RCBO shall be current operated independent of line voltage. Current sensitivity shall be of 30mA at 240/415V AC or as specified in BOQ / drawings and shall have a minimum of 10000 electrical operations. The RCBO shall also provide over load and short circuit protection in addition to the earth leakage protection.

- **Mechanical Operation**

The moving contacts of the phases shall be mounted on a common bridge, actuated by a rugged toggle mechanism. Hence, the closing/opening of all three phases shall occur simultaneously. This also shall ensure simultaneous opening of all the contacts under tripping conditions.

Neutral Advance Feature

The neutral moving contact shall be so mounted on the common bridge that, at the time of closing, the neutral shall make contact. First before the phases; and at the time of opening, the neutral shall break last after allowing the phases to open first. This is an important safety feature which is also required by regulations.

- **Testing Provision**

A test device shall be incorporated to check the integrity of earth leakage detection system and the tripping mechanism. When the unit is connected to service, pressing the test knob shall trip the ELCB/RCCB/RCBO and the operating handle shall move to the “OFF” position.

C. MOULDED CASE CIRCUIT BREAKER (MCCB's)

The rated normal current should be specified at 40°C

1. General

Moulded case circuit breakers shall be incorporated in the switchboard wherever specified. MCCB shall conform to IS: 13947 (Part-2): 1993 or IEC-60947-2 in all respects. MCCB shall be suitable either for single phase AC 230 Volts or three phase 415 volts ± 10%. The rated insulation voltage shall be 600 volts. Suitable discrimination shall be provided between upstream and downstream breakers in the

range of 10-20 milli seconds. The MCCBs will have earth fault module (if specifically asked) and front operated.
MCCB shall indicate its suitability for isolation and this should appear clearly on the MCCB with the symbol as specified in standard IS: 13947/IEC 60947.

2. 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 Rs.ON' Rs.OFF' and Rs.TRIPPED' mechanical indicators notable from outside. Three phase MCCBS shall have a common operating handle for simultaneous operation and tripping of all the three phases.

Suitable arc extinguishing device shall be provided for each contact. **Tripping unit shall be thermal-magnetic type upto 250A and Microprocessor based above 250A (or as specified specifically in Bill of Quantities and drawings)** 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. Tripping device shall have IDMT characteristics for sustained over load and short circuits.

3. Contact tips shall be made of suitable arc resistant, sintered alloy for long electrical life. Terminals shall be of liberal design with adequate clearances.

4. Accessories
All the accessories shall be mounted from the front and shall be adjustment free. MCCBs shall have the electrical accessories fitted even without removing the circuit breaker from the switchboard so that site changes, if any, can be carried out easily. MCCB shall be provided with the following accessories, if specified in schedule of quantities, such as Under voltage trip, Shunt trip, Alarm switch, auxiliary switches, Rotary and motorized operating mechanism, Plug in and with draw able mechanism etc.

5. Interlocking
Moulded case circuit breakers shall be provided with the following interlocking devices for interlocking the door of a switchboard.

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 position.

c) Defeat-interlocking device to open the door even if the breaker is in ON position.

6. Rupturing capacity

The moulded case circuit breaker shall have a rupturing capacity as mentioned against each in Schedule of Quantity at 415 volts. Wherever required, higher rupturing capacity breakers to meet the system short circuit fault shall be used. In absence of any capacity specifically mentioned in the bill of quantities and drawings, following rupturing capacities shall be used –

100 / 125 Amp : 25 KA

160/200/250 Amp : 35 KA

300/400/630/800 Amp : 50 KA

7. The MCCB shall be **current limiting type** and comprise of quick make – break switching mechanism. MCCBs shall be capable of defined variable overload adjustment. For thermal magnetic protection the O/L adjustment should be 75%-100% and for microprocessor-based release the adjustment should be 40%- 100% and S/c for 2 to 12 times .All MCCBs rated 200 Amps and above shall have adjustable magnetic short circuit pick-up.

8. Electrical Features

All MCCB's & shall be selected on the basis of rated current. Four poles MCCBs shall be always supplied with neutral protection. The MCCBs having 400A & should have category B as per the IEC standards to ensure the selectivity. Minimum Electrical & Mechanical Endurance of MCCB Shall be as follows

Rating of MCCB	**Electrical Endurance**	**Mechanical Endurance**
Upto 160 A	7000 Opns	25000 Opns
Above 160 A	4000 Opns	15000 Opns

9. The trip command shall override all other commands. The manufacturer shall provide both the discrimination tables (with test certificates) and let-through energy curves. Line and Load connections shall be interchangeable.

10. Installation

It should be possible to terminate Aluminium cable of required size for the defined current carrying capacity. The requisite size should be made available by means of extended terminals (as a standard offer) in case the direct terminals are not of adequate size. Adequate phase to phase clearance has to be ensured in case of extended terminations.

The circuit breaker should provide the flexibility of terminating line and load from any direction. Manufacturers should test the circuit breaker for this condition and requisite test certificate should be available.

Phase barrier should be provided as a standard feature.

11. Testing

a) Original test certificate of the MCCB as per BS 3871 or JS-C-8370 shall be furnished.

b) Pre-commissioning tests on the switchboard panel incorporating the MCCB shall be done as per standard specifications.

D. AIR CIRCUIT BREAKER

1. General

Air circuit breakers shall be incorporated in power control center and motor control centers wherever specified. ACB shall conform to **IEC60947 / IS: 13947** Part-2 1993 in all respects. ACBS shall be suitable for operation on 660 volts, 3 phase, 50/60 Hz, AC supply. The rated insulation voltage shall be equal to or greater than 1000V.The rated impulse withstand voltage shall be equal to 12kV, so that the device can be used for every installation category, in compliance with the international standards CEI IEC 664-1.

2. Type and construction

Air circuit breakers shall be of enclosed pattern, dead front type with trip free operating mechanism. Air Circuit breakers shall be **withdraw able type with horizontal draw out carriage.**The mechanism shall be mechanical if not specifically mentioned for electrical. The ACBs shall be strong and robust in construction with suitable arrangement for anchoring when in fully engaged or fully drawn out positions. The carriage or cradle on which the breaker is mounted shall be of robust design made of fabricated steel, supported on rollers. Cradle shall also comprise of main and secondary separable contacts and all draw out mechanisms in a completely fig welded assembly short circuit on top. There shall be no dependence upon the panel board frame for any critical alignment. The withdrawal arrangement shall be such as to allow smooth and easy movement.

The draw out operation shall be possible through a closed door. Three positions of the moving part shall be possible:

1 - Connected / service position - all auxiliary and main circuits engaged
2 - Test position - all auxiliary circuits engaged all main circuits disconnected
3 - Isolated position - all circuits disconnected.

All three positions should be indicated discreetly on the cradle. Safety shutter to be provided as standard

All the current carrying parts of the circuit breakers shall be silver-plated. Suitable arcing contacts shall be provided to protect the main contacts. The contacts shall be of spring-loaded design. The sequence of operation of the contacts shall be such that arcing contacts Rs.make' before and Rs.break' after the main contacts. Arcing contacts shall be provided with efficient arc chutes on each pole. The arc chutes shall be suitable for ready replacement. Self-aligning isolating contacts with automatic shutters to screen the live parts shall be provided. The design of the breaker shall be such that all the components are easily accessible to inspection, maintenance and replacement. The ACB at its rated current shall be suitable for operation in extremely tropical humid climate at 50°C ambient temp. The manufacturer shall declare ideal de-rating charts.

There should be total segregation between the power circuit and control circuit, thus making double insulation and ensuring fitting of accessories while the circuit breaker is in the ON position. It shall be possible to inspect the arcing chamber and main contacts. The ACB shall have metal load bearing structures. The main contacts shall be separate from the arc-breaking contacts. It shall be possible to check the wear of the main contacts with the ACB in its racked-out position, removing the arcing chambers. No mechanical junctions in the main contact shall be there so that losses are minimal.

3. Operating Mechanism

Air circuit breaker shall be provided with a **quick-make, trip-free** operating mechanism. The operating mechanism shall be strain-free spring operated. The operating shall be "handle front of the panel" type. The design shall be such that the circuit breaker compartment door need not be opened while moving the breaker from completely connected, through test, in to the disconnected position. The spring shall be charged automatically during the closing operation. Mechanical Indication of the position of the spring charge shall be provided.

3. Interlocking and safety arrangement

Air circuit breakers shall be provided with the following safety and interlocking arrangements:

i) It shall not be possible for breaker to be withdrawn when in Rs. ON" position.

ii) It shall not be possible for the breaker to be switched on until it is either in fully inserted position or for testing purposes it is in fully isolated position.

iii) The breaker shall be capable of being raked in to Rs.testing' isolated and maintenance positions and kept locked in any of these positions.

iv) A safety latch to ensure that the movement of the breaker, as it is withdrawn is checked before it is completely out of the cubicle.

v) If under voltage release is provided then circuit breaker will close only if it is energized. Under voltage release should have time delay to avoid nuisance tripping for transient voltage failure

vi) The operating mechanism shall provide for raking the breaker in to connect, test and disconnected positions without opening the compartment door.

vii) Mechanical interlocks shall be provided between the operations of different breakers (if specified in Bill of Quantities).

The circuit breaker shall provide as a standard feature, the following mechanical indicator in the front Panel

1 Contact portion indicator (on/off)
2. Stored energy status indicator
3. Trip indicator on fault

5. Rating

The CTs range from 250A to 6300A: all the CTs shall have a structure made of self-extinguishing thermoplastic material. The breaking capacity of the ACB shall be greater than or equivalent to 50kA. The Breaking Capacity of the circuit breaker shall be as indicated in the BOQ with minimum of 50kA for upto 1250A, 65kA for 1600 to 2000A and 80kA for 2500 to 3200A. **Icu for all ACBs**. Icw rating at 1 sec/3sec should be declared. The minimum Electrical & Mechanical Life of ACB at 415/440V shall be as follows:

Rating of ACB	Electrical Endurance	Mechanical Endurance
Upto 1600 A	10000 Opns	20000Opns
2000-4000 A	5000 Opns	15000 Opns
Above 4000 A	1500 Opns	10000 Opns

6. Accessories

All the accessories like U/V, shunt opening, shunt closing shall be accessible from the front.

Circuit breakers shall be provided with the following Accessories: -

i) Under-voltage relay for the incoming ACB.
ii) Microprocessor based Overload releases with IDMT characteristics.
iii) Microprocessor based Instantaneous earth fault release.
iv) Alarm switches (if specifically asked for)
v) Auxiliary switches
viii) NO and NC auxiliary contacts rated for 10 Amps at 415 V AC and 6 Amp at 48V DC, in addition to ones already in use for the operation of the breaker and will be used in subsequent interlocks to be incorporated in future.

8. Mechanical indicators

Mechanical indication on the front of the air circuit breaker shall be provided to indicate the following:

- main contacts closed "ON"
- main contacts open "OFF"
- springs charged
- springs discharged
- circuit breaker in "service" position (drawout only)
- circuit breaker in "test" position (drawout only)
- circuit breaker in "isolated" position (drawout only)

9. Mounting

Circuit breakers shall be mounted as per the standard specification of power control centers.

10. Testing

Testing of each circuit breaker shall be carried out at the works as per IEC:60947 and the original test certificate shall be furnished in triplicate. The tests shall incorporate atleast the following:

i) Impulse withstand test

ii) Insulation test

iii) Di-electric rigidity /Insulation test

iv) Mechanical operation checking

v) Thermal protection with a current of 3ith starting from cold conditions.

11. Protection

The ACB shall be with an integral self-powered **microprocessor based current release** for Overload, Short-Circuit and Earth Fault protection which works on true rms values for ensuring accurate protection, if specifically asked for. The protection unit should meet the EMI/EMC requirement as per latest standard. Online Test Fault shall be provided to test healthiness of release and ACB.

12. Setting range of protection release

a) Overload protection shall have adjustable setting from 40% to 100% of the ACBs rated current in steps of 10% and adjustable time setting from 3-18m sec.

b) Short circuit protection shall have adjustable current setting from 100% to 1000% of the overload setting and adjustable time delay setting for fault discrimination from 50-500 m sec.

c) E/F protection if specified will have adjustable current setting from 40% to 100% of ACB rated current and adjustable time setting from 100-800m sec. It shall be possible to charge the release setting on load.

PVC CONDUIT WIRING SYSTEM

1. SCOPE:-

This chapter covers the detailed requirements for wiring work in non-metallic conduits. This chapter covers both surface and recessed types of wiring work.

2. APPLICATION:-

1. Recessed conduit work is generally suitable for all applications. conduit work may be adopted in places like workshops etc. and where recessed work may not be possible to be done. The type of work shall be as specified in individual works.

2. Flexible non-metallic conduits shall be used only at terminations, wherever specified.

3. Special precautions:-

i. If the pipes are liable to mechanical damages, they should be adequately protected.

ii. Non-metallic conduit shall not be used for the following applications:-

a) In concealed/ inaccessible places of combustible construction where ambient temperature exceeds 60^{o}C.

b) In places where ambient temperature is less than 5^{o}C.

c) For suspension of fluorescent fittings and other fixtures.

d) In areas exposed to sunlight.

3. MATERIAL:-

3.1 CONDUITS:-

i. All non-metallic conduit pipes and accessories shall be of suitable material complying with IS : 2509-1973 and IS : 3419-1988. for rigid conduits and IS : 9537(V)-2000 for flexible conduits. The interior of the conduits shall be free from obstructions. The rigid conduit pipes shall be ISI marked.

ii. The conduit shall be circular in cross-section. The conduit shall be designated by their nominal outside diameter. The dimensional details of rigid non-metallic conduits are given in **Table-3.**

iii. No non-metallic conduit less than 20 mm in diameter shall be used.

iv. **WIRING CAPACITY:-**

The maximum number of PVC insulated aluminum/copper conductor cables of 650/1100 V grade conforming to IS: 694-1990 that can be drawn in one conduit of various sizes is given in **table-4**. Conduit sizes shall be selected accordingly.

3.2 CONDUIT ACCESSORIES:-

i. The conduit wiring system shall be complete in all respect including accessories.

ii. Rigid conduit accessories shall be normally of grip type.

iii. Flexible conduit accessories shall be of threaded type.

iv. 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.

v. Saddles for fixing conduits shall be heavy gauge non-metallic type with base.

vi. The minimum width and the thickness of the ordinary clips or girder clips shall be as per **Table-5.**

vii. For all sizes of conduit, the size of clamping rod shall be 4.5mm (7 SWG) diameter.

4. INSTALLATION:-

1. COMMON ASPECTS FOR BOTH RECESSED AND SURFACE CONDUIT WORKS.

i. The erection of conduits of each circuit shall be completed before the cables are drawn in.

ii. **CONDUIT JOINTS :-**

a) All joints shall be sealed/cemented with approved cement. Damaged conduit pipes / fittings shall not be used in the work. Cut ends of conduit pipes shall have no sharp edges or any burrs left to avoid damage to the insulation of conductors while pulling them through such pipes.

b) The Engineer-in-charge, with a view to ensuring that the above provision has been Carried out, may require that the separate lengths of conduit etc. after they have been prepared, shall be submitted for inspection before being fixed.

iii. **BENDS IN CONDUITS:-**

a) All bends in the system may be formed either by bending the pipes by an approved method of heating, or by inserting suitable accessories such as bends, elbows or similar fittings, or by fixing non-metallic inspection

boxes, whichever is most suitable. Where necessary, solid type fittings shall be used.

b) Radius of bends in conduit pipes shall not be less than 7.5 cm.
c) Care shall be taken while bending the pipes to ensure that the conduit pipe is Not Injured, and that the internal diameter is not effectively reduced.

iv. **PAINTING:-**
After installation, all accessible surfaces of metallic accessories shall be painted.

5. ADDITIONAL REQUIREMENTS FOR SURFACE CONDUIT WORK:-

i. Conduit pipe shall be fixed by heavy gauge non-metallic saddles with base, secured to suitable approved plugs with screws in an approved manner, at an interval of not more than 60 cm, on either side of couplers or bends or similar fittings, saddles shall be fixed at a closer distance from the center of such fittings. Slotted PVC saddles may also be used where the PVC pipe can be pushed in through the slots.

ii. Where the conduit pipes are to be laid along the trusses, steel joists etc. the same shall be secured by means of saddles or girder clips as required by the Engineer-in-charge. Where it is not possible to use these for fixing, suitable clamps with bolts and nuts shall be used.

6. ADDITIONAL REQUIREMENTS FOR RECESSED CONDUIT WORK:-

i. **MAKING CHASE:-**

a) chase in the wall shall be neatly made, and of ample dimensions to permit the Conduit tube fixed in the manner desired.

b) In the case of buildings under construction, the conduits shall be buried in the wall Before plastering, and shall be finished neatly after erection of conduit.

c) In case of exposed brick/rubble masonry work, special care shall be taken to fix the conduit and accessories in position along with the building work.

iii. FIXING CONDUITS IN CHASE:-

a) The conduit pipe shall be fixed by means of staples, or by means of non-metallic saddles, placed at not more than 40 cm apart, or shall be fixed by any other approved means of fixing.

b) At either side of the bends, saddles/staples shall be fixed at a distance of 15 cm from the center of the bends.

IV. ERECTION IN RCC WORK :-

a) The conduit pipes shall be laid in position and fixed to the steel reinforcement bars by steel binding wires before the concreting is done. The conduit pipes shall be fixed firmly to the steel reinforcement bars to avoid

their dislocation during pouring of cement concrete and subsequent tamping of the same.

b) Fixing of standard bends or elbows shall be avoided as far as practicable, and all Curves shall be maintained by bending the conduit pipe itself with a long radius which will permit easy drawing of conductors.

c) Location of inspection/junction boxes in RCC work should be identified by suitable means to avoid unnecessary chipping of the RCC slab subsequently to locate these boxes.

V. FIXING INSPECTION BOXES:-

a) Suitable inspection boxes to the minimum requirement shall be provided to Permit Inspection, and to facilitate replacement of wires, if necessary.
b) These shall be mounted flush with the wall or ceiling concrete. Minimum 65 mm Depth junction boxes shall be used in roof slabs.
c) Suitable ventilating holes shall be provided in the inspection box covers.

VI. FIXING SWITCH BOXES AND ACCESSORIES:-

vii. Switch boxes shall be mounted flush with the wall. All outlets such as switches, socket outlets etc. shall be flush mounting type, unless otherwise specified in the additional specification.

VI. FISH WIRE:-

To facilitate subsequent drawing of wires in the conduit, GI fish wire of 1.2 mm (18 SWG) shall be provided along with the laying of the recessed conduit.

7. BUNCHING OF CABLES :-

a) Cable carrying alternating current, installed in metal conduit, shall always be bunched so that the outgoing and return cables are drawn into the same conduit.

b) Where the distribution is for single phase loads only, conductors for these phases shall be drawn in one conduit.
c) In case of three phase loads, separate conduits shall be run from the distribution boards to the load points, or outlets as the case may be.

8. EARTHING REQUIREMENTS:-

i. A protective (earth) conductor shall be drawn inside the conduit in all distribution circuits to provide for earthing of non-current carrying metallic parts of the installation. These shall be terminated on the earth terminal in the switch boxes, and/or earth terminal blocks at the DB's.
ii. Protective conductors of large size which may not be possible to be carried inside the conduits (as in the case of some sub mains etc.) may be laid external to the conduits and clamped thereto suitably.
iii. Gas or water pipes shall not be used as protective conductors (Earth medium).

TABLE – 3

DIMENSIONAL DETAILS OF RIGID NON-METALLIC CONDUITS.
(All dimensions in mm)

S.No.	Nominal outside diameter (In mm)	Maximum outside diameter (In mm)	Minimum inside diameter (In mm)	Maximum permissible eccentricity (In mm)	Maximum permissible ovality (In mm)
1.	20	$20^{+0.3}$	17.2	0.2	0.5
2.	25	$25^{+0.3}$	21.6	0.2	0.5
3.	32	$32^{+0.3}$	28.2	0.2	0.5
4.	40	$40^{+0.3}$	35.8	0.2	0.5
5.	50	$50^{+0.3}$	45.0	0.4	0.6

TABLE – 4

MAXIMUM NUMBER OF PVC INSULATED 650/ 1100 VOLT GRADE COPPER CONDUCTOR CABLE THAT CAN BE DRAWN INTO RIGID PVC CONDUIT

Nominal cross sectional area of conductor in Sqmm.	20 Mm	25 mm	32 Mm	40 mm
1.50	5	10	14	-
2.50	5	8	12	-
4.00	3	8	10	-
6.00	2	5	8	-
10.00	-	3	5	6
16.00	-	-	3	6
25.00	-	-	2	4

Note :-
The above table shows the maximum capacity ofconduits for a simultaneous drawing of cables.

TABLE - 5

ORDINARY CLIPS OR GIRDER CLIPS.

S.No.	Size of conduit	Width	Thickness
1.	20 mm & 25 mm	19 mm	20 SWG (0.9144 mm)
2.	32 mm & above	25 mm	18 SWG (1.219 mm)

EARTHING

1. SCOPE:-

This chapter covers the essential requirements of earthing system components and their installation. For details not covered in these specifications. IS code of Practice on earthing (IS: 3043-1987) shall be referred to.

2. INSTALLATION:-

1. ELECTRODES:-

i. Plate electrode shall be buried in ground with its faces vertical, and its top not less than 3 m below the ground level. The installation shall be carried out as per standard drawing.

ii. When more than one electrode is to be installed, a separation of not less than 2 m shall be maintained between two adjacent electrodes.

iii. a) The strip or conductor electrode shall be buried in trench not less than 0.5 m deep.

b) If condition necessitate the use of more than one strip or conductor electrode, they shall be laid as widely distributed as possible, in a single straight trench where feasible, or preferably in a number of trenches radiating from one point.

iv. Earth Electrodes shall be kept clear of the building foundation & in no case shall it be nearer than 2 meters from the outer surface of the wall.

3. WATERING ARRANGEMENT:-

i. In the case of plate earth electrodes, a watering pipe 20mm dia. medium class pipe shall be provided and attached to the electrodes. A funnel with mesh shall be provided on the top of this pipe for watering the earth.

ii. The watering funnel attachment shall be housed in a masonry enclosure of size not less than 30cm*30cm*30cm.

iii. A cost iron/MS frame with MS cover, 6 mm thick, and having locking arrangement shall be suitably embedded in the masonry enclosure.

4. EARTHING CONDUCTOR (Main earthing lead):-

i. The earthing conductor shall be securely terminated on to the plate with two bolts, nuts, check nuts and washers.

ii. A double C-clamp arrangement shall be provided for terminating tape type earthing conductor with GI watering pipe coupled to the pipe earth electrode. Galvanised "C" shaped strips, bolts, washers, nuts and check nuts of adequate size shall be used for the purpose.

iii. The earthing conductor from the electrode up to the building shall be protected from mechanical injury by a medium class 15 mm dia GI pipe in the case of wire, and by 40 mm dia, medium class GI pipe in the case of strip. The protection pipe in ground shall be buried at least 30 cm deep (to be increased 60 cm in case of road crossing and pavements). The portion within the building shall be recessed in walls and floors to adequate depth in due co-ordination with the building work.

iv. The earthing conductor shall be securely connected at the other end to the earth stud/earth bar provided on the switchboard by:

a) Soldered or preferably crimped lug, bolt, nut and washer in the case of wire, and,

b) Bolt, nut and washer in case of strip conductor.

c) Earthing Terminal/ neutral point/ earth bus in case of equipments/ sub stations.

5. <u>PROTECTIVE (Loop earthing/earth continuity) CONDUCTOR:-</u>

i. Earth terminal of every switchboard in the distribution system shall be bonded to the earth bar/terminal of the upstream switchboard by protective conductor(s).

ii. Two protective conductors shall be provided for a switchboard carrying a 3 phase switch gear thereon.

iii. All the mountings of industrial type switchboards shall be bonded to the earth stud/earth bar using a protective conductor looping from one to another. Loop earthing of individual units will not be however necessary in the case of cubical type switchboards.

iv. The earth connector in every distribution board (DB) shall be securely connected to the earth stud/earth bar of the corresponding switchboard by a protective conductor.

v. All metallic switch boxes and regulator boxes in a circuit shall be connected to the earth connector in the DB by protective conductor (also called circuit protective or loop earthing conductor), looping from one box to another up to the DB.

vi. The earth pin of socket outlets as well as metallic body of fan regulators shall be connected to the earth stud in switch boxes by protective conductor. Where the switch boxes are non-metallic type, these shall be looped at the socket earth terminals, switch or at an independent screwed connector inside the switch box. Twisted earth connections shall not be accepted in any case.

vii. Double earthing strips in rising mains, bus trunking etc. shall be securely connected to the earth bar/earth stud at the sending end switchboard. In the case of overhead bus bar systems, protective conductors shall be provided in addition to feeder cable armouring connection.

5. <u>EARTH RESISTANCE:-</u>

i. The earth resistance at each electrode shall be measured. No earth electrode shall have a greater ohmic resistance than 5 ohms as measured by an approved earth testing apparatus. In rocky soil the resistance may be up to 8 ohms.

ii. Where the above stated earth resistance is not achieved, necessary improvement shall be made by additional provisions, such as additional electrode(s), different type of electrode, or artificial chemical treatment of soil etc., as may be directed by the Engineer-in-charge.

iii. If the earth resistance is too high and the multiple electrode earthing does not give adequate low resistance to earth, then the soil resistivity immediately surrounding the earth electrodes shall be reduced by adding sodium chloride, calcium chloride, sodium carbonate, copper sulphate, salt and soft coke or charcoal in suitable proportions.

7. MARKING: -

i. Earth bars/terminals at all switchboards shall be marked permanently either as "E".
ii. Main earthing terminal shall be marked "SAFETY EARTH - DO NOT DISCONNECT".

CABLES

1. GENERAL

All cables shall be supplied, inspected, laid tested and commissioned in accordance with drawings, specifications, relevant Indian standards specifications and cable manufacturer's instructions. The cable shall be delivered at site in original drums with manufacturer's name clearly written on the drum.

The recommendations of the cable manufacturer with regard to jointing and sealing shall be strictly followed.
The laying of cable shall be done as per IS 1255 amended up to date.

Cable Identification

Cable identification shall be provided by embossing on the outer sheath the following:

(i) Manufacturer's name or trade mark
(ii) Voltage grade
(iii) Year of manufacture
(iv) Type of insulation
(v) Printing of cable length on each meter

Core Identification

Respective cores of power/control cables shall be identified with the following pattern :

2 core	:	red (R), black (BK)
3 core	:	5 core red (R), yellow (Y),blue (BL)
4 core	:	red (R),yellow (Y),blue (BL), black (BK)
5 core	:	red (R), yellow (Y),blue (BL), black (BK) & grey (GY)
7&14 cores	:	cores shall be numbered.

Tests

(i) Shop Tests
The cables shall be subject to shop tests in accordance with relevant standards to prove the design and general qualities of the cables as below:

(ii) Routine tests on each drum of cables.

(iii) Acceptance tests on drums chosen at random for acceptance of the lot.

(iv) Type tests on each type of cable, inclusive of measurement of armour D.C. resistance of power cables.

2. MATERIAL

11 kV HT Cables

The 11 KV cable shall be cross linked polyethylene insulated, GI strip armored, PVC inner and outer sheath (to be extruded type) earthed grade cable. The outer sheath shall be resistant to water, fungus, termite & rodent attacks. Colour of outer sheath shall be black. The cable shall be confirming to IS : 7098 (Part – II) with aluminium conductor as per I.S. 8130.

L T Power Cables

The 1.1 KV cables shall be XLPE insulated PVC sheathed aluminium conductor armoured conforming to IS : 7098 (part - 1) amended up to date or PVC insulated, extruded PVC inner sheath, steel strip armored and extruded PVC overall sheath conforming to 15:1554 (PI).as mentioned in the Bill of Quantities and drawings, laid in trenches, ducts and underground as shown on drawing or as per instruction given by engineer-in-charge.

Control Cables

Control cables shall be of stranded annealed copper conductors with cross section area of 1.5/ 2.5 sq.mm, PVC insulated, colour coded or with core identification, extruded inner sheathed, steel wire armoured and over all PVC extruded outer sheath etc. The cable shall conform to 15: 1554 (P-I).

Cable Termination

a) HT Cable Terminations
Cable termination shall be heat shrinkable type/cold shrink type suitable for sizes as specified in BOQ, XLPE insulated 11 kV (E) grade, and aluminum conductor armoured cables. Termination shall confirm to IS 3573 with latest amendment.

b) L T power, control cable termination

(i) L T cable termination shall be provided with compression cable glands of brass suitable for holding the armour of the cable.

(ii) Lugs shall be crimping type and shall be of copper suitable for copper conductor cable and of aluminum for aluminum conductor cable.

(iii) Termination shall be carried out as per details furnished in this specification.

Compression Glands

Cable glands shall be made of brass casting, machined accurately to the required size with protective coating of nickel.
Cable glands shall be of heavy duty type and shall consist of: gland nipple, neoprene seal for inner sheath, armour clamping cone, gland body, neoprene seal for outer sheath, skid washer, gland body nut.

The Aluminium conductor shall be stranded, grade H4 class 2 as per IS 8130 and copper conductor shall be annealed copper class 2 as per IS 8130.

Technical data sheets for above cables, including all electrical & mechanical parameters shall be furnished with offer.

L. T. PANEL

1. CONSTRUCTION FEATURES

a) Panels shall be indoor, metal clad, modular construction, fix type (except circuit breaker cubicles) air insulated and floor mounted type.

b) Unless otherwise mentioned, panels shall be of single front construction and shall be of dead front type.

c) All panels shall be extensible on both sides.

d) All panels shall be dust proof and vermin proof.

e) The panels shall have horizontal Busbar Chamber at top of the panel even for top cable entry.

f) All panels shall have provision for cable entry from top or from bottom or both as required. The same shall be confirmed to the Vendor during detailed engineering approval of shop drawing of panel manufacturer.

g) All panels including capacitor panels shall be fully compartmentalized with metal! insulating partitions between individual compartments.

h) The Horizontal busbar chamber shall be separate & totally enclosed.

i) Minimum thickness of CRCA MS sheet member shall be 1.6 mm for non load bearing members and 2.0 mm for load bearing members.

j) All panels shall comprise a continuous line up of dead front, free standing vertical sections. The installation of circuit breakers shall be limited to the bottom two tiers only. In two tiers formation two nos. of upto 1000 Amp. breakers can be provided.

k) All doors and cutouts shall be provided with neoprene gaskets.

l) The back doors of the panels shall be double door leaf type where the panels have more than 400 mm width.

m) Strong concealed type hinges shall support all doors.

n) All relays, meters, and switches etc. shall be flush mounted type.

o) All incoming terminals shall be provided with shrouds. Support shrouds shall be transparent and shall be made of SMC/DMC material. However Bakelite/Hylam material is not acceptable and shall not be used anywhere in panels.

p) The complete structure shall be rigid, self-supporting free from vibration, twists and bends etc.

q) The panels housing circuit breaker feeders shall be in single front draw out execution. The incoming & bus coupler circuit breaker feeders shall be in

single tier formation while the outgoing circuit breaker feeders may be in double tier formation, unless otherwise specified.

r) A suitable barrier shall be provided between the circuit breaker and the associated control.

s) The number of modules shall be so decided that the cable alleys are not over crowded. However the number of module in any panel shall not exceed six. The minimum size of module shall be 300mm and 225mm for starter and switch fuse / MCCBs feeders respectively. The minimum clear width of cable alley shall be 300mm.

t) In cable alley, outgoing terminals shall be identified with feeder number.

2 BUS AND BUS TAPS

a) The main buses and connection shall be of high grade of aluminium bus bars conductivity aluminium 1 aluminium alloy (Grade EC-91 E), sized for specified current ratings with max, temp. limited to 85 deg.C (35 deg. above 50 deg. ambient temp.).Vertical bus bars shall be designed depending upon the actual feeder requirement. Bimetallic connector shall be provided for connection between dissimilar metals.

b) Busbars and connections shall be fully insulated for working voltage with adequate phase 1 ground clearances. Insulating sleeves for Bus bars and shrouds for joint shall be provided. Minimum clearance of 25 mm is required between phases and between phase & earth.

c) Shrouds for busbars joints tapping points shall be of fiber glass only. Bus insulators shall be flame retardant, track resistant type with high creepage surface and of non-hygroscopic material such as epoxy SMC DMC.

d) Busbars shall be supported and braced to withstand the stresses due to max. short circuit current and also to take care of any thermal expansion. .

e) The busbar size shall be of similar size as of busduct.

2 CHANGEOVER SWITCHES

a) Changeovers switches shall be 4 pole, heavy duty, group operated load break fault make type with AC 23A duty.

b) The switches shall be capable of successfully withstanding the thermal stress for one sec. caused by the short circuit corresponding to the fault level specified.

c) The switches shall be able to withstand mechanical stresses caused by the peak short circuit currents corresponding fault level specified.

d) The switches shall be provided with operating handle compartment door and shall be so interlocked that on the hinged compartment door and shall be so interlocked that :
   i) The door can be opened only when the switch is in OFF position.
   ii) It shall not be possible to close the switch when the door is open.

e) The switch shall be provided with pad-locking arrangement for 250A and above rating.

f) The switch shall be provided with defeat interlock facilities.

4 FUSES

a) All fuses shall be HRC cartridge link type.

b) The fuses shall be provided with visible indication when they have operated.

c) Rating of the fuses shall be so chosen so as to have co-ordination with switch. Fuses shall preferably mounted directly on plug in type fuse bases & sufficient

number of insulated fuse pullers shall be supplied.

d) Fuses and links functionally associated with the same circuit shall be mounted side by side.

Earthing and neutral links in main supply circuits shall be of silver plated copper & of bolted pattern.

5 CONTACTORS

a) Contactors shall be of double break, single throw and electromagnetic and non-gravity type.
b) Contactors shall be suitable for interrupted duty and shall be rated for class AC-3 duty.
c) Main contacts of contactors shall be silver faced.
d) Operating coils of contactors shall be suitable for operation on 220/240V AC, 1 phase, 50 Hz supply.
e) Contactors shall be provided with at least two pairs of 'NO' and 'NC auxiliary contacts.
f) Contactors shall not drop out at voltages down to 70% of coil rated voltages and min. pick up voltage shall be 85%.

6 OVERLOAD RELAYS

a) Overload protection for each motor feeder (wherever required) shall be provided by thermal overload relay on each of the three phases.
b) The relay shall be duly compensated against fluctuations on ambient temp. and frequency and shall have single phasing preventer feature.
c) Relay shall be hand reset type from the front of the cubicle door.

Overload relay for fan applications shall be of heavy duty type with provision of by-passing the same during starting of the fan.

7 CAPACITORS

a) The capacitor shall be of mixed dielectric type rated for 440Volts. Capacitors shall be provided with discharge resistors. The value of discharge resistors should be such that the residual voltage be less than 50V in one minute.
b) Capacitors shall be suitable for prolonged operation at an rms. voltage between terminals not exceeding 1.10 times the rated voltage, excluding transients.
c) Capacitors shall be suitable for continuous operation at an rms. line current not exceeding 1.30 times the current which occurs at rated sinusoidal voltage and rated frequency excluding transients.
d) The maximum continuous reactive output of a capacitor (including any due to flow of harmonic currents) shall not exceed 30% over rated reactive output of a capacitor.
e) Loss in the capacitors shall be kept as low as possible. (Max 0.5W/ KVAR).
f) Wherever capacitor consists of several elements inside the units, each element shall be provided with individual fuses, so that the unit need not be discharged or disconnected (although with moderate reduction in output), if one of short circuit to any of the elements.

8 AUTOMATIC POWER FACTOR CONTROL RELAY

a) Automatic Power factor control relay (APFCR) shall operate its auxiliary relay by sensing the power factor of the plant thru' current and voltage signals.

b) APFCR shall have no. of steps specified in drawings.
c) APFCR shall be provided with Built in PF meter (0.5 lag to 0.5 lead), calibrated setting dial.
d) APFCR shall be suitable for 5A secondary current.
e) APFCR shall be suitable for flush mounting in capacitor panel/MCCs.
f) Current rating of its auxiliary relay shall be compatible with switching and continuous energization of main contactor of capacitors. Otherwise, additional relay shall be provided.

9 COOLING

a) All the Capacitor Panels shall be properly ventilated. If required a small exhaust fan of suitable rating shall be provided on the rear door of the panel, with the opening properly covered with fine wire mesh. The fan shall start/stop automatically along with normal start/stop provision.
b) Louvers shall be provided on the door on rear side with a fine wire mesh.

10 CURRENT TRANSFORMERS

a) Current Transformers shall be cast - resin type .AII secondary connections shall be brought out to terminal blocks where connection will be made.
b) Accuracy class of the current transformers shall be:
   (i) Class 5P20 for protection.
   (ii) Class 1.0 for metering.
   (iii) Class PS for differential Protection & REF.
c) Current transformer shall be provided with test links and shorting on both secondary leads for setting purpose.
d) All current transformers shall be earthed by a separate earth link on terminal blocks.
e) Additional nameplate of CTs*/* PTs shall be provided (if required) at such a place that it shall be possible to find out details of CTs*/* PTs after mounting in the panel.

11 VOLTAGE TRANSFORMERS

a) Voltage transformers shall be cast-resin, fixed type and shall have an accuracy class of 1.0.
b) Low voltage fuses, sized to prevent overload, shall be installed in all ungrounded secondary leads. Fuses shall be suitably located to permit easy replacement while the board is energized.

12 RELAYS

Relays wherever provided shall be of draw-out design with built-in testing facilities. Small auxiliary relays may be in non-drawout execution-.

13 CONTROL AND SELECTOR SWITCHES

a) Control and selector switches shall be of rotary type having enclosed contacts, which are accessible by the removal of cover.
b) Control and selector switches shall be of flush mounted type and on front of panels. .

c) Selector switches shall be of stay-put maintained contact type.
d) Control switches shall be provided with escutcheon plate clearly marked to show the position.

14 INDICATING METERS AND INSTRUMENTS

Indicating instrument (96 x 96 mm) shall be digital meter, switch board type and accuracy class of 1 (1 % full scale ± 1 count).

15 INDICATING LAMPS

a) Indicating lamps shall be of LED type, low watt consumption and provided with appropriate value of resistors. The LEDs shall also have an in-built surge suppressor.
b) Bulbs and lenses shall be interchangeable and easily replaceable from the front of the panel.

16 PUSH BUTTONS

a) All push buttons shall be of the push to actuate the contact type.
b) All push buttons shall be oil tight and shall be provided with adequate no. of contacts.

17 POWER AND CONTROL CABLE TERMINATION

a) Suitable supporting arrangement shall be provided for all power and control cables entering the panel.
b) Removable undrilled gland plate of 3 mm thick of MS for multicore cables and 4mm thick of Aluminium for single core cables sufficient in size to accommodate all compression type, heavy duty brass glands shall be provided.
c) Adequate termination arrangement shall be provided for all power cables which shall be aluminium / copper conductor, PVC insulated, sheathed, armored PVC sleeved overall, heavy-duty cables, 1.1 KV grade. Power cables termination shall be by means of crimping type lugs on conductor cables.
d) The terminal blocks shall be bolted lug type for cables. These shall be protected type and rated for 1100 Volts service. The minimum current rating of terminal block shall be 16 Amp. The construction shall be such that after the connection of cable by means of lugs, necessary clearance and creep age distance are available.
e) Wherever there is more than one equipment connected on the same feeder, separate terminals shall be provided.

18 INTERNAL WIRING

a) All internal wring shall be carried out with stranded copper conductors, PVC insulated, 1100/650 V grade.
b) Min. size of conductor for power wiring shall be 2.5 sq.mm, 1.5 sq.mm for AC control wiring and 4.0 sq.mm. for DC control wiring. Current transformer secondary wiring shall be with 2.5 sq.mm conductor.
c) All wiring shall be run on the sides of the panels and shall be neatly bunched and shall not affect access to equipment mounted in the panels.
d) Wiring shall be terminated on terminal blocks using crimping type lugs and

without joints or tees on their runs.

e) Power wiring shall be done either by phase identifying coloured wires or suitably coloured PVC sleeves shall be provided at each end of wire.
The following wiring codes shall be used.

Instrument Transformer	:	Red, yellow or blue depending upon phase with which wire is associated.
A-C phase wire	:	White
A-C Neutral wire	:	Black
Earth connection	:	Green

f) PVC identification ferrules, yellow colour with black engraved letter shall be provided at each end of all control wires marked to correspond with equipment designation & termination numbers.

g) Ferrules provided shall be oil tight and numbered from left to right.

19 TERMINAL BLOCKS

a) Terminal blocks for control wiring shall be 650V grade 10 sq.mm size.

b) Terminal blocks shall be grouped depending on circuit voltage. Different voltage groups of terminals blocks shall be segregated.

c) Terminals blocks shall be numbered for identification and provision shall be provided for terminal labels.

d) Terminal blocks requiring duplication shall be provided with solid bonding links.

e) Terminal blocks for current transformer secondary lead wires shall be provided with shorting, disconnecting / earthing facilities.

f) Terminal blocks and control wiring shall be so arranged that only one conductor of external wiring required to be terminated in at each terminal.

20 GROUND BUS

a) A ground bus, rated to carry maximum fault current, shall extend to full length of the panel.

b) The ground bus shall be provided with two-bolt drilling with GJ. bolts and nuts at each end to receive 75X 10 mm G.I. flat. .

c) Each stationary unit shall be connected directly to the ground bus. The frame of each circuit breaker and shall be grounded through heavy multiple contacts at all times.

d) Wherever the schematic diagrams indicate a definite ground at the switchgear, a single wire for each circuit thus grounded shall be run independent to the ground bus and connected thereto.

e) C.T. shall be earthed through removable links so that earth of one circuit may be removed without disturbing other.

f) Frames and noncurrent carrying metal parts of all equipment mounted shall be effectively to earth bus.

g) All hinged doors shall be connected to earth bus by flexible tinned bare copper wire.

h) Instrument and relay cabinets shall be connected to earth by 2.5 sq.mm stranded copper insulated wire 1100 V grade.

21 SPACE HEATERS

Each cubicle shall be provided with thermostat controlled space heaters.

22 AC/DC POWER SUPPLY

a) The panels shall be suitable to receive following power supplies.
   AC Supply : Single Feeder
   DC Supply : Double Feeder
b) Isolating switch fuse units shall be provided at each switchgear for the incoming supplies, 4-pole, single throw for AC.
c) Bus-wires of adequate capacity shall be provided to distribute the incoming supplies to different cubicles. Isolating switch-fuse units shall be provided at each cubicle for AC supplies.
d) AC load shall be so distributed as to present a balance loading on three phase supply system.

23 NAME PLATES

a) Name plates of anodized aluminium shall be furnished at cubicle and at each instrument, device mounted on and inside the cubicle.
b) Caution notice on suitable metal plate shall be affixed at the back of each vertical panel.
c) Name plates for feeders shall be provided on front and back of the panel.

24 TROPICAL PROTECTION

a) All equipment, accessories and wiring shall have fungus protection, involving special treatment of insulation and metal against fungus, insects and corrosion.
b) Screens of corrosion resistant material shall be furnished on all ventilating louvers to prevent the entrance of insects.

25 PAINTING

a) All surfaces shall be sand blasted, pickled and grounded as required to produce a smooth, clean surface free of scale, grease and rust.
b) After clearing, the surfaces shall be given a phosphate coating followed by 2 coats of high quality primer and stoved after each coat.
c) The panels shall be finished with two coats of Siemens Grey (Shade RAL 7032) powder coated / Polyester enameled.

26 TESTS & INSPECTION

a) The following routine and acceptance tests shall be carried out during final acceptance list.

i) Mechanical operation test.
ii) Electrical operation test.
iii) High voltage test on power circuits.
iv) High voltage test on control circuits.
v) Millivolt test on the circuit breakers.
vi) Millivolt Drop test on Busbar joints

b) All tests shall be performed in the presence of Owner's representative, if so desired by the owner. The contractor shall give at least 15 days advance notice of the date when tests are to be carried out.
c) Contractor shall furnish test certificate indicating that equipment has been tested by their quality control department for compliance of technical specification and approved drawings. The same shall be forwarded to owner! Consultants along with inspection call.
d) These inspections shall however, not absolve the vendor from the responsibility for making good any defect with may be noticed subsequently.

27. The Bank at its discretion may purchase light fixtures and supply it to the contractor for installation. Contractor cannot claim any compensation for supply of fixtures by the Bank.

BATTERY & BATTERY CHARGER

1. BATTERY

General

a) The battery shall be maintenance free type
b) The plates shall be designed for maximum durability during all service conditions including high rate of discharge and rapid fluctuation of load.

2. BATTERY CHARGER

General

a) The charger shall be natural air cooled, solid state type with full wave, fully controlled, bridge configurations.
b) The charger shall be provided with automatic voltage regulation; current limiting circuitry smoothing filter circuit and soft start feature.
c) Voltage control shall be step-less, smooth and continuous.
d) The charger shall be self-protecting against all A-C and D-C transients and steady state abnormal currents and voltages.
e) Voltage setters shall be provided for setting the output of float boost charge. Setting shall be independent of each other so that setting of one voltage shall not require resetting other.
f) There shall be separate transformers for float and boost charger.
g) Charger A-C input and D-C output shall be electrically isolated from each other and also from panel ground.
h) Isolation shall also be provided between power and control circuits.
i) Batteries shall also be housed into the Battery Charger cubical.

Construction

a) The charger shall be freestanding, floor mounted with sheet steel enclosure with all access from the front.
b) The panel shall conform to the degree of protection IP 42. Minimum thickness of sheet metal used shall be 2 mm.
c) Access door shall be with concealed hinges and neoprene gaskets. Ventilating louvers shall be covered with fine wire mesh.
d) All equipment within the panels shall be arranged in modular units and laid out with sufficient space for easy maintenance.
e) Switches, meters, relays etc. shall be flush mounted on the front of the panels. Nameplates of approved size and type shall be provided for all circuits and devices.

Charger Equipment

a) All power diodes and control rectifiers shall be silicon type. Rectifier Transformer shall be dry type, double wound, with copper conductor and class B insulation.
b) Blocking diodes shall be fully rated and redundant so that failure of a single diode shall not incapacitate the system in any way.
c) Isolating switches shall be heavy duty, load break type, operated by an external handle with provision for padlocking in ON and OFF position.

d) Changeover switch shall be 3 position, 4 pole, load break type with 2 NO + 2 NC auxiliary contacts.
e) Contactor shall be air-break type with thermal overload relays having in built single phase preventor.
f) Fuses shall be HRC type and arranged for easy replacement. Semi conducting device fuses shall be fast-acting.
g) Indicating lights shall be low-watt filament type with series resistor. Both lamp and lens shall be replaceable from front.
h) Meters shall be 96 x 96mm switchboard type, 250 deg. scale, antiglare glass, :!: 2% accuracy with zero adjuster on the front.

Alarms

a) One (1) ten-points alarm facia shall be provided on charger panel complete with proper actuating devices, circuitry and legends.
b) The arrangement shall be such that on occurrence of a fault the corresponding window will light up and stays lighted until the fault is cleared and reset button is pressed.
c) Each time a window lights up, a master relay will get energized to provide group alarm signals for Owner's remote panel.
d) Following minimum annunciation shall be provided:
   i) A. C. Supply failure *
   ii) D. C. Voltage low *
   iii) D. C. Voltage high *
   iv) D. C. System ground *
   v) Charger overload *
   vi) SCR fuse blown
   vii) Filter fuse blown
   viii) D. C. Output fuse blown
e) Alarm points marked with an asterisk (*) shall have electrically separate spare set of contacts wire_ up to the terminal block for Owner's use.
f) Alarm contacts shall be rated 2A at 24V D. C. And SA at 240V A.C.

Outgoing Feeders

a) Each Outgoing feeder shall be provided with double pole switch and with HRC fuses.
b) Outgoing feeders shall be located in separate module forming part of charger panel with separate cable alley for terminated outgoing cable.

Lamp / Space Heaters / Receptacles

a) The charger panels shall be provided with:
   - Internal illumination lamp with door switch.
   - Space heater with thermostat control.

c) Lamp, heater circuits shall have individual switch fuse units.

Wiring/ Cabling

a) The panels shall be completely wired-up. All wiring shall be routed through wiring troughs. Wires shall be ferruled at both ends for identification.
b) Panels shall have removable gland plates at the bottom for cable entry. All

incoming / outgoing cables shall be terminated in suitable terminal blocks.

c) Control terminal blocks shall be box-clamp type ELMEX 10 Sq. mm or approved equal.

Grounding

a) The charger panels shall be fully rated ground bus with two ground terminals, one at each end.
b) Each terminal shall comprise two-bolt drilling with M10 G.I. bolts and nuts to receive Owner's ground connection of 50 x 6 mm G.I. flat.

Tropical Protection

a) All equipment accessories and wiring shall have fungus protection, involving special treatment of insulation and metal against fungus, insects and corrosion.
b) Screens of corrosion resistant material shall be furnished on all ventilating louvers to prevent the entrance of insects.

Painting

a) All surfaces shall be sand blasted, pickled as required to produce a smooth, clean surface free of scale, grease and rust.
b) After cleaning, the surfaces shall be given a phosphate coating followed by 2 coats of high quality primer and stoved after each coat.
c) The panels shall be finished in powder coated Siemens Grey, RAL7032.

Tests

a) All equipment and components there of shall be subject to shop tests as per relevant IS standards. The tests shall included but not limited to:
b) Tests on battery charger.
- Dielectric tests.
- Voltage regulation check from 0 to 100% load with ±10% input voltage variation.
- Ripple content measurement.
- Heat run test on current limiting value.

Test Witness

All tests shall be performed in presence of Owner's representatives, if so desired by the Owner. The contractor shall give at least fifteen (15) days advance notice of the date when tests are to be carried out.

3. REQUIREMENT

Battery

i)	Type	:	Lead Acid
ii)	Nos. of Cells per Battery	:	12
iii)	Battery nominal voltage	:	24 V
iv)	Ten hour rating to 1.85 Volt/Cell at 27 deg. C.	:	300 AH

Battery Charger

i)	Charger	:	Float & Boost
ii)	Type	:	Solid state, rectifier
iii)	Rating	:	40A
iv)	A.C. Input Supply	:	415V, 3ph,4 w/230V, 1Ph., 50Hz., 2 wire.
v)	Ripple content in charger DC output		: ± 1%
vi)	Outgoing feeders - 12 Nos	:	Each consisting of double pole MCB of 32A.

INSPECTION SCHEDULE

Witness of routine / Type test (as per relevant standards/ agreed schedule) of various equipments shall be carried out at the works of manufacturer by Owner/ owner's representative. The Contractor shall furnish the following details and freeze this schedule within 2 weeks after placement of LOI in consultation with Owner/ Consultants.

ITEMS	TESTING DATE OF INSPECTION	PLACE	NAME OF MANUFACTURER

NOTE

It is the obligation on the part of Contractor to inform actual date of inspection 2 weeks in advance.

Contractor's engineer shall be present in all inspection.

In some cases, Owner/ Owner's Representative may give waiver of inspection.

In all cases, test certificate shall be furnished by the contractor and the same shall be approved by owner/ Consultant.

……..

Bidder's Signature

APPROVED LIST OF ELECTRICAL MATERIAL

Description	Brand
11 KV CIRCUIT BREAKER PANEL	ABB / SEIMENS / AREVA
11 KV / 0.4 KV TRANSFORMERS	CROMPTON / KIRLOSKER / AREVA / SEIMENS
BATTERY CHARGING PANEL	KELTRON / NELCO
BATTERIES	EXIDE / AMCO / STANDARD
L T PANEL	NEPTUNE (INDIA) LTD. / ZETA SWITCH GEARS / KRYPTON POWER CONTROL INDIA PVT LTD. / ADLEC SYSTEM / N E C
11 KV Isolator and D O Fuses	AMEI / ELLPRO / STERLING
Capacitor	L & T / DUCATI / EPCOS
APFC relay	L & T KHATAU / DUCATI / SYNTRON
M.C.B. / RCCB / RCBO	LEXIC / HAGER / ABB
Distribution Boards	LEXIC / HAGER / ABB
Switch Fuse Units With HRC fuses	GE / L&T / ABB
Moulded Case Circuit Breaker (MCCB)	ABB (T max) / L & T (D sine)
Air Circuit Breakers	ABB (EMEX/L&T(C POWER)
Current Transformer / Meters / Voltage Transformers / Relays / Starters / Contactors / Selector Switch / Indicating Lamps	L & T / SIEMENS / AUTOMATIC ELECTRIC / CONTROL & SWITCH GEARS / ABB
Change Over Switches	GE / L&T / HH ELCON
Cable Glands and Sockets	SIEMENS
PVC insulated Copper conductor wires	FINOLEX / RR / POLYCAB
Telephone Wires and cables	FINOLEX / (RPG/BIRLA ERRICCSON POLYCAB
Television Coaxial cable	FINOLEX / RR /RPG / L&T
PVC / XLPE Insulated 11 KV / 1.1 KV Cables	UNIVERSAL /FORT CLOSTER / NICCO / FINOLEX/POLYCAB
Switches and Sockets outlets (Conventional piano type)	ANCHOR
Switches and Sockets outlets (Modular type)	LK Fuga / MK / MDS-MOSAIC
Industrial outlet	LEXIC / HAGER / ABB
MIS Conduits and Accessories	B.E.C./AKG/MK
PVC Conduits and accessories	AKG/BEC/CAP/SEIKO / [POLYCAB
Fluorescent Tube Fitting	PHILIPS /WIPRO
Incandescent Light Fitting	DECON/PHILIPS / BAJAJ / WIPRO
Hpmv/hpsv/ halogen Lamp	PHILIPS / WIPRO
Ceiling Fans / Exhaust Fans	CROMPTON / BAJAJ
Floor / Wall Raceways to date	MK/ LK/ MDS
Computer networking – outlet	AMP/SYSTEMAX / LUCENT
Electronic Energy Meters	SECURE / L&T
UPS	EMERSON / POWERWARE / TATA LIBERT
Ceiling Rose holders	ANCHOR
Buzzers/Bell Push bell	ANCHOR
MCB Distribution Board	MOS/LEGRAND/SIEMENS /HAGER
HRC Switch Fuse nits	SIEMENS ABB/GE/L&T
Cable Glands/Lugs	SIEMENS/DOWELLS
Electronic Regulator	MK/ANCHOR/ROMA/DEGRAND/MDS
Contractors	SIEMENS/L&T/ABB/SCHNIEDER
Geysers/water/heater	SPHERE HOT /RACOLD/USHA

NOTE:

Sr. No.	Description
1.	The choice of the final makes shall be made by the owner/ consultant
2.	The samples or Cat.No. of all type of switches & light fittings should be approved before execution.

CONVENTIONAL FIRE ALARM AND ANNUNCIATION SYSTEM

SCOPE OF WORK

1.1 The scope of work covers supply, installation, commissioning and testing of Conventional Fire Alarm System meeting the intents of these specifications. The work shall cover.

i. Conventional Fire Alarm Control Panel (FACP)

ii. Conventional Alarm initiating devices

iii. Audio-visual annunciation

iv. All wiring

a) From alarm initiating devices

SUBMITTALS

2.1 All details comprising the following shall be submitted:

i. System configuration & capability vies a vies the specifications.

ii. Compliance from the specifications.

iii. Makes and catalogues.

FIRE ALARM SYSTEM

3.1 The main fire alarm control panel shall be microprocessor-based signal initiating devices, local and remote operator terminals and all other system-controlled devices.

3.2 Supervise all signaling and notification circuits throughout the system through the circuit interface modules.

iii. Detect activation of any signal initiating devices such as smoke detectors, heat detectors and break glass units and location of alarm condition.

a) Acceptance switch that changes the alarm signal from blinking mode to steady mode and silence all remote alarm sounders.

b) Signal silence switch to silence all the programmed silence able notification appliances.

c) Reset switch to bring all initiating and output devices to normal condition.

d) Test switch to initiate automatic testing of alarm conditions and all such tests shall be displayed and recorded.

The detailed requirements and system capacity are shown in the drawings.

3.3 The FACP shall be modular in construction and shall be enclosed in a sheet-steel rust-inhibited cabinet of appropriate size to accommodate atleast 25% expansion of all modules. The cabinet door shall have a glass window for all display and shall be provided with a key lock.

3.4 The main power supply unit shall operate on 230 VAC 50 Hz meeting the needs of the FACP and notification appliance circuits. The unit shall incorporate a battery charger with duel rate charging facility.

SIGNAL INITIATING DEVICES

4.1 Each detector shall be provided with power LED's and an output connection for remote indication. Both LED will be blinking mode during normal operation. And will be in steady mode indicating an alarm mode.

Detector sensitivity shall automatically compensate for accumulated dust or slow environmental degradation. All detectors shall include a temper proof twist-lock base which shall be common interchangeable for all detectors.

4.2 All detectors shall be low profile with sealed sensing chambers and suitable for stable operation in an ambient temp of 0 to 49C and against 7.5mps air velocities. Detectors shall be optical type enclosed in a heat retardant plastic body. The heat detectors shall operate at 59C with a rate of rise element of 9.5C per minute

4.3 Response indicators shall be LED powered from the Signal-initiating device.

INSTALLATION

5.1 The installation shall be carried out in accordance with the specifications and drawings and complying with IS 2189, any local codes and proprietary manufacturer's instructions. Where the provisions are conflicting, areas of such conflict shall be identified and clearly brought out in the 'Deviations from Tender' Appendix II together with the financial implications, if any.

5.2 All wiring shall be carried out with armored cables as specified in the schedule of work. All junction boxes and conduit accessories shall be galvanized steel.

6.0 TESTING

6.1 The system shall be tested and commissioned by a qualified specialist technician to establish system performance in all its aspects and all such tests shall be witnessed and test readings attested by the Consultant.

6.2 All cabling shall be checked for proper connections and tested for

I) Continuity
ii) Ground faults
iii) Short circuits
iv) Insulation resistance by a 1000V meggar

6.3 Test all Circuits and device for verification trouble/fault signals in the FACP and performance compliance All test results shall be verified and authenticated by the Consultant and shall be included as part of the Instruction manual.

6.4 During the period of verification and testing the contractor should associate atleast 1 person from the client's side for training in all aspects of system operation and maintenance, and fire drill etc.

7.0 MODE OF MEASUREMENT

The mode of measurement shall follow the schedule of work.

PUBLIC ADDRESS SYSTEM

1.0 SCOPE OF WORK

1.1 The scope of work covers supply, installation, commissioning and testing of the Public Address System relating to the Fire Alarm System meeting the intents of the specifications. The system may have centralized or distributed amplifiers.

1.2 The system could be combined with other paging functions or piped music or any other announcements.

2.0 AMPLIFIERS

2.1 All amplifiers shall be suitable for Fire Protective Signaling Systems.

2.2 The power amplifiers associated with FACP shall have adequate continuous (RMS) power output to meet with centralized or distributed configuration as the case may. The unit shall be capable of delivering the rated output watts with less than 0.5% harmonic distortion in the design band width. The amplifier shall have a broad band frequency response of 20 Hz to 20 KHz with a signal to noise ration greater than – 90dB. The output voltage and impedance shall meet with the system requirements. Amplifiers shall be protected against over loads and output shorts and a special thermal overload on the heat sink.

2.3 The distributed audio amplifiers shall be magnetically coupled switch mode type with three input signal sources selectable manually or automatically by the fire alarm system. The amplifier shall incorporate a push to talk switch and paging over ride. Output wattage and volts shall be as shown in the schedule of work or as required to meet the needs of the PA system.

2.4 All amplifiers shall have adequate back up battery support to power the PA System for at least 4 hours. The battery system shall have facility for recharging the battery.

2.5 Power as well as audio amplifiers shall be mounted in suitable wall mounted/floor standing enclosures shall have lockable and removable doors with vision panel, all suitable for fire alarm systems.

3.0 SPEAKERS

3.1 Speakers shall be especially designed for broadcasting high quality, integrated emergency fire alarm signals and voice communications and approved by an appropriate authority for use in such situations. Speakers shall be ceiling or wall mounted as shown in the schedule of work and shall be completed with mounting brackets accessories etc.

3.2 Speakers shall be of high efficiency yielding maximum output at minimum power acress 400 – 4000 Hz frequency range. Speakers shall have a line matching transformer with power – doubling multiple taps and shall yield a sound pressure level of 84 DBA @ 3.0 when on the lowest tap. Speakers shall be mounted in a rugged metal housing with vandal resistant grille.

3.3 Speakers external appearance shall be approved by the Architects.

3.4 Speakers and strobes shall be capable of being mounted on a 100 x 40 mm junction box. There shall be appropriate terminal strips for incoming and outgoing wires, Pigtail type connections are not acceptable.

4.0 P A SYSTEM WIRING

4.1 PA System wiring shall follow the specifications under “conduit wiring”.

5.0 Testing and Commissioning

5.1 Entire PA System shall be tested to establish the following.

i. Functionally of the PA System

ii. Acceptable audibility of the public address in all spaces and record sound pressure levels of the Public address vis the ambient noise levels.

6.0 MODE OF MEASUREMENT

6.1 The mode of measurement shall follow the schedule of work.

COMPUTER NETWORKING
SECTION – I INTRODUCTION

1.0 GENERAL REQUIREMENTS:

Computer Net Working System should adhere to relevant and recognized standards.

1.1 The Structural Cabling System shall be a hierarchical star topology utilizing CAT 6 copper cable in horizontal sub system and multi mode fiber optic cable in the backbone subsystem.

1.2 All components within the cabling system shall be from a single manufacture and shall be covered by the manufacturer’s system performance warranty. The warranty shall be independent of application and will support all ratified protocols, and the warranty shall be minimum of 25 years.

2.0 DATA CABLING – UNSHIELDED TWISTED PAIR

2.1 Unshielded Twisted pair (UTP) CAT 6 cable shall be used for LAN connectivity to the Desktop. To enable increased performance UTP-CAT 6 cabling should support 100/1000 Mbps Ethernet and ATM 155 Mbps as per IEEE 802.3ab connectivity standards.

2.2 Unshielded Twisted Pair (UTP) CAT 6 cable and other relevant products shall be in accordance with EIA/TIA 568 standards.

2.3 Unshielded Twisted Pair (UTP) CAT 6 cable shall meet developments in applications technology and shall perform for a worst case four-connector channel to support applications that utilize full-duplex transmission schemes, such as Gigabit Ethernet.

2.4 All cables shall be fitted with strain relief boots.

2.5 Contractor shall furnish 25 Year warranty certificate to cover Bandwidth of the specified and installed cabling system and installation costs.

2.6 Cable shall be manufactured by using 24 AWG solid bare coppers with polyethylene insulation and Flame retardant PVC jacket.

2.7 Cable shall be suitable in operating temperature of –20° C to 60° C.

2.8 The cable shall be tested up to 350 MHz frequencies.

2.9 Delay skew should not be more than 25ns/100m.

2.10 Impedance of the cable shall be 100 Ω +/- 15 Ω.

2.11 Following installation practice shall be followed by the Contractor

While laying the cable.

a. Do not place cable near equipment that may generate high levels of electromagnetic interface.
b. Place cabling at a sufficient distance from equipment.
c. Do not over tighten cable ties, use staples or make sharp bend with cables.
d. Tie and dress horizontal cables neatly and with a minimum bend radius of 4 times the cable diameter.
e. Maintain the twist of horizontal and backbone cable pairs up to the point of termination. Do not leave any wire pairs untwisted.
f. Do not create multiple appearances of the same cable at several distribution points (called Bridging Taps)
g. Do not use connecting hardware that is of lower category than the cable being used.
h. Terminate each horizontal cable on a dedicated telecommunications outlet.
i. Use connecting hardware that is compatible with the installed cable.

The contractor shall note that the above installation practices are not exclusive. It is the responsibility of the contractor to ensure that the installation is compliant to required specifications. Installation Practices shall also meet all applicable local and national cades, standards and ordinances. Where a conflict exists between these standards, it is the responsibility of the contractor to detail these conflicts to the consultant prior to installation commencing.

3.0 CAT 6 RJ 45 MODULAR JACK

3.1 Copper outlets shall be presented into work area as an RJ45 connector. The outlet shall have a shuttered cover to prevent the ingress of dust and other contaminates.

3.2 One outlet/Double outlet of required color and type should be provided to each workstation as per the final approval of the consultant.

3.3 All outlets shall be modular type and made out of ABS plastic.

3.4 The outlet shall be provided with icons or circuit identification and labels for poll identification.

3.5 All outlets should include cable management facilities as per standards.

3.6 The modular outlets shall be factory assembled.

3.7 The termination of the installed horizontal cable shall be by insulation displacement connectors.

4.0 UTP JACKS

4.1 UTP Jacks shall be suitable for CAT 6 cable, PCB Based and as per TIA/EIA 568 standards.

4.2 The durability of Modular jack shall be minimum 750 mating cycles and minimum 200 termination cycles for wire terminals.

4.3 Housing of UTP Jack shall be made out of Polyphenylene oxide rated for 94V and wiring block shall be of Poly Carbonate rated for 94 V.

5.0 UTP JACK PANELS

5.1 UTP Jack Panels shall be suitable for CAT 6 cable with 24 port, modular type, PCB based, 1 U height and as per the EIA/TIA 568-B2 standards.

5.2 UTP Jack panel shall have Icons on each of 24 Ports.

5.3 9mm or 12mm labels on each of 24 ports shall be provided as per the final approval of the consultant.

5.4 The durability of Modular jack shall be minimum 750 mating cycles and minimum 200 termination cycles for wire terminals.

5.5 The UTP Jack Panel shall be made out of Powder Coated Sheet Steel with UTP Jack shall be made out of Polyphenylene oxide rated for 94V and wiring block shall be of Poly Carbonate rated for 94 V.

6.0 WORK AREA CABLING

Work area equipment and cables shall be as per ANSI/TIA/EIA-568-A and ISO/IEC 11801.

Equipment Cords are assumed to have the same performance as patch cords of the same type and category.

To ensure consistency of performance, the same manufacturer as the installed cabling shall provide all the work area cables (patch/mounting cords) throughout this project.

The patch cord shall be manufactured out of 24 AWG 7/32, Stranded copper conductor, with PVC insulation, Flame retardant polyethylene jacket and shall have length as mentioned in schedule of quantities as per the standards of CAT 6.

The patch cord shall be provided with matching colored snag-less, elastomeric polyolefin boot.

Housing of the plug shall be of Clear Polycarbonate and the Load Bar shall be of PBT polyester.

Terminals shall be made out of Phosphor Bronze, 50 micron gold plating over selected area and gold flash over remainder, over 100 micron nickel under plate.

All cables shall be fitted with strain relief boots.
The onsite fabrication of work area cabling shall not be permitted.

7.0 DATA RACKS

7.1 The contractor shall also examine the location of the Data Rack to Ensure the Air Flow around the same and sufficient clearance is available to allow access for inspection and maintenance.

7.2 The specification for patching frames shall match that detailed in UTP cabling.

7.3 The patch panels shall meet or exceed the transmission Performance requirements of ANSI/EIA/TIA 568-A5.

8.0 TERMINATION AND CONNECTORS

8.1 The wiring schedule used at the point of termination should be Complete with ANSI/EIA/TIA 568-A.

8.2 All termination shall be made using CAT 6 connectors and Panels.

8.3 When terminating both ends of the connection should be tested, Labeled and documented according to the requirement of the OEM and site practices.

8.4 All termination should be made by an approval installer so as to Meet warranty.

9.0 LABELING AND COLOR CODING CONVENTIONS

9.1 All Cables shall be labeled so as to ultimately and the end user in The maintenance and administration of the installed cabling system.

9.2 Contractors shall make allowance for labeling of all cables at both Ends and for the full labeling of all patch panels and outlets with a unique circuit identifier.

10.0 INSTALLATION ACCEPTANCE TESTING SPECIFICATIONS

10.1 Installed UTP Cabling system shall be tested with TIA/EIA 568 Level IIE/Level III hand held testers. Each installed UTP drop shall be tested as per the latest revisions of TIA/EIA 568 CAT5e specifications.

10.2 The contractor shall after completion of the installation, submit a Detailed documentation of the cable plant. The documentation shall cover minimum following:

a. As built diagrams of the Network.

b. Test results for UTP

c. Consolidated Bill of Materials with manufacturer’s part Nos. and quantities used.
d. Warranty certificate from OEM Supplier.

SECTION – II SUBMISSION

1.0 SUBMISSIONS

Contractor to note that the following Minimum Documents shall be furnished along with the Bid.

1.1 UTP CABLING SYSTEM

a. ETL verification of the Cable as per TIA/EIA 568 B.1 standards.

b. Performance characteristics for Attenuation, Pair to Pair and PS NEXT, ELFEXT and PSELFEXR, Return Loss, ACR and PS ACR for 4 – Connector Channel.

c. Certificate of UL listing.

1.2 UTP JACKS

a. Certificate of UL listing.

b. Performance characteristics for Attenuation, NEXT, PS NEXT, FEXT and Return Loss.

1.3 UTP JACK PANELS

a. Certificate of UL listing.

b. Performance characteristics for Attenuation, NEXT, PS NEXT, FEXT and Return Loss.

c. Certificate for termination pattern as per TIA/EIA 568 A and B.

2.0 After the system is fully supplied, installed, tested, Commissioned, successfully handed over and such certified by the Employer, the contractor should carry out his defects liability responsibilities as specified for a period of one year. During this period the Contractor shall carry out all repairs to the equipment and replace all defective components at his own cost.

3.0 TELEPHONE WIRING

Telephone Wiring should be carried out with 0.5 Sqmm Tinned Copper flexible wire through PVC Cassing Caping / Conduit. And terminated in the Jack on workstation and on the krones in the Krone Junction Box place at Server Room.
The Krone Junction Box should be joint less type.

ACCESS CONTROL SYSTEM

SCOPE OF WORK

1.1 The scope of work shall covers supply, installation, commissioning and testing of entire access control system meeting the intends of the specifications and drawings.

1.2 The system generally covers control of:
i) Normal door entry and exit.
ii) Emergency exits.
iii) Intruder alarms.

1.3 The scope of work shall also cover field training of two of the owner's representatives for a period of 7 working days on the operation and maintenance of the system during normal and emergency conditions.

2.0 STANDARDS

2.1 The systems shall be standard products of adequate field experience and UL and FM listed.

3.0 SUBMITTALS

3.1 The tenderer shall submit along with the tender.

i) A block diagram of the system proposed.
ii) Makes of various components and their catalogues.
iii) Comments on alternate proposals to and variances from the tender specification indicating the financial implication.

3.2 Upon award of the contract the following submittals shall be made

i) Final block diagrams.
ii) Layout drawings of all floors showing runs of conduits and cables.
iii) Layout of security command center (SCC).
iv) Catalogues and selections of all equipment and component.
v) Samples of wiring materials, cards with the in scripts and all visible components.

All submittals shall be got approved before procurement

4.0 SYSTEM FEATURES

4.1 The system shall be PC based distributed processing networking an Operator Station (OS) at the Security Command Center (SCC) with Field Controllers (FC) and Terminal Controllers (TC). The system shall be standard product of at least 10 years of experience providing with a select suite of hardware and peripherals, an integral solution to access monitoring and control, intrusion monitoring and alarm, emergency set-up and alarm, video badging / verification and closed circuit video system control, viewing and alarms.

4.2 The cardholder data, system parameters and operator actions shall be programmed into the OS on windows platform. The cardholder data bank shall have his code No, name, company, residential address, office and residence telephone numbers. The same card shall access the car park when authorized, but a separate data bank for cars shall be created showing make, model, and registration No, color and chassis No.

4.3 The data shall be intelligently down loaded to the network controllers like FC & TC and stored. Decision shall be made at all levels on the basis of the stored data and an on board clock. Should communication fail between the OS and FC & TC, the access control functions shall continue undisturbed and all events during that period shall be stored at the network controller level and up-loaded to the OS when normalcy is restored.

4.4 The system shall archive all events of permitted entries, refused entries, breaking, emergencies, communication loss system faults, system updates etc. All updated and changes in access levels, times and passwords shall be validated by naming the authority, and date and tile stamped. The capacity of the hard drives shall be adequate for at least 500,000 events or as specified, whichever is higher.

4.5 The system shall generate reportage of events, data and the firmware performance in any sequence or manner the operator desires. All reports shall be capable of being displayed, printed or stored for future reviews.

4.6 The system shall provide password protected levels to operators & supervisors and shall enable temporary accesses. All access levels shall be controlled by time periods and system shall provide adequate time slots and holidays schedules. The system shall have the capability of monitoring any card/cards on 'trace mode'.

4.7 Each card holder is to be assigned a code no and identified and sorted as visitor, escort or regular with validity period and access 'to' or 'to and from' Cards of all regular car holders shall have their company logo and photo ID. In the case of regular card holders who are assigned a space in the car park, the system shall include additional data of the car as specified. Visitor profiles shall comprise name, company, visiting person and company. All visitor cards shall have limited time validity.

4.8 Panick bars on emergency staircase doors shall be open able only on emergency release only and forced exits shall be reported as alarms. Guard tour units (GTU) if not activated on scheduled time shall be reported as alarms.

4.9 The system shall have graphic screens showing the locations of various access control and CCTV points in different colours showing points on action so that the operator is able to monitor the whole building from the security command centre.The system shall incorporate a Graphics Use Interface (GUI) for the control and viewing of the CCTV system. During an alarm, the operator shall be able to switch from access control task to alarm investigation using the cameras covering the event area.

5.0 SECURITY COMMAND CENTRE

5.1 The Security Command Centre (SCC) shall act as the hub of all security related matters and operations. The SCC shall house, among others, the following :

i) PC Pentium II 200 mh2 or higher 2 RS 232 ports, 32 M6 RAM, 2 Gb hard disc, 1.4 MD FDD, CD ROM drive, Mouse with pad, 101 key board, Modems, Windows-_____OS.

ii) 20" Colour monitor SUGA 1024 x 768 min. Resolution.

iii) 132 Col DM printer.

iv) Break Glass emergency button for all door access mode.

v) Panick / intruder alarm.

5.2 The command centre shall also accommodate the fire alarm, panel, multiplexers, switches, monitors etc. All hardware, shall be part of a custom built console/table with two operator swiveling chairs. 2# SB racks for tape storage, 2# steel cupboards for record storage. The SCC layout shall be compact, functional amd aesthetically designed. All cable entry points shall be maintainable with adequate and easy access.

6.0 FIELD CONTROLLERS

6.1 Field Controllers (FC) shall provide multitasking capability through distributed processing network and permit operator interface through Main Controller in the command centre using IS-232 or RS-485 protocol. The FC shall be capable of communicating with 16 addresses of Terminal Control Units (TCU) and have a minimum of reader capacity and 20000 cards. The field controller shall also be capable of accepting a minimum of 200 supervised inputs and 200 outputs from remote peripherals like PIR's, panick button etc. The FC shall be compatible with Access Control System and its access levels, variation of cards etc.

6.2 The Controller shall have adequate access levels, time zone parameters, antipassback facility and a minimum of 5000 event archiving buffer facility with back-up alert and alarm annunciation and suppression. Provision shall be available for necessary ports for programming, networking and printing.

6.3 In the event of loss of communication, the field controller should be capable of operating stand-alone without degrading the security levels specified. The field controller shall power all terminal controllers and other peripherals with a backup battery for full control operations for 8 hours and memory backup upto 48 hours.

6.4 Field controllers shall be totally enclosed in a galvanized sheet steel box with key lock and tamper switch.

7.0 TERMINAL CONTROLLERS

7.1 The Terminal Controller (TC) shall be capable of supporting two readers and shall also have two ancillary ports. Monitor (door contact) and control points shall be dedicated to each reader supported and shall also have two additional monitor and control points.

7.2 Failure of the system communication shall not degrade the TC in any manner affecting the system security. An adequate buffer memory shall maintain the event archiving capability.

7.3 TC's are either powered from the field controller or separately powered with a battery backup for 8 hour full load operation and 48 hour memory functions.

7.4 TC's shall be sheet steel enclosed and surface or recess mounted with a key operated lock and tamper switch. Wherever located outdoors, the TC's shall have IP 55 enclosure.

8.0 CARD READERS

8.1 General Requirements

8.1.1 Card Readers shall be one of the following types as specified in the schedule of work :

a) Magnetic stripe insertion or swipe.
b) Proximity
c) Key Pad activated
d) Biometric

8.1.2 Readers shall be weather proof, fire and vandal resistant metal enclosure mounted in a single gang galvanized electrical switch box and there shall be no distortion due to mounting on a metal stud or partition. Readers shall be powered from a terminal controller located upto 200 meters running length. Each reader shall provide a bi-directional data link with appropriate signals for

a) Card read
b) Entry Okayed
c) Entry denied
d) Communication loss
e) Reader tamper with active alarm
f) or any other supervision messages

Alarm should be suitable for remote indication cancellation and reset.

8.1.3 Readers may be provided for :

a) entry only & free exit
b) entry& exit through a push button
c) entry& exit through readers
Readers shall be wired from and to the controller, door lock and door contact using minimum of 0.8 mm copper screened cables drawn in galvanized steel concealed conduits.

8.1.4 All card readers shall be compatible with system controller and shall provide supervised communication.

8.2 SWIPE CARD READERS

8.2.1 Swipe Card Readers shall be capable of unerring and repeated reading of the magnetic stripe. Reader shall have non-wearing plastic slot meeting the general requirements and shall read at swipe speed of minimum 0.2 to the maximum of 1.2 mps with Wiegand formatted cards.

8.3 PROXIMITY CARD READERS

8.3.1 Proximity readers for indoor use shall have a read range of 15 to 20 cm or as required. Reader shall be capable of being installed on metal surface without affecting the performance.

8.3.2 Readers for car park shall have extended read range of 60 cm and shall have a weather proof enclosure. Readers shall be metal mountable and shall be mounted on a galvanized and powder coated steel frame with a 25mm diameter galvanized steel pipes for entry of power and communication cables. Readers shall be located in a manner that it is easy to reach and read from the car.

9.0 CARDS

9.1 Cards shall be of the size of a credit card with a key hole and made of a durable plastic. Each card shall have a unique and non repeated user code. Cards shall provide facility for the company logo or Photo ID of the user.

9.2 Cards shall be suitable either for swipe or proximity readers as specified and required. Same card should be capable of being used for car parking also wherever authorized.

10.0 DOOR HARDWARE

10.1 Door Hardware shall be long life UL approved multi-read type employing a stable magnet. The contact shall be corrosion resistant and hermetically sealed for fail-proof operation in dusty and high humid areas. The type of contacts shall be suitable for the door, metal or wooden and the application. The door contacts and the sensors (either the number or the type) shall be suitable for the type of doors (single/double) shown in the drawings.

10.2 The contacts shall be NO or NC as required with an appropriate gap spacing but not less than 15mm. Contacts shall not freeze or get stuck if the door is sparingly used. The contact rating shall be to suit the size of door and the power supply of the access control system. Door locks shall be electromagnetic mortise or cylindrical locks suitable for half hour rated wooden doors. Lock will remain open in ‘fail-safe’.

10.3 Wiring from the door contact and door lock to the controller and/or reader shall be minimum 0.8 mm shielded cable drawn in a concealed galvanized conduit.

10.4 Panic hardware shall be stainless steel bars suitable for single swing half hour rated fire rated wood or steel door complete with approved trim. Door width will be minimum 750 mm and a maximum of 1200mm.

10.5 Door closers shall be indoor/outdoor non-handed surface mounted hydraulically operated units with adjustable keys for regulating closing and latch speed. Door opening force shall be adjustable and for fire doors it shall not exceed 15 ibf (67) for delatching and farce for moving the door.

11.0 VEHICLE BARRIER GATES (VBG)

11.1 The VBG shall consist of an independent heavy duty steel cabinet with a heavy duty steel frame housing the operating mechanism and a microprocessor based control board. The cabinet and the support structure shall be of rust-inhibited steel or galvanized and painted to an appropriate colour.

11.2 The barrier gate shall be of wood swinging on precision bearing from the control cabinet. The gate shall be painted black and white or yellow as required. The gate shall be 3.5m in length and open/close in 5 seconds.

11.3 The control board shall operate from 240V AC 1Ph 50Hz mains supply and shall have its own voltage and frequency conditioner for trouble free operation during supply voltage and frequency variation. Facility shall be available for change over to manual mode in the event of power failure or control mal-function.

12.0 MISCELLANEOUS

12.1 Stiles shall be two way waist high units with a heavy duty durable aluminum hub, hydraulically controlled arm rotation with stainless steel arms and permanently lubricated bearings. The unit shall incorporate a card reader,

12.2 Guard Tour Unit (GTU) shall be a single key operated unit signaling

i) Guard attendance
ii) Overdue alarm and
iii) Discreet emergency alarm

Guard attendance shall register time of attendance and the overdue alarm shall signal non-attendance at the predetermined time. The emergency alarm shall be signaled by the discreet operation of the key in the wrong direction. Any other system meeting the intents is acceptable.

12.3 Hold-up switch (HUS) shall be a discreetly mounted unit with twin push buttons and a reset key. Pressing of both the buttons simultaneously shall set up alarm and locks-in. The HUS can be reset only by authorized person through a key operated switch.

12.4 Metal Detectors (MD) shall be electronic metal detecting devices built into a pass-thru arch (built by others) providing audio-visual signaling.

13.0 INSTALLATION

13.1 The installation shall be carried out in a work like manner. Network controllers shall be recessed in walls wherever possible. Readers shall be mounted in co-ordination with the interior designs. Enclosures for all panels, readers shall have IP 54 class of enclosure and any steel structural members used for mounting the peripherals shall be galvanized after fabrication.

13.2 Wiring shall be through wires drawn through concealed galvanized conduits. Wiring details shown below and on drawings are suggestive and tenderers may modify to suit their systems.

Key pad to Reader	Multi-core shielded
Reader to R. C.	2 Pair shielded
Door lock & door contact to TC	1 Pair shielded or unshielded
TC to FC	2 pair shielded

14.0 ACCEPTANCE TESTING

14.1 The system shall be tested and validated for its function as an integrated security system conforming to the intents of the specifications. The following functional tests shall be carried out in the presence of the engineer-in-charge.

Card Readers
- Card acceptance & entry clearance
- Card rejection
- Measure maximum distance of card reading (Proximity cards)
- Tamper switch

Doors
- Door contact activation
- Door closing forces for delivering & door opening
- Time to door shut and to latch
- panic/Fire escape hardware operation

Terminal Controller
- Communication Failure mode :

  Full mode operation
  Event recoding
  Supervising the monitoring circuits
- Power failure mode

  Full mode operation
  Event recoding
  Supervising the monitoring circuits

Field Controllers
- Same as for Terminal Controllers
- Uploading from TC's

Main Controller (SCC)
- Same as FC's
- Uploading from TC's
- Databank and retrieval

14.2 All the network components shall be tested 100% and results recorded Engineer in charge may make random verification of any of the components. All such verification shall be recorded.

15.0 MODE OF MEASUREMENT

15.1 The mode of measurement shall follow the schedule of work.

AIR CONDITIONING SYSTEM

1.0 INTRODUCTION

These specifications spell out the complete requirement for the proposed Air-Conditioning System for facility of UBI, Nariman Point

The interior of the facility is being done by consultant Architect M/s. Design Ideas, Mumbai. The facility is having the most modern interior correspondingly the equipment offered should also have it's own aesthetic values to suit the kind of the interior.

And therefore, such offers, indicating of highly efficient system, will be preferred.

The H.V.A.C. TENDER consists of HIGH WALL MOUNTED SPLIT/ CASSETE UNITS, WINDOW UNITS and modification of existing ducting to suit the newly designed Interiors.

The tender documents describe the Scope & Extent Of Work, Commercial Terms & Conditions, Specifications, Equipment Schedules, Bill Of Quantities, etc. It also comprises of scheme drawings. Tender submission for the job will be in two-bid system. The first part shall be techno-commercial bid in a separate envelope inside the envelope, name of work etc.

The system will be exposed to people from all walls of life and should be very safe against any type of hazard. The equipment should be designed for complete personal safety and ease of operation and maintenance.

The system will be catering to a most modern facility accordingly the system offered shall be suitable for continuous trouble free operation.

The facility is having no planning for ceiling fans accordingly the system selected should be highly efficient and trouble free with minimum trouble shooting time requirement.

In the event of an order being placed, the Contractor shall supply four copies each of the following within TWO WEEKS from the date of placement of the order-

a. Complete installation drawings showing details of the Indoor & Outdoor units, Refrigerant pipes and their sizes, electrical circuit diagrams, air distribution system etc.

b. Instruction books for operation, maintenance and servicing of all components.

c. List of recommended spares for two years of operation. M/s. Design Ideas ,Architects. will provide all the working drawings. However, for items of proprietary nature, working drawings and as built drawings shall be provided by the contractor, which will have to be approved by the Employer / Consultants.

Note

Before taking up the installation work at site the supplier should ensure that the installation drawings are approved by the Employer and Consultants.

2.0 ERECTION

This specification provides for the complete erection including minor civil works like wall cutouts for pipes, ducts etc. However, RCC foundations will have to be provided by the Employer.
The tenderer shall make his own arrangements for the storage of materials & their safe custody at site. The Contractor shall make his own arrangements for providing accommodation for his workmen at site.

The Contractor shall make good all damages to the Purchaser's building, property, equipments and articles, how so ever arising from the erection of the equipment. The Contractor shall indemnify and hold harmless the employer against all claims in respect of injury to any person how so ever arising out of the erection of the equipment in the course of such installation.

The Contractor shall discharge all his obligations under the Indian Workman's Compensation Act & E.S.I. in so far as it affects workmen in his employment.

The Contractor shall make his own arrangements for procuring the necessary labour, skilled and unskilled. He should conform to all local government laws and regulations concerning labour and their employment.

The Contractor and his employees will submit to the regulations in force for controlled entry into the premises where the air conditioning equipment is to be installed.

2.1 TRAINING OF PERSONNEL

The tenderer shall undertake to extend free training in operation and maintenance of Air Conditioning System offered by them to two technical persons of UBI,Nariman Point, mumbai. at their works for a period of 15 days and 15 days at the site of Employer. A certificate in this regard will have to be obtained from the Employer by the tenderer. The expenditure in respect of journey and stay necessary for this training will be borne by the successful tenderer. The choice of dates for training is to be decided in consultation with the Employer.

3.0 GENERAL

In order to avoid correspondence and clarification at a later date, tenderers are requested to indicate clearly all technical details and information asked for in the tender document.
Absence of any information on item will be assumed to be negative reply.

3.1 COMPLETENESS OF CONTRACT

All items whether specifically mentioned or not but which are usually required to make a complete working system and to ensure safe and satisfactory operation are to be provided by the Contractor without any extra charge. All appliances, apparatus, labour or material which may complete the work in accordance with the intent or purpose of the specifications shall be considered to be in the scope of work of the Contractor and shall be furnished without extra charge, as if fully described and called for in these specifications and shown in the drawings.

3.2 SPECIFICATIONS

The tenderer shall be deemed to have satisfied him before tendering as to the correctness of the capacities offered after making his own independent calculations. He must guarantee and demonstrate that the installation shall maintain the required indoor design conditions.

The specifications, drawings and other parts of this contract are to be considered as explanatory to each other or should anything appear in the one that is not described in the other or should any discrepancy or any misunderstanding arise on account of such discrepancy, or inconsistency, the site instruction given by the consignee shall prevail. The contractor shall execute the work according to such instructions/explanations given by the different part of this contract, even though such works are not specifically shown and described therein.

3.3 GUARANTEE

The tenderer shall guarantee against manufacturing and installation defects of all equipment supplied by him and carried out by him for a period of 12 months from the date when the equipment is accepted & taken over by the Employer for running purposes as specified. The tenderer shall confirm that he is agreeable to give this guarantee.

3.4 INSURANCE OF WORK

The tenderer will insure entire equipment and materials for transit / storage during erection & up to commissioning against losses, damages, due to fire, earth-quake, war, floods, insurrections etc. No claims will admissible on this account.

3.5 ITEMS INCLUDED IN THE CONTRACT

a. Entire equipment under supply as mentioned in the specification and shown in the drawings including installation, painting (as per the color code mentioned in Annexure-I), trial commissioning, final adjustments and testing.
b. Complete electrical work, including equipment wiring, control wiring, control panels etc. as specified. Employer shall make power with main switch available at main switchboard only. Further wiring from main switchboards to air conditioning equipment shall be in your scope of work.
c. Earthing sets and earth conductors.
d. Drain piping suitably insulated where necessary to the drain points in the equipment rooms, as per drawing.
e. First fill of refrigerant, oil or other contingent material.
f. Any loss of refrigerant, oil etc. due to the defects of the equipment or installation system during guarantee period shall be made good.
g. Operation of system until the time, system is handed over.

3.6 CO-ORDINATION

a. Work shall be carried out in confirmation with specifications, accompanying drawings and with the requirements of the general architectural and structural plans after approval by the Employer. The Contractor shall be responsible for taking actual measurements at site and effecting variations in the work in details, if required, to meet the site conditions. Such deviations shall however be subject to the approval of the Employer.

b. The Contractor shall also co-operate with other Contractors employed by the employer, compare plans, specification & time schedules & shall forward to the Employer copies of all correspondence & drawings so exchanged, failure to check plans and conditions will render the Contractor responsible for bearing the cost of any subsequent change.

3.7 DRAWINGS & LITERATURE / DOCUMENTATION AS PER ANNEXURE ATTACHED

a. Before proceeding with the work, the Contractor shall submit the following documents in duplicate -

i. Descriptive leaflets for all the equipment viz. indoor units, outdoor units, instrumentation Data, Electrical Components, Controls etc. having details of Capacity, Power Consumption, Efficiency, Performance Curves, best duty points, electrical details, mechanical details, dimensional details, operating weight etc.

ii. General layout and assembly drawings.

iii. Foundation drawings / frame details for all equipment.

iv. Operational and maintenance manuals / instruction book.

v. Trouble shooting details.

vi. All working drawings other than Consultants drawings.

vii. Detailed BAR CHART with activity schedules.

b. Approval by the Employer on the drawings shall not relieve the Contractor of any part of his obligation to meet all the requirements of the contract or of the correctness of his drawings.

The Contractor shall be responsible for and pay for all alterations of the work due to discrepancies or omission in the drawings or other particulars supplied by him, whether the Employer has approved such drawings.

c. Six copies of the comprehensive manual for use by the Employer before & during erection and subsequent operation & maintenance of the system shall be furnished after approval of the Contractor's drawings.

d. The Contractor shall furnish and install in the machine room a neatly prepared set of operating instructions securely framed.

e. The Contractor shall furnish information required in the tender document.

3.8 VARIATION OF WORK

The Employer shall have the power from time to time during the course of the work, by notice in writing to instruct the Contractor to make any alteration, omission, addition or variation in the work (herein after referred to as variation).

The difference in the cost of such variation shall be added to or deducted from the contract price as the case may be in accordance with the rates available in the contract, and if in the opinion of the contractor the variation would prevent him from meeting any of his obligations or guarantees in the contract, he shall give the same in writing failing which he shall not be entitled to any modifications in his obligations.

The variation required should never the less be carried out. The matter in difference shall be settled by arbitration.

The Employer shall give a reasonable notice to the Contractor to enable him to make arrangements for variation in work required by him.

3.9 NEGLIGENCE

If the Contractor shall neglect to execute the work with the due diligence or shall contravene the provisions of the contract, the Employer may give notice in writing to the Contractor, calling upon him to make good the neglect or contravention complained of.

If the Contractor fails to comply with such notice within a reasonable period, the Employer shall have the option and be at liberty to determine the contract and to take the work wholly or in part out of the Contractor's hands and complete it either by himself or his agents at a reasonable price. The Employer shall then be entitled to retain any balance payment which may otherwise be then due on the contract.

The cost of execution of such work as aforesaid will be adjusted against the payment due to the Contractor. If the cost of execution shall exceed the balance due to the Contractor, the Employer shall be at liberty to dispose off any of the Contractor's material or consumption system that may be at site and apply the proceeds for payment of the difference of such cost and recover the balance by process of law, or from any moneys due to the Contractor.

3.10 PROGRAM OF WORK & PROGRESS SCHEDULES

The Contractor shall submit along with the offer detailed schedules showing the program and the sequence in which the Contractor proposes to carry out the work with dates and estimated completion times for various parts of the work.

Such schedules shall be approved by the Employer before starting the work and shall be binding on the Contractor. If so required by the Employer, the Contractor shall furnish weekly progress reports.

3.11 INITIAL INSPECTION

a. The equipment offered shall be inspected by Employer/Consulting Engineers at site or at the Contractor's / Manufacturer's premises as per conditions.

b. The Employer or his authorized representatives shall have full power to inspect drawings of any portion of the work or examine the materials and workmanship of the system at the Contractor's works or at any place from which the material or equipment is obtained. Acceptance of any material or equipment shall in no way relieve the Contractor of his responsibilities for meetings the requirements of specifications.

c. All types of routine and type tests shall be carried out at the works of the Contractor or the manufacturers of the components. The Employer shall be free to witness any or all tests if he so desires. If required by the Employer, the Contractor shall permit his representative to be present during any of the tests.

d. Quality plan to be approved by Employer & Consultants.

3.12 EXTRA ITEM

Any kind of extra work not specifically mentioned in the bill of quantity and also other than the variable items, shall be approved based on nearest rates available for any other items closed to the nature of the work of the extra item or by rate analysis or by cost + 15% margin as approved by us.

3.13 COMPLETENESS OF ERECTION & COMMISSIONING OF THE SYSTEM & INSPECTION DURING ERECTION

a. Inspection during erection

The Employer is at liberty to inspect the system during installation and the Contractor free of cost shall remedy defects found.

The Contractor shall furnish all instruments and services needed for the tests. Any defects and deficiencies that are noticed during these inspections will have to be attended by the Contractor from time to time.

b. Completeness of erection & commissioning

Only after the entire installations are satisfactorily completed and the defects found during inspections rectified, the system will be ready for commissioning and then will be subjected to run at least 48 hours to demonstrate its satisfactory performance. The ODU capacities, inside conditions and IDU measurements of DB, WB of return and supply air will be checked. Only then the system will be deemed fit to pass on to seasonal tests.

3.14 SEASONAL TESTS & TAKE OVER

A. "INITIAL TEST" for Air-conditioning Equipment-
The System ready for seasonal tests of summer & monsoon. The contractor shall arrange to carry out various initial tests as detailed below in the presence of & to the complete satisfaction of the Employer or his representative. Any defects or shortcoming found during the tests shall be speedily rectified or made good by the Contractor at his own expenses.
The initial tests shall include but not be limited to-

i. Test & check the proper functioning & settings of switchgear, starters, contractors, safety controls and electrical motors etc, to ensure their proper functioning.

ii. Check the system against leaks in different circuits, alignment of motors, V-belt adjustment, control setting & all such other tests, which are essential for smooth functioning of the system.

iii. No load test to be carried out.
iv. Operate and check the proper functioning of all Components viz, compressors, pumps, air handling units, water softening plant etc.
v. Check and adjust the water flow in the system to the original design through such components viz, chiller and cooling coils etc.

vi. Check air distribution system and provide design air flow in all areas by adjusting the grilles, diffuser and dampers whether specifically shown on the drawing or not.

vii. Check the performance of the equipment on cooling cycle in summer and monsoon taking hourly DB and WB readings in all rooms non-stop for 72 hours (3 days) for trial test.

viii. The initial test performs in the above manner, shall be concluded with reports specifying completeness of all supplied equipments.

B. "CONTINUOUS TEST" for Air-conditioning Equipment-

In addition to the "Initial Tests" the Contractor shall also give continuous running tests of the system i.e. during peak summer and monsoon, when the ambient conditions are close to the design ambient conditions. Each test shall be for (3) three continuous days non-stop in case the System is normally used for 24 hours, otherwise, for the duration of the normal use of the system for six consecutive days. The first summer test may be taken on the completion of the installation and satisfactory commissioning provided the ambient temperature and

Humidity are near their peaks. The Employer / Consultant will provide 3-Days notice for conducting the tests.

The Contractor shall provide all necessary tools, instruments, gauges, flow meter, anemometer etc., as may be required for conducting the various tests. He shall also provide necessary lubricants, refrigerant gas etc. and required personnel for the tests. However, the Employer shall provide water and power for the tests.

C. "PERFORMANCE TEST" –

After erection of various air handling units and fan coil Units, all the units shall be tested for their rated capacity. Following parameters have to be assured by the contractor-

i) TR PRODUCED:

A) By airflow, temperature & humidity of air.
B) By water circulation.

ii) CFM specified at given temp. & R. H. conditions.

iii) Static pressure.

iv) Electric power consumption for each equipment.

v) Any other utilities required shall also have to be measured compared to the committed consumption.

vi) Consumption of items whatsoever nature, not specified in the tender shall be considered as extra consumption and will disqualify the performance test.

vii) Delta T and Delta P to be checked and noted.

viii)

Canvass Temperature	-	°C / °F
Grille Temperature	-	°C / °F
Return Air Temperature	-	°C / °F

3.15 REJECTION OF DEFECTIVE SYSTEM

a. If the completed system or any portion thereof before it is taken over is found defective or fails to fulfill the intent of the specifications, the Contractor shall on receipts of notice from the Employer forthwith make defective system good. Should he fail to do so within a time considered reasonable by the Employer, The Employer may reject and replace at risk, and expense to the Contractor, the whole or any portion of the system, which is defective or fails to fulfill the requirement of the contract.

b. The Employer shall have the right to operate all equipment, if in operating condition, whether or not such equipment have been accepted as complete and satisfactory.

3.16 TAKING OVER

After completion of the installation and satisfactory commissioning of the system, the same shall be taken over by the Employer.

3.17 WARRANTY

Period of 12 months begins from the date of take over.

3.18 CLEAN-UP OF THE WORK SITE

During erection the Contractor shall at all times keep the working and storage areas free from waste or rubbish. On time-to-time, as directed by Employer in Charge, he shall remove all temporary structures, debris, insulation bitumen, EPS wastage and leave the premises neat and clean in a satisfactory condition.

3.19 WORK AND SERVICES TO BE PROVIDED BY THE EMPLOYER

Unless otherwise agreed, the Employer shall provide the following work and services to the Contractor for carrying out the erection work.

a. All major masonry/building work such as construction of platform and air handling unit rooms, foundation for all equipment trenches for pipes, cables, masonry shafts and ducts. The Contractor shall provide minor masonry work such as breaking and making good of openings for pipes and cables. The Contractor shall carry out chipping of holes and grouting of bolts/anchors.

b. The Employer shall provide raw water connection to the expansion tank and cooling tower basin.

c. Electrical cable of sufficient length up to the entire switchboard shall be supplied and laid by the Employer with suitable earthling. The Contractor shall connect the cable to the incoming side of all the panels on the main switch, which shall be supplied by him.

d. False ceiling and boxing for concealing pipes etc.

e. Electrical power for welding machines for site work.

f. Wooden frame for grilles and diffusers.

3.20 WORK AT SITE

Access to the work shall be allowed only to the Contractor and his duly appointed representatives. The Contractor shall not object to the execution of work by other Contractors or tradesman and shall afford them every facility for execution of their works simultaneously with his own.

3.21 DEFECT LIABILITY

a. The Contractor shall guarantee that all material, machinery and components, supplied, fabricated, designed and installed by him shall be free from defects due to faulty material and/or workmanship and that the system shall perform satisfactorily, and the efficiency of the system and all the components shall not be less than the values laid down in the specifications and the capacities shall be at least equal to those specified. The period of the guarantee shall be twelve (12) months from the date of commissioning of one month after the successful final test whichever is later, during which period any or all components found to be defective shall be replaced or repaired free of charge and shortcoming found in the system as specified shall be removed at no extra cost.

The Contractor shall make good any loss of refrigerant and oil at his own cost. The Contractor shall provide the necessary personnel and tools for fulfilling the guarantee.

b. If the defects are not remedied within a reasonable time, the Employer may proceed to get the defects remedied at the Contractor’s risk & expenses without prejudices to his right.

c. The Contractor shall without any cost to the Employer carry out during the guarantee period all routine and special maintenance of the system and attend to any defects that may arise in the operation of the system.

3.22 IMPORT LICENSE

The Employer shall not provide any import license and / or permit for controlled material.

3.23 CONTRACTOR'S CONDITIONS OF CONTRACT

Conditions of contract in Contractor's offer will be treated as null and void unless specifically agreed by the Employer in writing.

3.24 SUBMISSION OF TENDER

The tendered shall make out his offer in two parts as TECHNICAL and COMMERCIAL.

The technical part shall not carry any indications of the price, but the tenderer shall give details in technical part anything he would like to state/offer. In other words technical parts of the offer will detailed his offer as called for in various sections.

The commercial part shall have nothing but the prices indicated in. Any other qualifying clauses etc. in this part will not be considered. In other words the commercial part will only carry a cross reference to technical part and detail the various prices individually.

The Technical part and the Commercial part of the offer will both be submitted in separate covers duly sealed to client. One copy of technical part will be submitted to the consultants directly on the due date of tender.
Both the above mentioned envelopes shall be enclosed and submitted in another large size envelope duly marked and sealed. In case of any alternate offer submitted these would also be presented both in Technical part and Commercial part.
Tenderer shall reduce to the minimum, the enclosure of printed general conditions to avoid confusion.

Tenderer shall submit BAR CHART of the project along with the tender.

3.25 SAFETY

All equipment shall be complete with approved safety devices wherever a potential hazard to personnel exists and with provision for safe access of personnel to and around equipment for operational and maintenance functions.

These items shall include not only those usually furnished with elements of machinery but also covers, guards, crossovers, stair ways, ladders, platforms, handrails etc. which are necessary for safe operation of the system. The tenderer shall include for all safety devices including but not limited to the following items-

a. Belt Guards

Belt guards shall be designed with approved provision to facilitate belt inspection, adjustment, replacement and general servicing.

b. All couplings are to be covered with an approved guard, fabricated from welded plate and structural steel.

c. Access Ladders and Platforms

Provisions shall be made for access ladders (particularly for cooling tower) and platforms with handrails as necessary to provide operator's safe access to inspection.

2.0 GENERAL DESCRIPTION / BASIS OF DESIGN

5.1 SCOPE

The work stated in these specifications together with Consultant's drawings, cover the design, manufacture, testing performance of manufacturer's work, delivering goods at site, handling at site, installation, commissioning & carrying out performance tests at site of the complete equipment required for the HVAC System for M/s.UBI,Nariman Point.

5.2 BASIS OF DESIGN

Project : M/s. UBI, NARIMAN POINT

Application : Comfort Air-Conditioning & Active Ventilation.

ROOF

The exposed roof of the building will be insulated by air conditioning contractor / insulation contractor in such a manner so as to provide an overall transmission factor of 0.12 BTU / hour-FT2 / or better.

WORK TO BE DONE BY AIR CONDITIONING CONTRACTOR

The successful air conditioning contractor will provide complete air conditioning & ventilation system work as detailed in the tender BOQ and as specified in the technical specification.

5.3 POWER SUPPLY

415 V, 3 Ph. 7 Neutral 50 c/s, 4-wire A.C. elec. Power supply including earthing at the main panel will be made available by the Employer.

5.4 DESCRIPTION OF THE WORK TO BE CARRIED OUT

The successful tenderer's scope shall be carrying out complete high and low side work as per BOQ. The scope of work includes Supply, Installation, and Testing& Commissioning of system.
The units shall be located as per tender drawings. The electrical power required for outdoor units shall be made available at the main electrical panel supplied by you as required, this panel shall be suitable for outdoor application & confirming IP-55 construction. For Indoor units & ventilation fans single phase power required shall be provided at units from Floor Distribution Board however required control cabling between indoor and outdoor units shall be done by you. The power and water required for installation, erection and commissioning of the system shall be made available by client.

3.0 SPECIFICATION OF EQUIPMENT / MATERIAL AND INSTALLATION STANDARDS

6 REFRIGERANT PIPING

The indoor and outdoor units shall be connected with refrigerant piping. All piping connections for the units should be performed inside the unit. The refrigerant piping should be insulated with Tubular Nitrile rubber of minimum 12 MM thickness. Lastly, cover up the pipe sections with the help of 36 G Aluminium sheets on straight pipes and 28 G Al. sheet on bends, tees, valves etc.

DRAIN PIPING

Condensate from the evaporator unit shall be drained through properly installed drain piping designed to prevent any accumulation of condensate in the drain pan.

Drain piping shall be made of Kitec type for pipe sizes upto 1" dia and of G. I. for pipe sizes larger than 1" dia of 6 Kg/Sq. cm. pressure rating with water tight threaded connections, leading from the room unit to a suitable drain point. Complete drain piping shall be made leak proof and water tight by means of precise installation and the use of leak proof sealant / adhesives. Insulation of drain piping should be tubular Nitrile rubber of 12.5 mm thickness.

TESTING

1. After completion all such system shall be tested for leakage.

2. The entire air distribution system shall be balanced to supply the air quantities as required in various zones and rooms to maintain the specified room conditions. The final shall be recorded and submitted to the Consultant for approval before acceptance and taking over of the entire system by the Employer.

PAINTING

Angle iron flanges, stiffeners, hangers and supports shall be painted with 2 coats of anti rust primer and those remaining uncovered shall be further painted with 2 coats of synthetic enamel paints of black color.

6.4 ELECTRICAL WORK

The electrical work will be carried out as per IE rules. The Employer will provide incoming cable with earthing near split units panel supplied by the contractor. The further distribution including power cabling (1100 V Gr.), control cabling (650 V Gr.) and earthing GI shall be carried out by the contractor. The electrical panel required for all the split units will also be provided by the contractor. The power cabling will be of aluminium whereas the control cabling will be of copper. The electrical work will be carried out by the contractor as per the approved drawings.

ANNEXURE – I

1.0 TESTING OF AIR CONDITIONING SYSTEM

1.1 Routine and types tests for various items of equipment shall be performed at the contractor's work and the test certificates furnished. Functional test shall be conducted at site.

1.2 The performance test to determine whether OR not the full indent of the specification is met shall be conducted by the contractor. After notification to the Employer's that the installation has been completed and the plant has run continuously for a period of at least two weeks, the contractor shall conduct under the direction of the Consultant's and in the presence of Employer's representatives test, such test as specified to establish the capacity of various equipment supplied and installed by the contractor.

1.3 The contractor shall operate test and adjust the air conditioning system units, fans, motors, all air conditioning appliances including adjustment of regulators, dampers etc.

1.4 All test equipment, labour, operating personnel, oil and refrigerant required for this test shall be furnished by the contractor to enable the plant to be put in continuous running test for a period of 3 days after all other tests and adjustments hove been made.

The contractor will be provided with electrical power for testing by the client. The performance test shall be conducted during peak summer and peak monsoon.

2.0 PROCEDURE

2.1 Design Conditions

The inside and outside conditions will be recorded for 48 hrs. (2 days) duration on hourly basis.The outside and inside Dry Bulb and Wet Bulb temperatures shall be recorded by the means of a sling psychrometer with mercury thermometers. The relative humidity shall be computed from the psychometric chart.The inside Dry Bulb Temp. And relative humidity shall fall within the specified limits.

2.2 CAPACITY OF THE SYSTEM

The following aspects shall be checked before conducting the performance tests

1) The outside conditions shall be as close to the design values as possible. The tests shall be arranged during the peak summer and monsoon.
2) The internal loads of various spaces shall be close to the design values as far as possible.
3) The system shall be fully loaded and the temperatures stabilized.
4) Hourly readings of airflow shall be recorded b a calibrated flow meter.
5) Hourly readings of pressure, temperature, electrical current. Voltage and power factor shall be properly recorded.

The capacity of the system and various other equipment and accessories shall be ascertained as follows.

2.3 Cooling coil of Indoor units

The flow of air over the cooling coil will be measured by recording the velocity of air across each filter placed before the cooling coil. The velocity shall be measured by means of end anemometer.

4.0 FUNCTIONAL TESTS

4.1 Electrical equipment

i) All the cables shall be tested for continuity and absence of cross phasing, Insulation resistance between the phase conductors and earth shall be measured with the help of a 500 v megger,

ANNEXURE – II

MODE OF MEASUREMENT

1.0 The following measurement code shall apply to this contract

1.1 PIPING

a) Piping will be measured in running lengths (meters)

b) No special measurement of bends, elbows, reducer, expanders, tees, cross etc. will be made. All such fittings/accessories will be treated as normal piping.

c) The length of the piping including accessories and fittings will be measured along the enter line of piping.

B) Electrical Work

a) All cables shall be measured in running lengths as finally installed at site. No wastage measurement will allow.

b) Control Cable / wiring for a plant inside the plant room shall be treated as a lump sum item.

c) All measuring instruments indicating lamps etc shall form part of the equipment specified and no separate measurement shall be made for such items.

Note – Contractor should note that all the measurement should be carried out strictly as per mode of measurement stated above. However, all the work should be carried out as per relevant I. S. codes specified.

Note:

•	**The bidding Contractor should have their registered branch office in Mumbai Region and Should have executed at-least one similar work in Mumbai.**
•	**At least One qualifying work mentioned by the Contractor in Bid is to be from Govt./Public Sector/Banks.**
•	**Exemption of tender fees / EMD to MSME/NSIC/SSI registered firms will be allowed on submission of copy of Registration (Attested)**
•	**Phase wise floor will be handed over for work to the contractor. Also the contractor to be responsible for any other statutory approvals/ clearances apart from plan approval from MMRDA & CFO.**
•	**The Rates mentioned in tender are all Basic Rates.**
•	**Prequalification Criteria –Integrity Pact must be filled in and signed by the bidder in the prescribed format only and submitted along with the tender document.**
•	**Bank Solvency can be addressed to "Whom so ever it may concern" & not specifically addressed to UBI. It should not be older than 6 months.**
•	**All labour/workers should have valid Adhar Card for their identity and daily entry in Central Office Building. Electrical and Fire fighting Contractors should have local valid Licenses.**
•	**Material dismantled to be stacked in the Basement**
•	**TDS Certificates to be attached of completed Projects.**
•	**The contractor to erect a temporary partition between the work area & the office area at his own cost. Also the contractor to be responsible for any other statutory approvals/ clearances apart from plan approval from MMRDA & CFO.**
•	**Contractors are allowed to work overnight with the necessary statutory clearances if any to be taken by the contractor. office hours noise making work to be avoided. Full day and night will be available for work on 2nd,4th Saturday, Sunday and bank holiday.**
•	**The contractor shall be responsible for obtaining all the necessary statutory permissions for the same.**
•	**The Contractor to depute a full time Supervisor, who shall be a degree civil engineer with minimum 10 years' experience in managing similar Interior projects. The contractor should submit the necessary credentials of such engineer to UBI for scrutiny & approval. Such engineer shall be deputed on the site full time for the full**

	duration of the project & shall report daily to the concerned person in charge from UBI.
•	**The minimum salary requirement to be considered for such engineer shall be Rs 50,000/- (Rupees Fifty Thousand only) per month.**
•	**If it is found that the work on site is being carried out in absence of such an engineer, the contractor shall be fined Rs 5,000/- per day for such non-compliance. If such non-compliance is observed more than 10 times, UBI reserves the authority to ask the contractor to cease work on the site & terminate the contract without any explanation whatsoever & the termination process as per the tender document shall follow.**
•	**The contractor shall be allocated space for storing 1 truck load of debris either in the basement or on the ground. The arrangement for disposing off the same shall be of the contractor.**
•	**One Lift available for Raw Material movement before 9 am in morning and after 7 pm at night within the weight limit capacity of that lift. If the Lift is damaged due to over loading by the contractor, the repair charges of the lift shall be recovered from the contractor's bill.**
•	**Work completion certificate for the actual work executed mentioned in the bid is required from the client's side.**
•	**Electricity, water supply will be Free at one point -to be distributed at cost of contractor.**
•	**Electrical and Fire fighting Contractors should have local valid Licenses and should be able to submit Govt. certificates like B-Form etc.**
•	**No consideration shall be made by the Bank for any local issues.**
•	**All Windows on External Face-if required Scaffoldings to be provided and rates to be considered. No extra cost will be given.**
•	**Confidential letter from the client is not required for the Technical Bid. Only certificate & the current contact details of the relevant person from the client's side shall be enough.**
•	**Equivalent brand of material can be used than that mentioned in the Make of Materials with the necessary test reports & the prior approval of the consultant/ UBI. All materials to be used should be ISI approved.**
•	**Any Material from supplier should be accompanied by Certificate from Company and Supported by Purchase bills.**
•	**Brand mentioned in the individual specifications in the BOQ supersedes the one mentioned in the Makes of materials.**
•	**All pipes G.I./PVC etc. are to be concealed in wall/floor/false ceiling etc. properly by contractor.**
•	**All construction debris, salvageable material shall be disposed/ cleared as per local municipal laws and the cost to be included in rates. No extra payment shall be granted for this apart from the tender rate.The contractor shall be allocated space for storing 1 truck load of debris either in the basement or on the ground.The arrangement for disposing off the same shall be of the contractor.**
•	**All entries, Rate quoted etc. in Financial Bid should be Hand written only. Printed copies will not be accepted.**
•	**As built drawing of electrical and AC work to be submitted by the Vendor after completion of Project.**
•	**AC Piping to be verified on site and outdoor machines location longest position to be considered.**
•	**No crushed sand will be permitted, only River sand is allowed.**

•	**Partition Measurement upto ceiling to be considered for billing, partition above ceiling without finish to be included in the partition rate.**
•	**No extra rate for veneer grooves /pattern will be given**
•	**All ceiling surfaces horizontal and Vertical to be paid in Sqft .No Rft items.**
•	**The groove above skirting in POP shall be included in skirting cost, no extra payment shall be made. Group matching veneers to be used whenever possible.**

Annexure-A

Tender Ref. No.:……

Integrity Pact

Whereas Union Bank of India having its registered office at Union Bank Bhavan, 239,Vidhan Bhavan Marg, Nariman Point, Mumbai, India- 400 021 acting through its ……..Department, represented by General Manager / Dy. General Manager hereinafter referred to as the Buyer and the first party, proposes to procure (Name or category of the Equipment, services, etc.), hereinafter referred to as Stores and / or Services.

And

M/s……., represented by…… , Chief Executive Officer (which term, unless expressly indicated by the contract, shall be deemed to include its successors and its assignee), hereinafter referred to as the Bidder/ Seller and the second party, is willing to offer/ has offered the Stores and / or Services.

2. Whereas the Bidder / Seller is a private company/public company /partnership/ registered export agency, constituted in accordance with the relevant law in the matter and the Buyer is a Public Sector Undertaking and registered under Companies Act 1956. Buyer and Bidder/Seller shall hereinafter be individually referred to as "Party" or collectively as the "parties", as the context may require.

3. Preamble

Buyer has called for tenders under laid down organizational procedures intending to enter into contract/s for supply / purchase / etc of……and the Bidder / Seller is one amongst several bidders/Proprietary Vendor/Customer Nominated Source/Licensor who has indicated a desire to bid/supply in such tendering process. The Buyer values and takes primary responsibility for values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness / transparency in its relations with its Bidder(s) and / or Seller(s).

In order to achieve these goals, the Buyer will appoint Independent External Monitor(s) (IEM) in consultation with Central Vigilance Commission, who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

4. Commitments of the Buyer.

4.1 The Buyer commits itself to take all measures necessary to prevent corruption and fraudulent practices and to observe the following principles:-

i) No employee of the Buyer, personally or through family members, will in connection with the tender, or the execution of a contract demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

ii) The Buyer will during the tender process treat all Bidder(s) / Seller(s) with equity and reason. The Buyer will in particular, before and during the tender process, provide to all Bidder(s) / Seller(s) the same information and will not provide to any Bidder(s)/ Seller(s) confidential / additional information

through which the Bidder(s) / Seller(s) could obtain an advantage in relation to the process or the contract execution.

iii) The Buyer will exclude from the process all known prejudiced persons.

4.2 If the Buyer obtains information on the conduct of any of its employees which is a criminal offence under the Indian legislation Prevention of Corruption Act 1988 as amended from time to time or if there be a substantive suspicion in this regard, the Buyer will inform to its Chief Vigilance Officer and in addition can initiate disciplinary action.

5. Commitments of the Bidder(s) / Seller(s).

5.1 The Bidder(s)/ Seller(s) commit himself to take necessary measures to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

i) The Bidder(s)/ Seller(s) will not, directly or through any other persons or firm, offer promise or give to any of the Buyer's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage during the tendering or qualification process or during the execution of the contract.

ii) The Bidder(s)/ Seller(s) will not enter with other Bidders / Sellers into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

iii) The Bidder(s)/ Seller(s) will not commit any offence under the Indian legislation, Prevention of Corruption Act 1988 as amended from time to time. Further, the Bidder(s)/ Seller(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Buyer as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

iv) The Bidder(s)/Seller(s) shall ensure compliance of the provisions of this Integrity Pact by its sub-supplier(s)/ sub-contractor(s), if any. Further, the Bidder/Seller shall be held responsible for any violation/breach of the provisions by its sub-supplier(s)/sub-contractor(s).

5.2 The Bidder(s)/Seller(s) shall ensure compliance of the provisions of this Integrity Pact by its sub-supplier(s)/ sub-contractor(s), if any. Further, the Bidder/Seller shall be held responsible for any violation/breach of the provisions by its sub-supplier(s)/sub-contractor(s).

5.3 The Bidder(s)/ Seller(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences

5.4 Agents / Agency Commission:

The Seller/Bidder confirms and declares to the buyer that the Seller/Bidder is the original manufacturer or authorized distributor / stockist of original manufacturer or Govt. Sponsored / Designated Export Agencies (applicable in case of countries where domestic laws do not permit direct export by OEMS) of the stores and / or Services referred to in this tender/ offer / contract / Purchase order and has not engaged any individual or firm, whether Indian or Foreign whatsoever, to intercede, facilitate or in any way to recommend to Buyer or any of its functionaries, whether officially or unofficially, to the award of the tender / contract / purchase order to the Seller/Bidder; nor has any amount been paid, promised or intended to be paid to any such individual or firm in respect of any such intercession, facilitation or recommendation. The Seller/Bidder agrees that if it is established at any time to the satisfaction of the Buyer that the present declaration is in anyway incorrect or if at a later stage it is discovered by the Buyer that the Seller/Bidder has engaged any such individual / firm, and paid or intended to pay any amount, gift, reward, fees, commission or consideration to such person, party, firm or institution, whether before or after the signing of this contract / purchase order, the Seller/Bidder will be liable to refund that amount to the Buyer. The Seller will also be debarred from participating in any RFQ / Tender for new projects / program with Buyer for a minimum period of five years. The Buyer will also have a right to consider cancellation of the Contract / Purchase order either wholly or in part, without any entitlement or compensation to the Seller/Bidder who shall in such event be liable to refund agents / agency commission payments to the buyer made by the Seller/Bidder along with interest at the rate of 2% per annum above LIBOR (London Inter Bank Offer Rate) (for foreign vendors) and Base Rate of SBI (State Bank of India) plus 2% (for Indian vendors). The Buyer will also have the right to recover any such amount from any contracts / Purchase order concluded earlier or later with Buyer.

6. Previous Transgression

6.1 The Bidder /Seller declares that no previous transgressions have occurred in the last three years from the date of signing of this Integrity Pact with any other company in any country conforming to the anti corruption approach or with any other Public Sector Enterprise in India that could justify Bidder's/ Sellers' exclusion from the tender process.

6.2 If the Bidder / Seller makes incorrect statement on this subject, Bidder / Seller can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason without any liability whatsoever on the Buyer.

7. Company Code of Conduct

Bidders / Sellers are also advised to have a company code of conduct (clearly rejecting the use of bribes and other unethical behavior) and a compliance program for the implementation of the code of conduct throughout the company.

8. Sanctions for Violation

8.1 If the Bidder(s)/ Seller(s), before award or during execution has committed a transgression through a violation of Clause 5, above or in any other form such as to

put his reliability or credibility in question, the Buyer is entitled to disqualify the Bidder(s)/ Seller(s) from the tender process or take action as per the procedure mentioned herein below:

i) To disqualify the Bidder / Seller with the tender process and exclusion from future contracts.

ii) To debar the Bidder / Seller from entering into any bid from Buyer for a period of two years.

iii) To immediately cancel the contract, if already signed / awarded without any liability on the Buyer to compensate the Bidder /Seller for damages, if any. Subject to Clause 5, any lawful payment due to the Bidder/Seller for supplies effected till date of termination would be made in normal course.

iv) To encash EMD / Advance Bank Guarantees/ Performance Bonds / Warranty Bonds, etc. which may have been furnished by the Bidder / Seller to the extent of the undelivered Stores and / or Services.

8.2 If the Buyer obtains knowledge of conduct of a Bidder/ Seller or of an employee or a representative or an associate of a Bidder / Seller which constitutes corruption, or if the Buyer has substantive suspicion in this regard, the Buyer will inform to its Chief Vigilance Officer.

9. Compensation for Damages

9.1 If the Buyer has disqualified the Bidder(s) / Seller(s) from the tender process prior to the award according to Clause 8, the Buyer is entitled to demand and recover the damages equivalent to Earnest Money Deposit in case of open tendering.

9.2 If the Buyer has terminated the contract according to Clause 8, or if the Buyer is entitled to terminate the contract according to Clause 8, the Buyer shall be entitled to encash the advance bank guarantee and performance bond/ warranty bond, if furnished by the Bidder / Seller, in order to recover the payments, already made by the Buyer for undelivered Stores and / or Services.

10. Price Fall Clause

The Bidder undertakes that it has not supplied/ is not supplying same or similar product/systems or subsystems at a price lower than that offered in the present Bid in respect of any other Ministry/Department of the Government of India or PSU or Coal India Ltd and its subsidiaries during the currency of the contract and if it is found at any stage that same or similar product/ Systems or Subsystems was supplied by the Bidder to any other Ministry / Department of the Government of India or a PSU or any Public Sector Bank at a lower price during the currency of the contract, then that very price will be applicable to the present case and the difference in the cost would be refunded by the Bidder to the Buyer, if the contract has already been concluded."

11. Independent External Monitor(s)

11.1 The Buyer has appointed Independent External Monitors for this Integrity Pact in consultation with the Central Vigilance Commission (Names and Addresses of the Monitors to be given in RFQ).

11.2 As soon as the Integrity Pact is signed, the Buyer shall provide a copy thereof, along with a brief background of the case to the Independent External Monitors.

11.3 The Bidder(s) / seller (s), if they deem it necessary, may furnish any information as relevant to their bid to the Independent External Monitors.

11.4 If any complaint with regard to violation of the IP is received by the buyer in a procurement case, the buyer shall refer the complaint to the Independent External Monitors for their comments / enquiry.

11.5 If the Independent External Monitors need to peruse the records of the buyer in connection with the complaint sent to them by the buyer, the buyer shall make arrangement for such perusal of records by the Independent External Monitors.

11.6 The report of enquiry, if any, made by the Independent External Monitors shall be submitted to MD & CEO, Union Bank of India, Union Bank Bhavan, Vidhan Bhavan Marg,Nariman Point, Mumbai -21 within 2 weeks, for a final and appropriate decision in the matter keeping in view the provision of this Integrity Pact.

12. Law and Place of Jurisdiction

This Integrity pact is subject to Indian Laws, and exclusive Jurisdiction of Courts at Mumbai, India.

13. Other Legal Actions

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

14 Integrity Pact Duration

14.1 This Integrity Pact begins when both parties have legally signed it. It expires for the successful Bidder / Seller 10 months after the last payment under the contract, and for all other Bidders / Sellers within 6 months from date of placement of order / finalization of contract.

14.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this Integrity Pact as specified above, unless it is discharged / determined by MD & CEO, Union Bank of India.

14.3 Should one or several provisions of this Integrity Pact turn out to be invalid, the remainder of this Integrity Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

15. Other Provisions

15.1 Changes and supplements need to be made in writing. Side agreements have not been made.

15.2 The Bidder(s)/Seller(s) signing this IP shall not initiate any Legal action or approach any court of law during the examination of any allegations/complaint by IEM and until the IEM delivers its report.

15.2 In view of the nature of this Integrity Pact, this Integrity Pact shall not be terminated by any party and will subsist throughout its stated period.

15.4 Nothing contained in this Integrity Pact shall be deemed to assure the Bidder/ Seller of any success or otherwise in the tendering process.

16. This Integrity Pact is signed with Union Bank of India exclusively and hence shall not be treated as precedence for signing of IP with MoD or any other Organization.

17. The Parties hereby sign this Integrity Pact at _____on_____ (Seller/Bidder) and _____on_____ (Buyer)

BUYER	BIDDER* / SELLER*
Signature:	Signature:
General Manager/ Dy G M,	Authorized Signatory (*)
Union Bank of India,	
……Division	
Date:	Date:
Stamp:	Stamp:
Witness	Witness
1._____	1._____
_____	_____
2._____	2._____
_____	_____

(*) – Authorized signatory of the company who has also signed and submitted the main bid

Annexure-B

INDEMNITY BOND

(On Non-Judicial Stamp Paper of Rs. 100/- duly Notarized)

KNOW all men by these presents that I/We _____ do hereby execute Indemnity Bond in favour of the Union Bank of India on this _____ day of _____2024.

WHEREAS **Union Bank of India, (address of the office)Union Bank Bhavan, 239,Vidhan Bhavan Marg, Nariman Point, Mumbai - 400 021,** have appointed _____ as the Contractors for their Proposed Union Bank of India Project at Ground floor of Central Office.

THIS DEED WITNESS AS FOLLOWS:

I/We _____, duly authorised by Resolution dated..... hereby do Indemnify and save harmless Union Bank of India, _____ against

1. Any third party claims, civil or criminal complaints/liabilities, site mishaps and other accidents or disputes and/or damages occurring or arising out of any mishaps at the site due to faulty work, negligence, faulty construction and/or for violating any law, rules and regulations in force, for the time being while executing/executed works by me/us.

2. Any damages to any of articles, fixtures, fittings, infrastructure of bank, loss or expenses to Bank due to or resulting from any negligence or breach of duty on the part of me/us or my sub contractor's if any, servants or agents.

3. The Contractor shall at all times indemnify and keep indemnified the Bank against all losses, claims, damages or compensation including under the provisions of the payment of the Wages Act 1936, Minimum Wages Act 1948, Bank's Liability Act 1938, Workman's Compensation Act 1923, the Maternity Benefit Act 1961,the Bombay Shops and Establishments Act1947, Industrial Disputes Act 1947, and Contract Labour (Regulation and Abolition) Act 1970 and Employees State Insurance Act 1948, Motor Vehicles Act 1988 or any modifications thereof or under any other law relating thereto and rules made there under from time to time or as a consequence of any accident or injury to any workman or other person in or about the work whether in the employment of the Bank or Contractor or not, and also against all costs, charges and expenses of any suit, action or proceedings whatsoever out of such accident or injury or combination of any such claims arising out of and in the course of the execution of the contract.

4.Any claim by an employee of mine/ours or of sub contractors if any, under the Employee's Compensation Act and Owners Liability Act, 1939 or any other law, rules and regulations in force for the time being and any Acts replacing and/or amending the same or any of the same as may be in force at the time and under any law in respect of injuries to persons or property arising out of and in the course of the execution of the contract work and/or arising out of and in the course of employment of any workman/employee.

5.All claims in respect of patent rights, royalties, damages to buildings, roads or members of public in the course of execution of work , noncompliance of any statutory provision at any point of time and shall keep the Bank saved harmless and indemnified in all respects from such actions, costs , litigations, expenses, fees.

Any act or omission of mine/ours of sub-contractor's if any, our/their servants or agents which may involve any loss, damage, liability, civil or criminal action.

IN WITNESS WHEREOF THE _____ has set his/their hand on this day of _____ 2024.

SIGNED AND DELIVERED BY THE

NAME AND ADDRESS

AFORESAID _____ (Contractor)

IN THE PRESENCE OF WITNESSES:

1.

2.

Annexure-C

ARTICLES OF AGREEMENT

(Draft will be modified by Bank's Law Officer as per requirement)

ARTICLES OF AGREEMENT made at _____ this _____day of _____ Two Thousand and twentyfour.

BETWEEN

UNION BANK OF INDIA, a body corporate constituted under the Banking Companies (Acquisition and Transfer of Undertakings) Act, 1970 and having its Office at Central Office 239, Vidhan Bhavan Marg, Nariman Point, Mumbai – 400 021represented by…… hereinafter referred to as the Bank (which expression shall, unless it be repugnant to the context or meaning thereof, include its successors and assigns) of the **ONE PART**

AND

MESSRS _____, having its registered office at _____ _____, herein afte referred to as the Contractor (which expression shall mean and include their respective heirs, successors, executors, administrators and assigns) on the **OTHER PART**.

WHEREAS

ii. The Bank is desirous of _____ (Works) on its _____ at _____.

iii. The Bank has already appointed and retained M/s _____, having its Office at _____and Registered Office at _____as Architect / Consultant for the Works or the Project.

iv. The Bank has caused the drawings and bills of quantities showing and describing the Works to be done to be prepared by or under the direction of the Consultants / Architect;

The Bank had invited tenders for _____work in accordance with the general conditions of contract, special conditions of contract, technical specifications, bills of quantities and working drawings, as prepared by the Interior Consultants/ Architect and furnished to the Contractor. And whereas the contractor has agreed to accept the terms and conditions specified in the Tender and also the terms and conditions annexed to these presents.

v. Having examined the general conditions of contract, special conditions of contract, technical specifications, bills of quantities and working drawings as prepared by the Consultants/ Architect, the Contractor offered to execute, complete and maintain the whole of the Works relating to the Project in conformity with the said general conditions of contract, special conditions of contract, technical specifications, bills of quantities and

working drawings and in accordance with instructions issued by the Consultants / Architect and the Contractor submitted its tender for the contract sum of Rs._____ towards the said work.

vi.

vii. The tender submitted by the Contractor was, after negotiations, modified/altered upon the Contractor agreeing to revise the rates of certain items and further offering a rebate for execution and completion of the Project thereby reducing the tender amount to Rs._____ as confirmed by its letters dated _____.

viii. Towards the implementation of the Project, the Contractor has supplied the Bank with a fully priced copy of the said bills of quantities (which copy is hereinafter referred to as "the Contract Bills") and the drawings numbered as mentioned in the Annexure 11 of the Tender document inclusive (hereinafter referred to as "the Contract Drawings") and the Contract Bills and the contract Drawings have been signed by or on behalf of the parties hereto.

ix. The Contractor has already agreed with the Bank to implement and execute the Project in full on the basis of the contract documents as hereinafter defined on the terms and conditions therein contained.

x. The parties are now executing this Agreement setting out the basic terms of the agreement between them for smooth implementation and execution of the Project without any unnecessary difference or dispute.

xi. Now, this Agreement witnesses as follows:

All terms and conditions as prescribed in the Part– I (Pre-qualification cum eligibility criteria, General terms & conditions and Technical Specifications) and Part-II (Price bid submitted by the contractor to this agreement shall have to be adhered to by the contractor. Any deviation must be with the written consent of the Union Bank of India, represented by its Asst. General Manager. Any deviation without the written consent is not at all permitted.

xii. And whereas Tender document published by the Bank vide Ref No. _____ dated _____ duly accepted by the contractor will be integral part of the agreement.

And whereas both the parties are agreeable to enter into these presents for the purpose of Providing the services at the abovementioned address of the Bank by the Contractor on the terms and conditions more specifically mentioned in the Part -I at and for the price Mentioned in the Part- II hereto annexed.

NOW IT IS HEREBY AGREED as follows:

i. In this Agreement words and expressions not defined but used shall have the same meanings as are respectively assigned to them in the Tender Document dated _____ Technical and Commercial Bid and Work Order.

ii. The following documents shall be deemed to form and constructed as part of this Agreement as if specifically incorporated herein

iii. Technical and Commercial Bid of the Contractor dated _____&_____ respectively

iv. Work Order (Letter of Intent) reference no. _____ dated _____ along with Annexure

v. Agreement

vi. Purchase Order/Work order

vii. Unconditional technical & commercial bid.

viii. Tender document along with any corrigendum/addendum to the tender document if any.

ix. All the documents together called as Contract document.

x. Notice Inviting Tender issued vide letter _____
xi. Subsequent letters issued by the Bank vide_____
xii. Clarifications submitted by the contractor vide letter dt. _____.
xiii. Minutes of Meeting held on _____
xiv. Rebate/ Discount offered by the contractor vide letter _____
xv. Acceptance letter _____ from the contractor
xvi. Drawings numbering as mentioned in Tender document enclosed along with the tender document.
xvii. All terms and conditions as prescribed in the Part-I to this agreement shall have to be adhered to by the contractor.
xviii. Unless the context otherwise requires the contract documents above mentioned shall be harmoniously construed and in the chronological order.
xix. Unless otherwise expressly provided under these presents, contract documents shall be construed as modifying only those general and special terms and conditions in tender document in so far and to the extent referable to the clauses in the said tender document.
xx. Unless otherwise stated expressly hereunder, all the general and special terms and conditions shall apply and binding on the contractor.
xxi. The Contractor do hereby agree to indemnify and keep indemnified defend and hold harmless the bank from and against any loss, damages liabilities, claims litigations, suit actions, judgments, and or otherwise including but not limited to those from third parties or liabilities of any kind howsoever suffered arising out of or incurred interalia during the term of this agreement and including but not limited to third party claims from the use of the services or any part thereof and/or otherwise. Further, the said indemnity shall also be available for any of actions arising out of or in connection with the Contractor's breach of any of the terms and conditions of the contract and any act and omissions or negligence or misconduct by the Contractor or its employee's representatives and agent.

In witness whereof the parties hereto have hereunto set and subscribed their respective hands the day and the year first hereinabove mentioned.

Signed and Delivered by Union Bank of India
By its authorized signatory
Name of the Officer:
Designation:
Seal of the bank:
In the presence of

Signed by the said Bank
In the presence of
Witness
Name:
Address

Signed by the said
In the presence of Contractor

Witness
Name:
Address

SUBJECT:INTERIOR RENOVATION OF MULTIPURPOSE HALL AT GROUND FLOOR, CENTRAL OFFICE, 239, NARIMAN POINT, MUMBAI.

TENDER FOR CIVIL/INTERIOR FURNISHING/ELECTRICAL/NETWORKING WORKS

PART-II

TENDER SPECIFICATION AND BILL OF QUANTITIES

PRICE BID

Date of issue of Tender	: **From 25.04.2024 to 10.05.2024** During office hours.
Last date for submission of tender	: **10.05.2024 upto 3.00 pm.**

Owner:	**Consultant**:
Union Bank of India, **Central Office, 239, Vidhan Bhavan Marg, Nariman Point, Mumbai-400021.** **Tel: 022-22892587,89.**	**M/s Design Ideas, Architects.** **1, Girja Bhavan, 163/B, Dr Ambedkar Rd, Dadar East, Mumbai-400014** **Tel: 24118778/ 24121713.** **Mobile: 9821004421.** **Email: ideas.design@yahoo.com**

ABSTRACT OF COST

SUBJECT: INTERIOR RENOVATION OF MULTIPURPOSE HALL AT GROUND FLOOR, CENTRAL OFFICE, 239, NARIMAN POINT,MUMBAI.

Details of tender amount quoted by the contractor:

Sr.No	Particulars of works		Amount
1	INTERIOR WORKS (Total of I to IX)	Rs.	
2	ELECTRICAL WORKS	Rs.	
3	AIR CONDITIONING WORK	Rs.	
4	FIRE DETECTION & FIRE ALARM, PA,CCTV,ACCESS CONTROL WORK (Total of A to D)	Rs.	
	TOTAL AMOUNT (1+2+3 + 4)=	Rs.	

(Total Quoted Amount in Words)=_____

Rate inclusive of all Material charges, Transportation, Local levies as applicable, Loading, Unloading, Lifting-Shifting, Erection, Testing , Commissioning, Scaffolding, GST, any additional/ special duties, excise, custom duty etc. as applicable.

Signature of Contractor with Seal

CONTENTS

INSTRUCTIONS

1. The Bill of Quantities shall be read in conjunction with the Drawings, Condition of Contract and Specifications, as these documents are jointly explanatory and descriptive of the works included in the Contract.

2. General directions and descriptions of work and materials given elsewhere in the Contract documents are not necessarily repeated in the Bill of Quantities. Reference is to be made to the other documents for information.

3. The Contractor shall be deemed to have visited the site before preparing his Tender and to have examined for himself the conditions under which the work will be priced and all other factors affecting the execution of the work and the cost thereof.

4. The Quantities of work and material in the Bill of Quantities are not to be considered as limiting or extending the scope of work to be done and materials to be supplied by the Contractor. The quantities in the Bill of Quantities are an estimate of the amount work but the work will be measured on complete and the contractor will be paid on the actual measurement of work approved by the Architect.

5. Any special methods of measurements used are stated at the head of or in text of the Bills of Quantities for the items affected. All other items are measured net in accordance with the drawings and no allowance has been made for wastage. Unless otherwise specified measurements shall be as per relevant Indian Standards.

6. A price or rate in figures is to be entered against the item in the Bill of Quantities, whether quantities are stated or not. Item against which no price is entered will be considered as covered by other prices or rates in the Bills.

7. The prices and rates inserted are to be the full inclusive value of the works described under the various items, including all costs and expenses which may be required for the completion of the work described, together with all cost and obligations set forth or implied in the conditions of Contract, Specifications and the Drawings.

8. Some finishing items may be quantity wise completely altered (either added or omitted) and the same shall not affect any rates quotes.

9. Where prices have been entered against Lump sum items, payment for such affected items shall be made in proportion to the extent of which works have been done at the time of billing and the same is at discretion of the Architect.

10. “Providing and Fixing” shall mean that the Contractor has to provide such materials not being procured and borne by the Bank, but which are required for the item and if no materials need be provided by the Contractor, the rate shall be only for fixing of the component covered in the item.

SUMMARY

PART –I

INTERIOR & CIVIL WORK		
NO	**DESCRIPTION**	**AMOUNT - Rs.**
I	**CARPENTRY**	
II	**DOORS**	
III	**FLOORING**	
IV	**SKIRTING & DADO**	
V	**GRANITE WORK**	
VI	**FALSE CEILING & FINISHING**	
VII	**PAINTING**	
VIII	**DISMANTLING & DEMOLITION**	
IX	**CIVIL WORK**	
	TOTAL FOR INTERIOR & CIVIL WORK	
	GST @18%	
PART-I	**GRAND TOTAL**	

PART –II

ELECTRICAL WORK		
NO	**DESCRIPTION**	**AMOUNT - Rs.**
1	**TOTAL OF ELECTRICAL WORK**	
	GST @18%	
PART-II	**GRAND TOTAL**	

PART –III

AIR CONDITIONING WORK		
NO	**DESCRIPTION**	**AMOUNT - Rs.**
A	**High Side**	
B	**Low Side**	
	TOTAL OF A.C. WORK	
	GST as applicable	
PART-III	**GRAND TOTAL**	

PART-IV
BOQ FOR PA,FIRE DETECTION & (CONVENTIONAL) ,CCTV, ACCESS CONTROL SYSTEM

NO	**DESCRIPTION**	**AMOUNT - Rs.**
A	**INTELLIGENT ADDRESSABLE FIRE ALARM SYSTEM**	
B	**PUBLIC ADDRESS SYSTEM**	
C	**CLOSED CIRCUIT TELEVISION SYSTEM**	
D	**ACCESS CONTROL SYSTEM**	
	TOTAL(A+B+C+D)	
	GST @18%	
PART-IV	**GRAND TOTAL**	

SCHEDULE OF QUANTITIES
PART-1
INTERIOR RENOVATION OF MULTIPURPOSE HALL AT GROUND FLOOR, CENTRAL OFFICE, 239, NARIMAN POINT, MUMBAI.

INTERIOR & CIVIL WORK BILL OF QUANTITIES

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
I	**CARPENTARY WORK**				
1	FULL HT/LOW HT. STORAGE	227.57	Sqft		
	Providing and fixing storage units of full height/ Low height as per drg. Internal Depth of storage to be of 400 mm clear.They shall consist of ¾" thk.BWR IS 303 ply top, sides, bottom, shelves and shutters.The bottom of the storages shall be at 3" from FFL. The top of storages shall touch the false ceiling level or 7'-0" ht.A back side of ¼" thk. BWR IS 303 ply shall be provided. ¾" thk. BWR IS 303 Ply shutter with self closing hinges of hafele make (full ovel open) & PVC lipping /T.W Lipping matching with approved laminate on all the edges. Division of the shutters shall be made equally according to the length of the storages. All the external surfaces shall be finished with 1.0mm thk. Laminate (special finish) of approved make.¾" thk. BWR IS 303. Ply shelves supported on battens at 16" interval shall be provided. Alternatively three drawers 8" deep will be provided along with shelves as per drawing and directions. All inner surfaces shall be finished with 0.8 mm white laminate of approved make including the shutters. Rate shall be inclusive of all necessary approved fittings like hinges (Hafele make), locks(Godrej make/Vijayan), 6" long brushed finish handles(kich-neki make-CHR103),tower bolts, magnets, Steel strips ,S.S rods for hangers (2 nos) etc and any miscellaneous hardware items. No drawers to be considered in Full Height storage item. Laminate 1mm thk SF.				

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
2	Providing and fixing over-head storages which consist of ¾" thk. BWR IS 303.ply shutter with self closing heavy duty hinges of hafele make(full ovel open) & PVC lipping matching with approved laminate on all the edges. They shall consist of ¾" thk. BWR IS 303. Ply top, sides and bottom and ¼" thk. BWR IS 303 ply back. A ¾" thk. Ply pelmet shall be provided below the storage to house the tube light. All the external surfaces shall be finished with 1.0mm thk. Laminate (special finish) of approved make. Division of the shutters shall be made equally according to the length of the storage. All internal surfaces shall be finished with 0.8 mm white laminate including the shutters. Rate shall be inclusive of all necessary approved fittings like hinges (Hafele make), locks(Godrej make/Vijayan),tower bolts and any miscellaneous hardware items.	16.14	Sqft		
	Note : The pelmet for tube lights(if made) will not be considered as separate item or in the measurements.				
3	Providing and fixing ¾" thk. BWR IS 303 ply shutters with required powder coated aluminium pipe frame work filled with C.P.Teak wood, skirting gap as shown in the drawing. Shall be maintained. Division of shutters shall be made equally according to the length of the counter. Shutters shall be hinged to the framework and finished with 1.0mm thk. Laminate (special finish) of approved shade from outside, applied with approved oil paint from the inside and covered with proper pvc lippings matching with approved laminate on all the edges. Rate shall be inclusive of all necessary approved fittings like handles, hinges (Hafele make),ball catch and any miscellaneous hardware items. Rate to also include for Aluminium powder coated grill for ventilation of size about 300 x 150 mm of approved design & colour.	32.28	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
4	Providing and Fixing 6mm T.W lipping on corner or walls for edge protection. Rate inclusive of groove etc.and all necessary hardware.	100.00	Rft		
5	Providing & fixing full/Low height Laminate finish hollow partitions 65 mm thick made out of Al tubular frame 50 x 38 x 1.2 mm at 600 mm c/c horizontally & vertically, anchored to the floor & the slab on top with skin on both sides of 12 mm +9mm thick Calcium silicate board+ BWR IS 303 grade plywood. The partition to have 50 mm thick 1000 Gsm synthetic wool insulation wrapped with chicken mesh in between and to be finished with 1.0 mm thick special finish laminate on both sides. The cost to include that for all necessary hardware, adhesives, fixtures & fittings. All exposed edges to be finished with wooden beadings 12 mm thick of width matching the thickness of the partition. All exposed wood work to be finished with melamine polish. The cost to also include that for fixing the laminate in patterns with wire nail grooves as per design.	1549.44	Sqft		
6	Providing & fixing Glass Partition with 8 mm thick clear glass fixed on a TW frame of size 65 x 38 mm of height varying from 900 to 2100 mm. The cost to include that for TW verticals at max 900mm c/c and horizontals at about 1050mm c/c.The glass to be fixed with TW beading of size 12 x 12mm. All exposed wood work to be finished in melamine polish of approved shade and colour.The glass partition to have frosting pattern in 3 M makes frosting film about 30% of glass area.	50.00	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
7	Providing & fixing full height Laminate finish Wall panelling/ceiling (with additional supports for hanging from slab) 60 mm thick made out of Al tubular frame 50 x 38 mm at 600 mm c/c horizontally & vertically, anchored to the wall with skin of 9 mm thick BWR grade IS 303 plywood and to be finished with 1.0 mm thick laminate. The cost to include that for all necessary hardware, adhesives, fixtures & fittings. All exposed edges to be finished with wooden beadings 12 mm thick of width matching the thickness of the partition. All exposed wood work to be finished with melamine polish. The cost to also include that for fixing the laminate in patterns with wire nail grooves as per design.	1218.89	Sqft		
8	Supply, fixing and installation of 4mm thick Aluminium Composite Panel (ACP) of approved colour for external cladding in combination of solid and metallic colours, including all necessary Framework, support and complete weather sealing as per architectural drawing. The Aluminium Composite Panel (ACP) should be made out of thermoplastic core of low-density polyethylene LDPE (100% virgin mix), sandwiched between two aluminium sheets of ALLOY GRADE- 5000 series, each not less than 0.50 mm thick, total thickness of aluminium composite panels not to be less than 4 mm, the exposed surface thereof shall have Stove lacquered finishing coat not less than (26+-2) micron (containing minimum 70% kynar 500 based PVDF) of colour and shade as per architectural design.The inside surface(facing the building exterior surface)shall have polyester based powderCoating not less than 25 Micron with protective peel-off foil on the exterior face (peel off film will in no case leave any adhesive mark over the composite of 50 mm X25mm X 3mm thick Aluminium section to be spaced	753.20	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	horizontally and vertically for fixing of panel of size 900 panel surface after it is peeled off).The supporting framework shall be made out mm X 1200 mm and fixed to the building structure as per design through 50mm X50mm X5 mm MS angle clamps prefixed to masonry or slab, columns with Hilti make anchor fastener screws. The fixing of panel to be done with the help of VHB tapes and screws and all the sealing of joints to be done with weather sealent Silicon as directed by Engineer-in-charge.				
9	Same as above but for 9 mm thick Bison board (Cement sheet) instead of Plywood & Paint finish instead of Laminate.	200.00	Sqft		
10	Dismantling the existing Ceiling/Partition/Panelling/tables/Equip ment/Ducting/Plumbing/Piping etc. carefully including the cost of stacking properly. The salvageable material shall be handed over to UBI & the debris shall be cleared as per local municipal laws. No extra payment shall be granted for this apart from the tender rate.	8000.00	Sqft		
11	Providing & fixing 100% polyester 600 grams/ sq meter weight, fire rating NFPA 701/ BS 5867 Part 2,Double Layer Roller Blinds fixed on Aluminium powder coated track with approved fabric of approved shade & colour as per manufacturers specifications and as per the directions of the engineer in charge.Basic Price of blinds Rs 150/- per Sqft.	645.60	Sqft		
12	Providing & fixing Soft board panelling in 12 mm thick Soft board mounted on 6 mm thick BWR grade IS 303 ply with fabric covering on top. Basic price of Fabric Rs. 250/- per RM (1.2 m width).	100.00	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
13	Providing & Fixing in position, Carpet more than 800+ gsm, made with100% stain proof fibres of approved make along with 5mm underlay as per Architectural & Acoustical Design & Instructions & Complete in all aspects including all materials labour,finishing etc complete. Cost to include that for 100 mm high 12 mm thick HDF prepainted skirting at the jooint of the wall & the floor & 50 mm wide 18 guage thick SS 304 grade steel trim at the junction of Carpet & Tiles flooring.	5750.00	Sqft		
	Common specifications for items 14 to 15				
14	Providing & Supplying foldable 1500 x 1500/ 1500 mm dia x 800 mm Dining Table made out of support frame made in grade 304 stainless steel pipes 80 mm dia, 3 mm thk for vertical supports & bracing pipes in rectangular pipes 32 x 32 mm, 2.7 mm thk at top (below the top surface). The top to be made out of 18 mm thick MR grade plywood with 6 mm thick corian sheet fixed on top & bent seamlessly at the edges of approved color, shade & design.	24.00	Nos.		
15	Same as above but for size 1800 x 800 x 800 mm.	4.00	No.		
16	Providing & Fixing Back painted glass of thickness 6 mm fixed on existing Laminate Panelling with wooden beading of size 1" x 1" size, French polished.	200.00	Sqft		
17	Providing & fixing L type pelmet over windows out of 18 mm thick BWR grade plywood with 1.0 mm thick laminate finish on top. The edges to be finished with 12mm thick TW of width matching the thickness of the ply & finished in French polish.	328.00	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
18	Providing & fixing 12 mm thick toughened Glass tops on existing tables/ shelves in wall niches in appropriate size, shape & pattern as per drawings & directions with edges mirror polished.	30.00	Sqft		
19	Providing & fixing Display rack on the staircase walls from inside on top of panelling (considered as a separate item) made out of vertical slats of plywood of size 15" x 5' x 1.5" thick in Laminate & French finish, fixed at about 4' c/c.These slats to support 18 mm thick Glass shelves with mirror polished edges placed vertically at about 18" c/c,as per drawings & directions including the cost of SS D-brackets to hold the glass.(Elevation Area to be measured).	150.00	Sqft		
20	Providing & erecting removable/ folding dias 150 mm high, made out of 25 mm thick Marine grade block board floor supported on a grid of about 1.2 m c/c both ways of the dias in 25 mm square MS pipe, to be erected as per plan. The cost to include that for MS pedestals in 50 x 50 mm Ms square tubes at about 1200 x 1200 mm c/c. The cost to include that for all fittings/ fixtures, base plates, Anchor bolts, welding, plates, etc & 2 coats of enamel paint on a primer cost of red oxide. (Only plan area to be measured, risers area shall not be paid extra)	450.00	Sqft		
21	Providing & Supplying decorative Teak wood chairs made out of Teak wood frame for body in approved design & type with cushioned back & seat over ply backing with fabric upholstery with water resistant finish on top of approved design & type (Basic price of fabric to be Rs 750/- per meter) The seat size to be 600 x 600 out to out. All exposed wood work to be finished in melamine polish finish with PU finish.	200.00	Sqft		
I	**TOTAL FOR CARPENTARY**				

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
II	**DOORS**				
1	Providing & Fixing solid core flush door in single leaf 35 mm thick Regular matching type of exterior grade as per detailed drawings, approved face **Laminate on both sides without glazing and** venetians, all necessary beads, mouldings and lipings on edges of the shutter of matching width, brass oxidised fixtures and fastenings with mortise lock, Stainless Steel grade 304 Alan Key type "H" Handles 300 mm long handles on both sides, sleek type door closer/Floor spring, dead lock, door stopper, etc and finishing with melamine polish, etc complete. 3-0" x 7'-0".	126.00	Sqft		
2	Providing & Fixing Door Frame with Jamb lining as per drawing Second class Sal wood for doors, windows, fan lights, etc including all mouldings, rebating, holdfasts, and finishing with one coat of primer & 2 coats of melamine polish complete. Country Teak wood frame Size 0.90m x 2.10m Ht.	14.17	Cuft		
3	Providing and fixing frameless fully glazed 12mm thk toughened float glass fixed with necessary patch fittings (Dorma make) including cutting, making holes, cut outs in the glass of required shape and size to ac BWR IS 303 date fittings and fixing the fittings in floors, soffits, jams including necessary fixtures, screws, sealant wherever required and SS cover over patch fittings.Rate shall include necessary etching film / LOGO, approved patch fitting locking systems,1 pair of 12" long S. S.(C Shape) Handles of approved make, floor springs, and any necessary hardware items.(DORMA MAKE Top Pivot-PT24, Top Patch Fittings - PT 20,Bottom Patch fittings - PT 10, Floor Spring - BTS 75 V, Corner lock with strike plate and Euro Profile Cylinder - US 10, Handle-TG9300EQ - S 25mm dia X 300mm length).	154.00	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
4	Fire Door 45mm 1HR FRL (60/60) 3 Criteria - INTEGRITY / INSULATION/ STABILITY WOODEN DOOR - Fire Door Tested in accordance to IS: 3614 Part 2.				
	Providing 60 min Fire rated doors system duly tested for 3 criteria - Integrity, Insulation and Stability Criteria as per the IS: 3614 Part 2 and BS: 476 part 22 at National Test House, Govt of India laboratory and/or with Central Building Research Institute, Govt of India undertaking with standard heating conditions as specified in IS:3614 Part II 1992 and BS: 476 part 20 & 22 1987 to achieve the required integrity, insulation and stability (i.e. to restrict the heat radiation, temperature rise on the non fire side to the maximum of 140° C above the ambient temperature on the exposed surface of the shutter. The fire doors are tested with NCBN technology("Non Combustible by Nature")with prior approval of concerned Superintending Engineer.				
a)	Door Frame: Supplying frames for Fire resistant door shutters 1st class Malaysian Hardwood Frame densified (810 Kilogram/cum) and pressure treated with fire retardant chemicals in vacuum impregnation vessel under 160 psi pressure as per IS:401and kiln seasoned to moisture below 15% as per IS:1141 of section 120 X 60 mm spray quoted with 2 coats of in tumescent paint of minimum 200 micron, with single row of Brush- Type ASTROFLAME in tumescent strip of size 10mm x 4mm affixed in the slit of the Frame for fire and smoke sealing, etc. complete.	120.00	Rft		
b)	Shutter: Providing of 65mm thick asbestos free composite - 3 criteria - fire, heat and smoke check Acoustic Door Shutter with flame guard of 120 minutes IS3614 part -II comprising of 2x9mm Calcium Silicate boards, Chemical treated internal timber with Fire retardant				

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	chemicals in pressure impregnation vessels under 160 PSI pressure as per IS:401 and kiln seasoned to moisture below 15% as per IS:1141 frame work of 100x32 mm with 32mm thick infill of ceramic fibre (density 128Kilograms/CMT), vermiculite mix faced with 6mm Fire retardant High Density ply, internally lipped with hardwood beading, and pasted in Hydraulic Press under 50 tonnes pressure, spray quoted with 2 coats of In tumescent paint of minimum 200 micron, and with 1 row of Brush- Type Astro flame® in tumescent strip (imported) of size 10mmx4mm concealed for fire and smoke sealing in the grooves in the shutter on all edges except bottom, without any external lipping.	180.00	Sqft		
c)	Vision Panel:1 HR rated E Class clear high stress fire rated glass is pre-fabricated strategically inside the shutter structure with 10 mm inside the shutter on all sides with U- glazing. An additional insulated powder coated 'Z' channel of 16 swg MS sheet to be fixed for reinforcement of the joints. With clear fire-resistant glass panes 11mm thick having minimum 120 minutes fire Description	7.00	Sqft		
5	Providing of Sliding Folding Acoustic Door to effectively control noise in conference rooms, broadcasting studios, theatres and music practice rooms. with prior approval of concerned Superintending Engineer.				
a	Door Frame: Providing Frames for Acoustic door shutters with double rabbit of 68mm 1st class Malaysian Hardwood Frame densified and pressure treated with chemicals in vacuum impregnation vessel under 160 PSI pressure as per IS:401and kiln seasoned to moisture below 15% as per IS:1141 of section 120 X 70 mm spray quoted with 2 coats of In tumescent paint of minimum 200 micron, with 1 row of Hafele	100.00	Rft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	Acoustic seals concealed in the groove of the Frame for noise control, etc. complete as per direction of Engineer in Charge.				
b	Shutter: Providing of 65 mm thick Acoustic Door Shutters with wooden structure comprising of Chemical treated internal timber with anti-termite chemicals in pressure impregnation vessels under 160 PSI pressure as per IS:401and kiln seasoned to moisture below 15% as per IS:1141 frame work of 100x 48 mm with 48 mm thick infill of ceramic vermiculite mix of density 54Kilograms/CMT, 3mm sheet rubber interlayer sheet on one side for acoustic property, faced with 6mm High Density Waterproof Ply confirming to IS Code 2201, internally lipped with hardwood beading, and pasted in Hydraulic Press under 50 tonnes pressure, spray quoted with 2 coats of PU paint of minimum 200 micron of colour of engineer choice, without any external lipping along with double rebating in shutters & acoustic seal. The cost to include that for 1.0 mm thick special finish Laminate finish on exposed surfaces. The cost to include that for sliding folding mechanism at the top including supporting cleats, sliding track & heavy duty rollers providing sliding folding mechanism.	450.00	Sqft		
	TOTAL FOR DOORS				
III	FLOORING.				
1	Providing and fixing 800 x 800 mm VITRIFIED Tiles of approved make, 1st quality & shade and pattern as shown in the drg. In CM 1:4 in proper line and level and also using 3mm approved spacers for maintaining the grid lines. Rate shall be inclusive of providing and laying necessary backing material and joint filling compound of the same shade of the tiles. Regular Tile fixing compound to be used. No epoxy. Approved make shall be	1706.00	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	Johnson/Nitco/Kajaria or equivalent. Basic price of Vitrified tiles to be Rs.150/-per Sqft + taxes.				
2	Providing, laying & removing POP on the existing/new laid flooring for the protection of tiles/slabs with base covering plastic. POP covering is not required to be laid for the new flooring (as the contractor needs to take care of new flooring at his own cost till handing over the possession).	1706.00	Sqft		
3	Providing and laying Premium Anti Skid ceramic tiles of RAK/ Kajaria/ Nitco/ Asian or equivalent make having size 30 cm x 30 cm confirming I.S.15622/2006 (group D IIA) and 7 to 8 mm thick for flooring in required position laid on a bed of 1:4 cement mortar including cement float, filling joint with white/colour cement slurry cleaning curing etc. complete. Basic Price of Tiles Rs 150/- per Sqft.	188.30	Sqft		
4	Providing & Fixing in position, Carpet tiles more than 800+ gsm, made with100% stain proof fibres of approved make along with 5mm underlay as per Architectural & Acoustical Design & Instructions & Complete in all aspects including all materials labour, finishing etc complete. Cost to include that for pre painted HDF profile skirting of size 75 x 12 mm at the junction of the wall & the floor & SS profile at the door entry.	4500.00	Sqft		
	TOTAL FOR FLOORING				
IV	**SKIRTING AND DADO**				
	VITRIFIED TILE SKIRTING				
1	Providing and fixing approved shade of Vitrified tiles as per pattern for dado/ skirting 100 mm high from FFL using CM 1:4 in proper line and level as directed by the Architect as shown in the drawings. The rate shall include necessary backing material, water proofing and joint filling compound of	255.90	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	the same shade as that of the Vitrified tiles.All sanitary fittings shall be located on the joints or junctions of the tiles. Basic price of Vitrified tiles to be Rs.150/-per Sqft+ taxes.				
2	Providing and laying ceramic tiles having size **120 cm.x 60 cm**. confirming to corresponding I.S. for dado and skirting in required position with readymade adhesive mortar of approved quality on plaster of 1:2 cement mortar including joint filling with white/ colour cement slurry cleaning curing etc. complete. **Basic price of Ceramic Tiles to be Rs.125/-per sqft.**	955.49	Sqft		
3	Providing and laying Artificial Marble of 18 to 20 mm thick for door frame/ dado/ window boxing etc. On C.M. 1:6 including filling joints with polymer base filler nosing the sharp edges wherever necessary, curing, etc. complete. **Basic price of Artificial Marble to be Rs.250/-per sqft.**	250.00	Sqft		
	TOTAL FOR SKIRTING AND DADO				
V	**GRANITE WORK**				
1	Providing and laying telephone black / Amba White / Cadbury brown / Ruby red/ Ocean Brown granite stone of 18 to 20 mm thick for door frame/ dado/window boxing etc. On C.M.1:6 including filling joints with polymer base filler nosing the sharp edges wherever necessary, curing, etc. complete. Basic price of Granite to be Rs.130/-per Sqft+taxes.	417.06	Sqft		
2	Same as above but for cladding on walls with slabs of average size about 0.9 x 1.2 m.The granite joints to be finished in a "V" groove pattern. The corner edges to be also in a right angle "V" groove pattern. Rate inclusive of all necessary hardware and accessories with round edges hand polished.	107.60	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
3	Providing and constructing granite kitchen platform with fixing of stainless-steel sink 600 mm x 450 mm size as per detailed drawing including vertical both side polished kadappah stone 25 to 30 mm thick supports with kadappah top 35 to 40 mm thick and polished granite 16 to 20 mm top with side strips of granite at front and both sides of platform raised with two vertical granite supports 15 cm height and top granite of 75 x40 cm including cutting, opening for sink of required size in kadappah as well as granite etc. complete.	64.56	Sqft		
	TOTAL FOR GRANITE WORK				
VI	**FALSE CEILING & WALL FINISHING WORK**				
1	Providing and applying POP Punning on walls and columns (average 6 mm thk). The rate shall include scrapping, levelling and preparing the surface. The rate shall be inclusive of all types of grooves above the skirting, around the window and door frames.The modular tiled ceiling to be of Prima Dune regular type of Armstrong makes with silloihte grid.	1291.20	Sqft		
2	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm	8574.38	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of 12 mm thk gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with reBWR IS 303ended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting.The cost to include that for fixing the Gypsum board in patterns & shapes as per drawings & creating alcoves for concealed lighting. The cost to also include that for vertical drops behind the concealed lighting alcoves.				
3	Providing and fixing tiled false ceiling of approved materials of size 595x595 mm in true horizontal level, suspended on inter locking metal grid of hot dipped galvanized steel sections (galvanized @ 120 grams/ sqm, both side inclusive) consisting of main "T" runner with	100.00	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	suitably spaced joints to get required length and of size 24x38 mm made from 0.30 mm thick (minimum) sheet, spaced at 1200 mm centre to centre and cross "T" of size 24x25 mm made of 0.30 mm thick (minimum) sheet, 1200 mm long spaced between main "T" at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross "T" of length 600 mm and size 24x25 mm made of 0.30 mm thick (minimum)sheet to be interlocked at middle of the 1200x600 mm panel to form grids of 600x600 mm and wall angle of size 24x24x0.3 mm and laying false ceiling tiles of approved texture in the grid Including required cutting/making, Opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc. Main "T" runners to be suspended from ceiling using GI slotted cleats of size 27 x37 x 25 x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm GI adjustable rods with galvanised butterfly level clips of size 85 x 30 x 0.8 mm spaced at 1200 mm centre to centre along main T, bottom exposed width of 24 mm of all T-sections shall be pre-painted with polyester paint, all Complete for all heights as per specifications, drawings and as directed by Engineer-in-charge.				
4	Providing and fixing A.C.Trap doors of above mentioned sizes consisting of19 mm thk. BWR ply IS 303 shutters. The pair of shutters shall be with MILKY WHITE 1 mm laminate on both sides fitted in frame of 2" x 1 ½" Sal wood sections finished with enamel paint to match with the ceiling. The frame needs to be supported from the ceiling as per directions of Bank/ Architect. Rate shall be inclusive of necessary fittings like hinges (Heavy Duty type),tower bolts, locks, etc.	120.00	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
5	Providing & Applying wall paper of approved type, color & pattern on existing finished wall with approved fixing solution in proper line & level. The cost to include that for all wastages in cutting as per the size available on the site. **Basic price of Wall paper to be Rs.120/-per sqft.**	500.00	Sqft		
6	Providing & Fixing Translucent False Ceiling made out of frame work of Teak wood batten frame of size 50 x 38 mm at 600 mm c/c supported from the ceiling slab by Aluminum frame of size 50 x 38 mm. The panels to be made out of 6 mm thick Acrylic sheet Laser Cut in the given pattern & this sheet to be fixed on another 6 mm thick Acrylic sheet. This panel to be supported on the wooden frame as above. All wooden frame work to be finished in French polish.	1210.50	Sqft		
7	Providing & Installing False ceiling made out of rafters of size 100 x 38 mm fabricated out of 2 x 18mm thick IS 303 plywood sheets 100 mm wide stuck to each other & clad with matching veneer sheet (basic price Rs 75/- per sft) on all sides with melamine polish of approved shade & color. The rafters to be spaced at about 600 mm c/c including fixing the same to the sides/ ceiling slab on top.	1210.50	Sqft		
	TOTAL FOR False Ceiling & Wall Finishing				
VII	**PAINTING**				
1	Providing & applying Royale Luxury Emulsion paint on walls, columns & ceilings. The rate shall include scrapping, levelling & preparing the surface. Primer coat + (minimum) 2 coats to get evenly spread quality finish (roller finish) of approved make,quality & finish shall be provided.	9865.58	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
2	Providing & applying 1st quality oil paint of approved make, quality & shade. The rate shall include scrapping, levelling & preparing the surface with primer quote.	200.00	Sqft		
3	Providing & applying a coat of textured finish on walls and columns. The rate shall include scrapping, levelling & preparing the surface. Primer coat + (minimum) 3 coats of approved make, quality & shade shall be provided. Basic price of Texture paint to be Rs.65/-per Sqft+ taxes.	250.00	Sqft		
4	Providing and applying French polish of required finish to previously polished wooden surfaces including knotting, preparing the surface, scaffolding, etc complete as directed.	250.00	Sqft		
5	same as above but for Wax Polishing.	250.00	Sqft		
6	Providing & applying melamine polish of required finish to wood work by spray machine including knotting and preparing the surface by scrapping, applying French polish, scaffolding if required, etc complete.	250.00	Sqft		
	TOTAL FOR PAINTING				
VIII	**DISMANTLING & DEMOLITION**				
1	Dismantling tile work in floors laid in cement mortar including disposing off the unserviceable material outside institute premises as per local municipal corporation byelaws for thickness of tiles 10 mm to 25 mm.	3355.69	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
2	Dismantling aluminium/gypsum partitions, doors, windows, fixed glazing and false ceiling including disposal of unserviceable surplus material outside institute premises as per local municipal corporation byelaws and stacking of serviceable material as directed by engineer.	9884.88	Sqft		
3	Demolishing brick work manually/ by mechanical means including stacking of serviceable material & disposal of unserviceable material outside institute premises as per local municipal corporation byelaws as per direction of Engineer-in-charge.	75.00	Cuft		
	Note:All construction debris, salvageable material shall be disposed/ cleared as per local municipal laws and the cost to be included in rates. No extra payment shall be granted for this apart from the tender rate. The contractor shall be allocated space for storing 1 truck load of debris either in the basement or on the ground. The arrangement for disposing off the same shall be of the contractor.				
	TOTAL FOR DISMANTLING & DEMOLITION				
IX	**CIVIL WORK & PLUMBING WORK**				
1	6" THK BRICK WALL WITH PLASTER				
	Constructing 115 mm thk. Brick wall in 1:6 cement mortar. Brick used shall be of best quality kiln burnt, having sharp edges & giving clear ringing sound when struck against each other. The rate shall be inclusive of plastering the walls with ¾" thk. 1:4 cement plaster on both sides. A 4 ½" R.C.C. Patli Beam shall run horizontally @ 3'-0" c/c. The rate shall be inclusive of any scaffolding required, curing etc, complete.	645.60	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
2	9" THK BRICK WALL WITH PLASTER				
	Specification same as IX-1 except for a 9" x 4-1/2" R.C.C. patli shall run horizontally @ 3'-0" c/c.	500.00	Sqft		
3	Providing internal cement plaster 12mm thick in single coat in cement mortar 1:4 without neeru finish to concrete or brick surfaces, in all positions including scaffolding and curing etc. complete.	2420.32	Sqft		
4	ANTI TERMITE TREATMENT				
	Providing anti termite treatment to the sides of flooring of the existing building as per I.S. 6313 (Part-III) by punching holes 6mm dia. drilled at a distance of 30cm. centre to centre and injecting one percent of chlorodane emulsion concentrate at the rate of 50 ml per hole and sealing by filling putty etc. complete covering 2 years guarantee on bond paper. The approximate carpet area to be covered is 8000 sqft.	300.00	nos		
5	Providing Holes/Sleeve in wall 75 m dia for Air conditioning pipes. PVC pipe of 75 mm to be inserted in the said hole. End caps on both sides to be provided. A minimal slope to be maintained towards outside to prevent any leakage.	30.00	Nos		
6	Providing and fixing in position U.P.V.C.(Plasticized Poly Vinyl Chloride) sliding windows having multi- chambered outer frame section (73 x 50)mm with an outer wall thickness of 2mm & steel reinforcement, multi-chambered slider frame (73x 60) mm with steel reinforcement, multi- chambered slider sash (46x 82) mm with steel reinforcement designed to give optimum strength, 5 mm thick toughened double glass with 12 mm spacer of good quality including aluminium track, Inter-locking profile, coextruded beadings, EPDM gaskets, silicon sealant, sliding handle, fixtures and fastenings (couplings,	564.90	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	hinges) including with all required screws and nuts with all necessary U.P.V.C. sections as per the detailed drawing and as directed by Engineer-In-Charge etc. complete, as mentioned below.				
7	Providing and fixing in position (as per 1868 / 1982) Aluminium sliding window of three tracks with rectangular pipe 95 x 38.10 x 0.90 mm at weight 0.637 Kilogram/One Running Metre. with window frame bottom track section 92 x 31.75 x 1.30 mm at weight 1.070 Kilogram/One Running Metre.Top and side track section 92 x 31.75 x 1.30 mm at weight 0.933 Kilogram/Running metre.The shutter should be of bearing bottom 40 x 18 x 1.25 mm at weight 0.417 Kilogram/One Running Metre. Inter locking section 40 x 18 x 1.10 mm at weight 0.469 Kilogram/Running metre and handle and top section 40 x 18 x 1.25 mm at weight 0.417 Kilogram/Running metre.As per detailed drawings and as directed by Engineer in charge with all necessary Aluminium sections fixtures and fastenings such as roller bearing in nylon casting and self locking catch fitted in vertical section of shutter including 5 mm thick plain glass and aluminium mosquito net shutter with stainless steel jail with all required screws and nuts etc, complete. With colour Anodising without box.	121.05	Sqft		
8	Providing and fixing in position powder coated aluminium louvered windows / ventilator of various sizes with powder coating as per detailed draing and specifications including aluminium frames 80 x 38 mm x 1.22 mm box type, 5 mm thick sheet glass louvers, of approved quality etc. complete.	30.99	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
9	Providing and laying in trenches 20 mm dai. CPVC pipe including necessary excavation, fittings. Refilling trenches etc. complete.	328.00	Rft		
10	Providing and laying in trenches 50 mm dai. CPVC pipe including necessary excavation, fittings. Refilling trenches etc. complete.	100.00	Rft		
11	Providing and fixing 10 cm PVC nahani trap with grating etc. complete.	12.00	Nos.		
12	Providing and fixing coloured glazed earthenware lipped flat back/corner type urinal with PVC 5 litres flushing cistern with fittings, capacity with fittings, inlet pipe and stop tap, brackets for fixing the cistern, P.V.C. flush pipe with fittings including lead soil pipe, lead trap and soil pipe connection up to the outside face of the wall.	4.00	Nos.		
	DRAINAGE				
13	Providing and fixing White glazed with bottle trap earthenware Wash Hand Basin of 55x40 cm size including cold water piller taps, brackets, rubber plugs and brass chain, stop tap, chromium plate bottle trap and necessary pipe connections including UPAC waste pipe and trap upto the outside face of the wall, making good the damaged surface, testing etc. complete.	7.00	Nos.		
14	Providing and fixing 75 mm dia stabiliser pipe/ P.V.C. soil vent/waste pipe and with necessary fixtures and fitting such as bends, tees, single junctions, slotted vent, clamps etc. complete.	100.00	Rft		
15	Providing and fixing 100 mm dia stabiliser pipe/P.V.C. soil vent/waste pipe and with necessary fixtures and fitting such as bends, tees, single junctions, slotted vent, clamps etc. complete.	100.00	Rft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
16	Providing and fixing European type wall hung white water closet of Parry ware / Hind ware with push valve concealed type with cover plate 32mm size of JAQUAR MAKE SERIES FLV1095 including soil pipe, vent pipe up to outside face of wall,100mm dia. G.I. plug bend inlet pipe all fittings, cutting & making good walls, floors etc. complete.	4.00	Nos		
	Providing & fixing following fixtures, the rate for the following shall be inclusive of all necessary fixtures, accessories & attachments to make then operational.				
17	Providing and fixing in walls/ ceiling/ floor 15 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete. Including removing existing pipe line if necessary and conveying and stacking the same as directed etc. complete.	300.00	Rft.		
18	Providing and fixing in walls/ceiling/floor 20 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete. Including removing existing pipe line if necessary and conveying and stacking the same as directed etc. complete.	100.00	Rft.		
19	Providing and fixing in walls/ ceiling/ floor 50 mm dia. CPVC pipe with necessary fittings, remaking good the demolished portion etc. complete.	100.00	Rft.		
20	Providing and fixing stainless steel sink of size 600 x 510 x 200 mm including coupling, outlet pipe, elbow and other necessary fitting, finishing etc. complete.	2.00	Nos.		
21	Providing and fixing C.P.Angular stop clock with wall flange of Jaguar Vignette make continental including necessary sockets/union nut etc. complete.	22.00	Nos.		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
22	Providing and fixing C.P.Two way BIB cock with Health Faucet of approved make continental including necessary sockets/union nut etc. complete.	6.00	Nos.		
23	Providing and fixing C.P. pillar cock long neck with aerator of approved make including necessary sockets/union nut etc. Complete.	2.00	Nos.		
24	Providing & fixing CP Toilet Paper Holder of approved Type & Design (Jaguar or Equivalent) Rate inclusive of all necessary hardware like screws etc. Jaguar make or equivalent.	4.00	Nos.		
25	Providing & fixing Kimberly Klark or Equivalent Liquid Soap Dispenser of approved design & type.	4.00	Nos.		
26	Providing & Fixing CP Towel Ring of approved type & Design (Jaguar or Equivalent).	4.00	Nos.		
27	Providing & fixing Jaguar or equivalent Double Coat Hook.	4.00	Nos.		
28	Providing and laying cement concrete flooring 40 to 60 mm thick with M15 cement concrete laid to proper level and slope in alternate bays including compaction, filling joints, marking lines to give the appearance of tiles of 30 cm x 30 cm or other size laid diagonally /square etc finishing smooth (with extra cement) in any colour as directed and curing etc. complete. With Natural Sand.	1706.00	Sqft		
29	Providing and fixing mirror (900x600mm) of superior glass (of approved quality) with 12 mm marine ply backing and mirror screws. Rate inclusive all necessary hardware, rough grout etc.The mirror to be fixed on tiled surface in proper line and level as per directions of Site Engineer.	129.12	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
30	Providing and Fixing Sink Cock with Raised J shaped Swinging Spout (Table mounted model/Wall mounted VGN-27173B) Jaguar make or eq. Rate inclusive of all necessary hardware.	2.00	Nos.		
31	Providing and Fixing S.S grating nahani trap cover of approved make. Rate inclusive of all necessary hardware etc.	12.00	Nos.		
32	Providing and Fixing S.S Towel Rack with lower hanger. Jaguar makes AHS -1581 or equivalent. Rate inclusive of all necessary hardware.	4.00	Nos.		
33	Waterproofing Treatment to Toilet and bathrooms & Kitchen (existing kitchen located separately from the proposed location) by using Polymeric cementitious membrane of approved make & approved by Engineer in charge and replacing the existing waterproofing treatment. Break open the existing I.P.S. and brick bat coba of the toilet and bathroom areas (approximately 8" thick) to expose the bare slab. (If there are cracks on the bare slab open the crack in V Groove and fill it with P.M.M. and if there are lots of honeycombs and identified bad patches of concrete the same should be grouted by grouting procedures). Clean the entire surface thoroughly and over this prepared surface, apply three coats of polymeric waterproofing coating having a breathable nontoxic acrylic polymer liquid of approved make & approved by Engineer in charge. Over this waterproofing treatment, providing cement-based water proofing treatment to terraces (Indian water proofing or alike) with brick bats laid in required slope to drain the water for any span after cleaning the base surface. Applying a coat of cement slurry admixed with approved water proofing compound and laying the brick bats on bottom layer in	188.30	Sqft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	C.M.1:5 admixed with approved water proofing compound filling up to half depth of brick bats, curing this layer for 3 days, applying cement slurry over this layer joints of brick bats with C.M.1:3 admixed with approved water proofing compound and finally top finishing with average 20 mm. thick layers of same mortar added with jute fibre at 1Kilogramper bag including finishing the surface smooth with cement slurry admixed with approved water proofing compound. The cost to include that for disposing off the debris from the premises in a designated dumping ground as per the local MCGM rules.				
34	Providing anti termite treatment to the sides of flooring of the existing building as per I.S. 6313 (Part II) by punching holes 6mm dia. drilled at a distance of 30cm. centre to centre and injecting one percent of chlordane emulsion concentrate at the rate of 50 ml per hole and sealing by filling putty etc. complete covering 2 years guarantee on bond paper.	200.00	Nos		
IX	**TOTAL FOR CIVILWORK**				
	TOTAL FOR INTERIOR & CIVIL WORK FOR GROUND FLOOR				
	GST @18%				
	GRAND TOTAL				

General Notes for Interior Work

1	The cost of items in the schedule of quantities to include that for Adhesive for pasting laminate/ veneer or any other material otherwise mentioned to be pasted.
2	Where ever Glass has to be fixed & requires to be glued, the cost to include that for necessary adhesive like Araldite or equivalent.
3	Where ever Plastic, Rubber, Cork Sheets have to be pasted the cost to include that for necessary Rubber Solution.
4	All exposed surfaces in Loose Furniture to be finished with Laminate 1 mm thick laminate & all hidden surfaces to be finished with 0.8 mm thk laminate.All other surfaces without laminate finish such as edges of ply, which are finished with TW lippings, rear surfaces of loose furniture's abutting against a partition, etc to be finished with French Polish.
5	All exposed edges of Plywood to be finished with TW Lippings 6 mm thick of width matching the thickness of the plywood as required.
6	All hidden Wood/ Plywood surfaces to be painted with Anti Termite Paint of approved manufacturer & specifications.
7	All drawers & Keyboards to be mounted on Telescopic Channels of required length.
8	Cost for Plumbing fittings & fixtures to include that for all necessary hardware, glues, compounds, etc as required.
9	All rates are inclusive of all Taxes.
10	The site shall be cordoned off by the contractor using metal sheets. Also safety measures such as covering of external sides of building with hessian cloth if required shall be considered as part of contract.
11	The cost to include that for all necessary scaffolding, cantering, staging & all necessary hardware wherever required.
12	All materials used should be conforming to the relevant IS standards & shall be tested from a Govt approved laboratory as required.

SCHEDULE OF QUANTITIES

PART-II

INTERIOR RENOVATION OF MULTIPURPOSE HALL AT GROUND FLOOR, CENTRAL OFFICE, 239, NARIMAN POINT, MUMBAI.

Bill of Quantities for Electrical work

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
A	**ELECTRICAL WORK**				
1	Point wiring for Primary light/bell concealed type in min 20 mm FRLS grade HMS PVC conduit with 1.5 sq.mm. (2+1E) FRLSH grade copper wires, modular type switch & Switch Box, earthing and required accessories. Length of point 10 meters. Cost to include that for making chases in the wall & concealing them.	170.00	Nos.		
2	Secondary point wiring for additional light/ bell point, concealed type in min 20 mm FRLS grade PVC conduit with 1.5 sq.mm. (2+1E) FRLSH grade copper wires with required accessories. Length of point 3 meters. Cost to include that for making chases in the wall & concealing them.	200.00	Nos.		
3	Point wiring for independent 6A plug, concealed type in min 20 mm FRLS grade HMS PVC conduit with 2.5 sq.mm (2+1E) FRLSH grade copper wires, modular type switch & Switch box, earthing and required accessories as per specification.	71.00	Nos.		
4	Secondary Wiring for 6A plug on board with Switch socket surface/concealed type, copper wiring and earthing and with modular accessories as per specification.	200.00	Nos.		
5	Point wiring for independent 15 A plug, concealed type in min 20 mm FRLS grade HMS PVC conduit with 4 sq.mm (2+1E) FRLSH grade copper wires, modular type switch & Switch box, earthing and required accessories as per specification	20.00	Nos.		
6	Secondary Wiring for 15A plug on board with Switch socket surface/concealed type, copper wiring and earthing and with modular accessories as per specification	20.00	Nos.		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
7	Supplying and erecting underfloor junction box of size 300mm x300mm x55 mm. with flush finish powder coated appearance having knock outs for UPVC duct entry of size 60x25 mm and 95x35 mm ducts complete as per specification.	50.00	Nos.		
8	Supplying & erecting ciruit wiring with 2x2.5 sq.mm.and earth wire 1.5 sq.mm FRLS PVC copper wire in rigid PVC conduit min.20mm dia. as per specification No: WG-MA/PC, para no. 1.4.1	3936.00	Rft		
9	Supplying & erecting circuit wiring with 2x4 sq.mm.and earth wire 2.5 sq.mm FRLS PVC copper wire in rigid PVC conduit min.20mm dia, as per specification No: WG-MA/PC, para no. 1.4.1	2952.00	Rft		
10	Supplying & erecting circuit wiring with 2x6 sq.mm.and earth wire 4 sq.mm FRLS PVC copper wire in rigid PVC conduit min.20mm dia, as per specification No: WG-MA/PC, para no. 1.4.1	1968.00	Rft		
11	Supplying and erecting modular type bell-push 6A/10A ISI mark approved make duly erected on provided plate and box with wiring connections complete including the cost of Buzzer.	6.00	Nos		
12	Supplying and erecting modular type telephone socket one gang with safety shutter ISI mark approved make duly erected on provided plate and box with wiring connections complete.	30.00	Nos		
13	Supplying and erecting modular type computer socket RJ 45 with safety shutter ISI mark approved make duly erected including the cost of box with wiring connections complete.	30.00	Nos		
14	Supplying and erecting modular type buzzer 230/250V ISI mark approved make duly erected on provided plate and box with wiring connections complete.	6.00	Nos		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
15	Supplying and erecting 6 to 32 A SPMCB suitable to fix in 1 module of modular switch in provided box complete & duly concealed with necessary material and connected.	5.00	Nos		
	Telephone Cables and MDF Box				
16	Supplying & erecting telephone cable 2 pair with 0.5 mm dia. laid in provided PVC casing / conduit as per specification No. WG-TW	2460.00	Rft		
17	Supplying & erecting telephone cable 10 pair with 0.5 mm dia.laid in provided PVC casing/ conduit as per specification No. WG-TW.	164.00	Rft		
18	Supplying, erecting & commissioning Main Distribution Frame (MDF) Box 50x50 pairs as per specification No. WG-TW.	1.00	Nos		
19	Supplying, erecting & commissioning Junction box suitable for 10 pairs as per specification No. WG-TW	1.00	Nos		
	Network Cabling and Rack				
20	Supplying & installing UTP networking Cat-6 cable suitable for LAN / WAN Computer net-working as per specification No. WGCOC/NC	2510.00	Rft		
21	Supplying and erecting FR grade, PVC armoured multimode armoured multimode Optical Fibre Cable with 6 fibres, with core dia 50/125 µm (OM3) suitable for 1 GBps Ethernet distance at 850 nm of wavelength, on wall/ceiling or laid in provided pipe/trench as per specification No. WG-COC/OFC LSZH.	10.00	Rft		
	Dismantling of Old Systems				
22	Dismantling the existing light, fan, bell, clock, independent plug point, wiring including circuit mains of all types along with accessories etc. complete as per specification No: WG-DM/PW.	300.00	Nos		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
23	Dismantling the existing Telephone / Lan/ Wan/TV cables and wires of all sizes along with casing-capping / conduit complete as per specification No: WG-DM/PW.	1000.00	Rft		
24	Dismantling the existing Aluminium/copper mains, sub mains wiring upto 10 sq.mm along with accessories etc. Complete as per specification No: WG-DM/PW.	150.00	Rft		
	Lighting Fixtures				
25	Supplying and erecting square shaped CRCA /die-cast aluminium powder coated housing LED Panel light 600X600mm of PREMIUM RANGE suitable for upto 45 to 48 W with provision for plane front frame with translucent cover fixed to the housing complete.	10.00	Nos		
26	Supplying and erecting square shaped CRCA / die-cast aluminium powder coated housing LED Panel light 250X250 mm of PREMIUM RANGE suitable for upto 18 to 20 W with provision for plane front frame with translucent cover fixed to the housing complete.	300.00	Nos		
27	Supplying and erecting T5 14/18 W energy efficient fluorescent tube.	15.00	Nos		
28	Supplying and erecting T8 Fluorescent tube day light 1200mm 36 W.	15.00	Nos		
29	Supplying erecting testing & commissioning of 40W LED hung Chandelier type fitting including all fittings & fixtures (Basic Price of fitting Rs 10000/- per fitting)	20.00	Nos		
30	Supplying erecting testing & commissioning of 20W LED wall mounted bracket/picture light type fitting including all fittings & fixtures (Basic Price of fitting Rs 2500/- per fitting).	20.00	Nos		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	Distribution Boards				
31	Supplying and erecting metal clad distribution board approved make 415/500V,8 way, 32A, per way & neutral bar connector complete erected on iron / G.I. frame/ wooden plank or Board as per specification No. SWSWR/ MDB.	3.00	Nos		
32	Supplying and erecting metal clad distribution board approved make 415/500V, 12 way,32A per way & neutral bar connector complete erected on iron / G.I. frame/ wooden plank or Board as per specification No. SWSWR/ MDB.	1.00	Nos.		
33	Supplying and erecting metal clad distribution board approved make 415/500V, 4 way, 32A. per way & neutral bar connector complete erected on iron frame/ wooden plank or Board as per specification No. SW-SWR/MDB.	1.00	Nos.		
34	Supplying, erecting & marking **SPN** MCB 6A to 32A,C- series (for motor/power/ Lighting) in provided distribution board as per specification No. SW-SWR/MCB.	104.00	Nos		
35	Supplying, erecting & marking **TPN** MCB 40A to 63A, C- Series in provided distribution board as per specification No. SW-SWR/MCB.	8.00	Nos		
36	Providing & erecting 4 Pole MCCB upto 200A, 415V capacity with S.C. rating 25 kA (Ics=100% of Icu), thermal setting with provided leads on iron frame/wooden board as per specification No. SW-SWR/MCCB	1.00	Nos		
37	Supplying, erecting & terminating PVC armoured cable 3½ core 35 sq mm aluminium conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL	100.00	Rft		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
38	Supplying & erecting Siemens type brass cable glands for 3½ core 35 sq mm for PVC armoured cable as per specification No. CB-GL	6.00	Nos.		
39	Supplying & erecting crimping type aluminium lugs for cable 35 sq mm complete as per specification No. CB-CL/AL.	6.00	Nos		
40	Supplying, erecting & terminating PVC armoured cable 3½ core 70 sq mm aluminium conductor with continuous 8.35 sq mm (10 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL.	100.00	Rft		
41	Supplying & erecting Siemens type brass cable glands for 3½ core 70 sq mm for PVC armoured cable as per specification No. CB-GL	2.00	Nos		
42	Supplying & erecting crimping type aluminium lugs for cable 70 sq mm complete as per specification No. CB-CL/AL.	2.00	Nos.		
43	Providing earthing with Copper earth plate size 60 x 60 x 0.315 cm with funnel with a wire mesh for watering and brick masonry block C.l. cover with minimum 25 kg of maintenance free earth conductivity enhancing mineral earthing compound complete with all materials, testing & recording the results as per specification no ESE –LA.	2.00	Nos.		
44	Supplying and erecting G.I. strip of required size used for earthing on wall and/or any other purpose with necessary GI clamps fixed on wall painted with bituminous paint in an approved manner with joint required as per specification No (EA-EP).	50.00	Kg		
45	Supplying and erecting Annealed bare copper wire of high purity of different sizes used for earthing on wall with necessary copper clamps fixed on wall/cable/conduit with screws in an approved manner.	50.00	Kg		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	Miscellaneous Works				
46	Providing, fixing, testing & commissioning open LED lighting strip, 20 W/ Rm of approved type & make as per directions.	450.00	Rft		
47	Providing, fixing, testing & commissioning Neon Flex LED lighting strip, 20 W/ Rm of approved type & make as per directions.	450.00	Rft		
48	Providing, Fixing, Testing & Commissioning HDMI cable including connectors at both ends.	100.00	Rft		
49	Providing, Fixing, Testing & Commissioning RG 6 cable including connectors at both ends.	100.00	Rft		
50	SITC 20 pair Jelly filled Armoured telephone cable.	100.00	Rft		
51	Supply & Laying of 1.5sqmm Cu FRLS Wire for Earth Point Wiring	8856.00	Rft		
52	Supply & Laying 4+1 Wire for CCTV	400.00	Rft		
53	Supply & Installation of 4P MCB Water Proof Box	2.00	Nos.		
54	Supply & Laying of 1Rmt Patch cord Wire for Data	30.00	Nos.		
55	Supplying and erecting regular/standard model ceiling fan of 1400 mm sweep complete erected in position.	45.00	Nos.		
56	Providing and erecting bracket fan 400 mm. sweep A. C. 230 volts 50 cycles 1350 R.P.M. Oscillating type, plastic or metal blades chrome plated guard with regulator and moisture proof treatment to winding and with 'E' class insulation.	6.00	Nos.		
57	Supplying and erecting fresh air cum exhaust fan of light duty 250 V A.C.50 cycles 300mm. 1400 RPM rust proof body & blades, wire mesh, duly erected in an approved manner	6.00	Nos.		
	TOTAL OF- A (ELECTRICAL WORKS)				

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
B	**LT PANEL FOR AIRCONDITIONER**				
	Supply and Installation of LT Panel, floor mounted, front operated, dead back, totally enclosed, vermin proof, indoor, non draw out, cubicle type power distribution panel fabricated out of 2mm thick CRCA sheet having gasketed hinged door on each cubicle, fully powder coated after seven tank treatment, incorporating horizontal/ vertical sleeved tinned copper busbar complete with all internal wiring, danger board, two earthing lugs, cable chamber etc. as required housing below mentioned switchgears / meters.(GA diagram of the panel to be got approved from the Consultant)				
	Incomer Section:				
A	**250 AMP FP MCCB - Main Power Supply**	1	No.		
1	Micro Switch for Trip	1	No.		
2	Load Manager	1	No.		
3	Voltmeter	1	No.		
4	Ammeter	1	No.		
5	Indication Lights	1	No.		
6	Indication Lights	4	No.		
7	Control MCB	3	Nos		
8	Current Transformer 250/5 CL-1, Cast Resin	3	Nos.		
9	Current Transformer 250/5 CL-1, Cast Resin 5P10	3	Nos.		
10	Push Button	3	Nos.		
11	Under Voltage Release	1	No.		
12	Restricted Earth Fault Relay	1	No.		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
13	CT Shortening Terminal	3	Nos.		
14	Voltage Monitoring Relay	1	No.		
B	**250 AMP FP MCCB - DG Supply**	1	No.		
1	Micro Switch for Trip	1	No.		
2	Load Manager	1	No.		
3	Voltmeter	1	No.		
4	Ammeter	1	No.		
5	Indication Lights	1	No.		
6	Indication Lights	4	No.		
7	Control MCB	3	Nos		
8	Current Transformer 250/5 CL-1, Cast Resin	3	Nos.		
9	Current Transformer 250/5 CL-1, Cast Resin 5P10	3	Nos.		
10	Push Button	3	Nos.		
11	Under Voltage Release	1	No.		
12	Restricted Earth Fault Relay	1	No.		
13	CT Shortning Terminal	3	Nos.		
14	Voltage Monitoring Relay	1	No.		
C	**250 Amp Automatic Transfer Switch**	1	Nos.		
1	Controller	1	Nos.		
2	Indication Lights	2	Nos.		
3	Indication Lights	1	Nos.		
4	Control MCBs	3	Nos.		

SR. NO	DESCRIPTION	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	Mechanical & Electrical Interlocking for both incomers When One incomer is ON, the other will be OFF. On power failure switch over to DG Supply and vice versa after restoration of Main Supply				
	Outgoing Section:				
1	125 Amp FP MCCB 50KA (MPR Based Protection) - For UPS 80KVA	1	Nos.		
2	Extended Rotary Handle	1	Nos.		
3	Spreaders	1	Nos.		
4	63 Amp FP MCCB 50KA (MPR Based Protection) - For AC outdoor x 2 Nos, Indoor Acs, RAW Supply, Lighting Supply	5	Nos.		
5	Extended Rotary Handle	5	Nos.		
6	Spreaders	5	Nos.		
7	63 Amp FP MCCB 50KA (MPR Based Protection) - Spares	2	Nos.		
8	Extended Rotary Handle	2	Nos.		
9	Spreaders	2	Nos.		
	TOTAL OF B-LT Panel for air conditioner				
	Total of A+B				
	ADD 18% GST				
	TOTAL WITH GST				

SCHEDULE OF QUANTITIES
PART-III

AIR CONDITIONING

INTERIOR RENOVATION OF MULTIPURPOSE HALL AT GROUND FLOOR, CENTRAL OFFICE, 239, NARIMAN POINT, MUMBAI.

Bill of Quantities for Installation of New VRF Units

PART A :- HI-SIDE

SR. NO.	DESCRIPTION	UNIT	QTY.	SUPPLY RATE (RS)	AMOUNT (RS)
	VRF SYSTEM- SUPPLY VOLTAS				
	MAKES :Bluestar/Hitachi/Daikin/ Mitsubishi/Voltas/Carrier				
1.0	**OUTDOOR UNITS**				
1.1	**16 HP**	Nos.	2		
1.2	**18 HP**	Nos.	1		
2.0	**INDOOR UNITS**				
2.1	**Ceiling suspended cassette Unit with cordless remote controller. (4-Way Cassette Unit)**				
2.1.1	1.3 TR CASSETTE UNIT	Nos.	1		
2.1.2	2.0 TR CASSETTE UNIT	Nos.	20		
3.0	Supply & Installation of Refrigerant piping Joints for above mentioned Indoor Units.	Nos.	21		
	COST FOR HIGH SIDE (Rs.)				
	GST @ 28%				
	TOTAL WITH GST				

PART B :- LOW-SIDE

SR. NO.	DESCRIPTION	UNIT	QTY.	SUPPLY RATE (RS)	AMOUNT (RS)
	VRF SYSTEM-INSTALLATION, TESTING & COMMISSIONING.				
1.0	**OUTDOOR UNITS**				
1.1	**16 /18HP**	Nos.	3		
2.0	**INDOOR UNITS**				
	Ceiling Suspended Cassette Unit with cordless remote controller (4-Way Cassette Unit)				
2.1.1	1.3 TR CASSETTE UNIT	Nos.	1		
2.1.2	2.0 TR CASSETTE UNIT	Nos.	20		
3.0	Supply and Installation of Refrigerant piping Joints for above mentioned Indoor Units.	Nos.	21		
4.0	**REFRIGERENT PIPING & ACCESSORIES FOR VRF**				
4.1	Supply, Installation & Testing of All refrigerant piping between indoor & outdoor units duly insulated. All piping inside the room shall be properly supported with hanger. All piping shall be pressure tested.				
4.1.1	28.6 mm	Rmt.	10		
4.1.2	25.4 mm	Rmt.	10		
4.1.3	22.2 mm	Rmt.	75		
4.1.4	19.1 mm	Rmt.	75		
4.1.5	15.9 mm	Rmt.	75		
4.1.6	12.7 mm	Rmt.	75		
4.1.7	9.5 mm	Rmt.	75		

SR. NO.	DESCRIPTION	UNIT	QTY.	SUPPLY RATE (RS)	AMOUNT (RS)
5.0	**POWER, CONTROL CABLING & EARTHING.**				
5.1	Supply, Installation & Testing of Power Cabling from Local isolator to OD Unit.				
5.1.1	4c x 16 sqmm	Rmt.	50		
5.2	Supply, Installation & Testing of Power Cabling from Local isolator/ switch socket to indoor unit including supply & fixing of plug top if required to match the receptacle provided.				
5.2.1	3c x 1.5 sqmm	Rmt.	75		
5.3	Supply, Installation & Testing of Communication cable between Indoor and Outdoor Unit.				
5.3.1	3c x 1.0 sqmm shielded cable.	Rmt.	600		
5.3.2	10 guage Cu strip for earthing	Rmt.	50		
6.0	**MS STAND**				
6.1	Supply & Installation of MS Structure for installing outdoor units with 2 coats of red oxide paint and black paint.	Nos	3		
7.0	**DRAIN PIPING**				
7.1	Supply, Installation & Testing of PVC with 6 mm insulated sections and including bends, elbows, tees, tappings, wall sleeves, hangers, supports etc.				
7.1.1	25 mm dia.	Rmt.	300		
7.1.2	32 mm dia.	Rmt.	300		
7.1.3	40 mm dia.	Rmt.	300		
7.1.4	50 mm dia.	Rmt.	300		

SR. NO.	DESCRIPTION	UNIT	QTY.	SUPPLY RATE (RS)	AMOUNT (RS)
8.0	Supply & Gas charging of Refrigerant Gas.	Kg.	80		
9.0	Providing & fixing Underdeck Insulation of Nitrile rubber 25 mm thick Class O ALU Sheet.(12.83x23.6)	Sqft	1000		
10.0	Lifting & Shifting Charges.	Lot.	1		
	TOTAL AMOUNT LOW SIDE(Rs.)				
	GST 18 %				
	TOTAL WITH GST				
A+B	**TOTAL HIGH SIDE & LOW SIDE WITH GST**				

SCHEDULE OF QUANTITIES

PART-IV

INTERIOR RENOVATION OF MULTIPURPOSE HALL AT GROUND FLOOR, CENTRAL OFFICE, 239, NARIMAN POINT, MUMBAI.

BILL OF QUANTITIES FOR PA, FIRE DETECTION & (CONVENTIONAL) CCTV YSTEM, ACCESS CONTROL SYSTEM

SR. NO.	DESCRIPTION	UNIT	QUANTITY.	RATE	AMOUNT
PART-A	**- FIRE DETECTION AND ALARM SYSTEM**				
1	Supply, installation, testing & commissioning of conventional Optical type Smoke Detector on suitable back box with base including all accessories and necessary connections. (Above & Below the False Ceiling) The detector should have listing of UL/LPCB/FM/VDS approved.	Nos.	30		
2	Supply, installation, testing & commissioning of conventional type Heat Detector with combination "ROR and Fixed Temperature" base including all accessories. The detector should have listing of UL/LPCB/FM/VDS approved.	Nos.	10		
3	Supply, installation, testing & commissioning of conventional Manual Call Point (Pill box) with break glass push button and flip abort switch or agent release switch in metal enclosure complete including all accessories. The MCP should have listing of UL/LPCB/FM/VDS approved.	Nos.	06		
4	Supply, Installation, Testing & Commissioning of Addressable transponder/ Monitor Modules for monitoring flow switches/Fire exit doors etc complete as required.	Nos.	02		

SR. NO.	DESCRIPTION	UNIT	QUANTITY.	RATE	AMOUNT
5	Supplying, erecting, testing and commissioning hooters having high (100dB @ 1m) and low (94dB @ 1m) volume setting, group addressing facility allowing multiple sounders to be activated with CRCA enclosure complete	Nos.	01		
6	Supplying, installing, testing and commissioning remote response indicators suitable to operate on 5-28 V dc supply having FR Polymer ABS Housing complete	Nos.	10		
7	Supplying, installing, testing and commissioning of 2 Zones Microprocessor based conventional fire alarm control panel (FACP) with standard accessories, 16x2 Character LCD Display, provision for zone wise contact and beep sound alarm, suitable to operate on 120-220 V AC, 0- 49 Deg C, 93 ± 2 Percentage RH (non- condensing) at 32 ± 2 Deg C complete.	No.	1		
8	Supply, installation, testing & commissioning FR,XLPE armoured cabel 2 Core x 1.5 Sq.mm. copper conductor FRLS Cable (Orange) fixed on walls/ceiling with saddles and spacers including all accessories.	Rft	1574.40		
9	Supply, installation, testing & commissioning FR,XLPE armoured cabel 8 Core x 1.5 Sq.mm. copper conductor FRLS Cable (Orange) fixed on walls/ceiling with saddles and spacers including all accessories.	Rft	50.00		
10	Carefully removing the existing security System, Cameras, Smoke detectors, cabling & Fire alarm panel, cabling and other fittings and fixtures & stacking as directed & re installing the same as per the new layout & drawing as per the directions of the site engineer/consultant/fire officer	LS	1		

SR. NO.	DESCRIPTION	UNIT	QUANTITY.	RATE	AMOUNT
	including the cost of all fittings, fixtures & accessories & the required hardware & testing, commissioning & certification of the system.				
	TOTAL OF PART-A				
PART-B	**- PUBLIC ADDRESS SYSTEM**				
1	Supplying, erecting, testing and commissioning 15 to 30 Watts Ceiling or column Mount Speaker with back box for mounting as per technical specifications.	No.	20		
2	Supplying, erecting, testing and commissioning 120 W amplifier suitable to operate on 230 Volts A.C. / 12 Volts D.C. supply complete	No.	1		
3	Supply, installation, testing and commissioning of DVD/CD/MP3 with FM complete as per technical specifications.	Set	1		
4	Supply, installation, testing and commissioning of 6W Volume Control Switch with ON OFF Control for Controlling the Speaker Volume at the User level.	No.	2		
5	Supply, installation, testing and commissioning of the Rack of suitable design to house all the amplifiers, controller, DVD players all interface unit all complete with required accessories and ready for commissioning all complete floor mounting.	No.	1		
6	Supply, installation, testing and commissioning of Console with facilitating announcement of All Zone.	No.	1		

SR. NO.	DESCRIPTION	UNIT	QUANTITY.	RATE	AMOUNT
7	Supplying, erecting, testing and commissioning of 1.5 sq. mm speaker wire complete.	Rft	1640		
8	Supply, installation, testing and commissioning of 40/36 wires in to be laid in GI,14 G minimum 20 mm Conduit complete with all fixing accessories as per the specifications.	Rft	100		
9	Supply, installation, testing and commissioning of the Main Music Fuse box at the Main console end to terminate floor circuit wires all complete with bottle type fuses to control circuits at every floor level in GI enclosure all complete wall mounting.	No.	1		
10	Supplying, erecting, testing and commissioning of 2 core shielded cable complete	Rft	50		
11	6 Zone Controller with 240 W Amplifier compliance with emergency Standards EN 60849 , EN 54-16, Expandable up to 60 zones using Call Router, Full System supervision line supervision, impedance supervision, Message manager for emergency message, Allowed for pre-recorded announcement and evacuation message, Amplifiers connected are also supervised, Internal memory 16 MB for 255 message storage, Six programmable volume override output contacts are there for overriding local volume control during priority calls, Equalizer is inbuilt.	No.	1		
	TOTAL OF PART-B				

SR. NO.	DESCRIPTION	UNIT	QUANTITY.	RATE	AMOUNT
PART-C	**-SECURITY CAMERA SYSTEM - (CCTV)**				
	Supply, Installation, Testing and commissioning of the following complete system.				
1	32 Channel NVR based CCTV System-Package.	No.	1		
2	Additional CAT 6 Cable with ISI marking in PVC Conduit.	Mtrs	1100		
	TOTAL OF PART-C				

SR. NO.	DESCRIPTION	UNIT	QUANTITY.	RATE	AMOUNT
PART-D	**-ACCESS CONTROL SYSTEM**				
1	**Providing & installing fingerprinting biometric Access/ attendance system with the following features:**				
1	Hardware Function CPU- 32 bit (ARM9) Fingerprint Sensor- Optical Identify Mode- Fingerprint, Dual-Fingerprint , Multiperson combination, PIN, EM, MIFARE Card (Optional) Display- 4.3" TFT True Color Touch LCD LED Indicator – 2 Colors with Red & Green Keyboard – 4 Keys Interface Power Port, TCP/IP, RS485, Wi-Fi (Optional), GPRS (Optional) Wiegand 26/34 bits with 1 In & 1 Out Door Relay Output, Tamper Input , Duress Alarm Output Door Bell Relay, Door Relay, Door Bell Relay Door Bell Output, Anti Pass Back Port Camera Yes (Real Time Photo Taking) USB Disk- Yes(Only USB Disk or Wi-Fi) Real Time Clock – Yes, Power – DC 12V + = 5% 1.5A Operating Humidity – 20% - 80% Fingerprint Capacity – 10,000 Max. Attendance Logs – 300,00 Max. Management Logs – 10,000 Photo Logs – 100,000 Searchable Attendance Logs – Yes (After Authentication, user can look his/her attendance logs) Authentication Methods– Fingerprint, EM Card, Password, Dual Fingerprint, Multi- person Combination Authentication Languages- English Access Control – Able to controlSingle door access through Wiegand,	Set	1		

SR. NO.	DESCRIPTION	UNIT	QUANTITY.	RATE	AMOUNT
	50 time periods, time setting Alarm- Force Removal Alarm, Duress Alarm, Force Door Open Alarm, Overtime Alarm Self-check – Yes FAR/FRR- 0.00001 / 0.1% FP Verification Speed - <=1.0S (With 100,000 FP registration) FP Verification Mode- 1:N, 1:1, Dual Fingerprint or Group Combination Authentication. Door Lock : Magnetic				
	TOTAL OF PART-D				
	TOTAL OF PART-A+B+C+D				
	GST AT 18%				
	TOTAL WITH GST				

GRAND TOTAL FOR PART(I+II+III+IV)

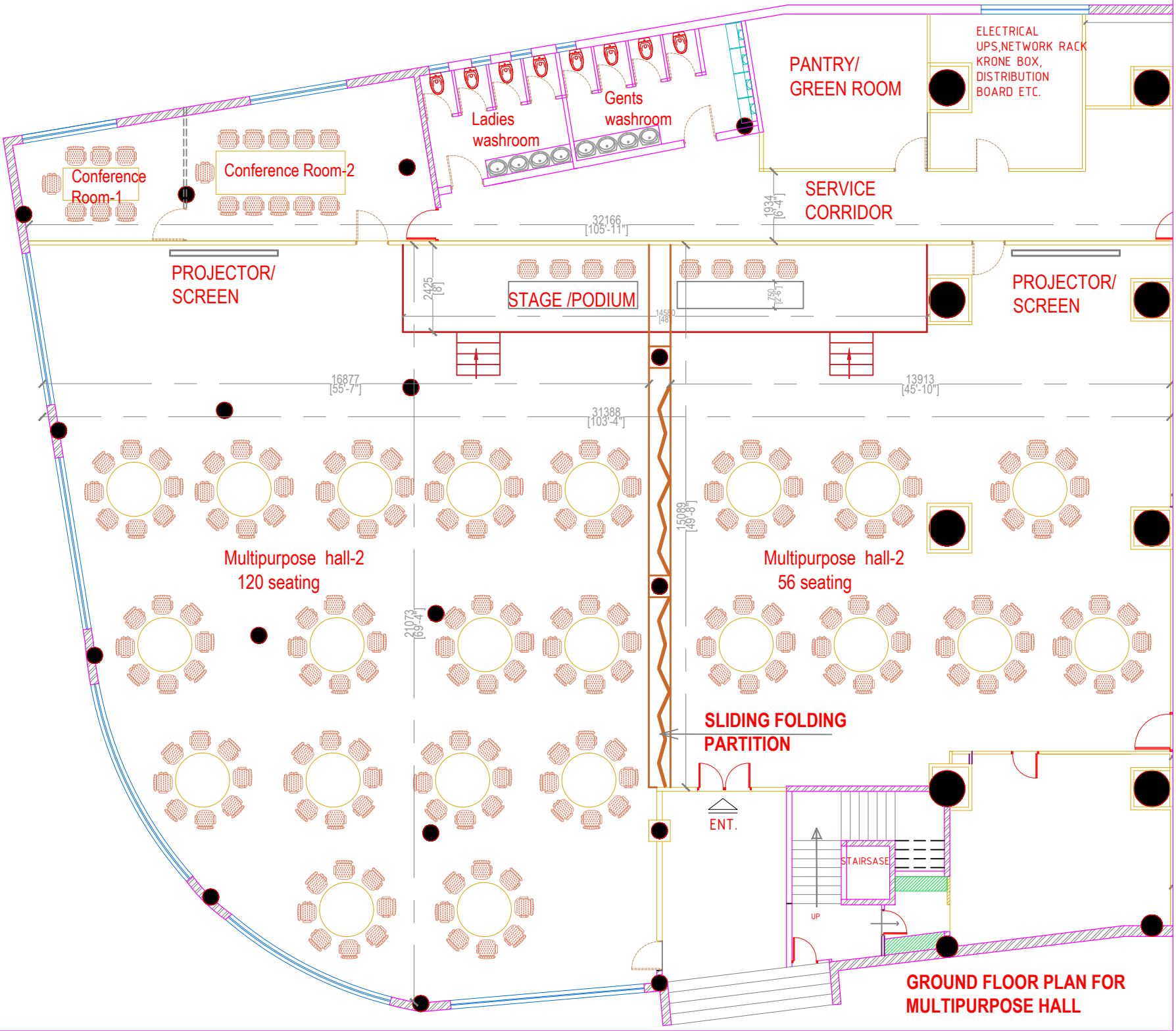
TOTAL IN WORDS :

Rate inclusive of all Material charges, Transportation, Local levies as applicable, Loading, Unloading, Lifting- Shifting, Erection, Testing , Commissioning, Scaffolding, VAT, Sales tax, GST any additional/ special duties, excise, custom duty etc. as applicable.
S/I/T/C = Supply , Installation ,Testing & Commissioning

Contractor Name :

Sign & Seal

Address


Conference Room-1
Conference Room-2
Ladies washroom
Gents washroom
PANTRY/ GREEN ROOM
ELECTRICAL UPS,NETWORK RACK KRONE BOX, DISTRIBUTION BOARD ETC.
SERVICE CORRIDOR
1934 [6'-4"]
32166 [105'-11"]
PROJECTOR/ SCREEN
2425 [8']
STAGE /PODIUM
730 [2'-6"]
14580 [48']
PROJECTOR/ SCREEN
16877 [55'-7"]
13913 [45'-10"]
31388 [103'-4"]
15089 [49'-8"]
Multipurpose hall-2 120 seating
Multipurpose hall-2 56 seating
21073 [69'-4"]
SLIDING FOLDING PARTITION
ENT.
STAIRSASE
UP
GROUND FLOOR PLAN FOR MULTIPURPOSE HALL