



Regional Office Anand

SUBJECT: INTERIOR WORK FOR UNION BANK OF INDIA, ANAND REGIONAL OFFICE, 2ND FLOOR, MARUTI SOLARIS, ANAND.

TENDER FOR INTERIOR FURNISHING WORKS,ELECTRICAL WORKS,NETWORKING WORKS& AC WORKS.

PART-1

PREQUALIFICATION CUM

TECHNICAL BID

Date of issue of Tender	: 01.06.2022to21.06.2022 During office hours.
Last date for submission of tender	:21.06.2022up to 3.00 pm.
Opening of Bid	:21.06.2022 at3.30 pm.
Pre bid Meeting	:13.06.2022 at3.30 pm.

Owner:

Union Bank of India,
Anand Regional Office,
Peridot Hub, 24 Urmi Society,
Near Urmi Crossing,
Productivity Road, Akota.

Contact Person:- Mr Mrutyunjaya
Biswal, Chief Manager (Operations)

Email:-cb8831ssd@unionbankofindia.bank
Ph:- 0265 2343602, 655

Consultant:

M/s Mayur Shah & Associates.
803, Top Floor,
Center Point, Alkapuri,
Vadodara - 390007.
(M) 9377213854
Email -msa.baroda@gmail.com

INTERIOR WORK FOR UNION BANK OF INDIA, REGIONAL OFFICE: ANAND

Union Bank of India, Regional Office Anand, invites sealed Tenders in two-bid system for Interior & furnishing, Electrical and Air Conditioner work of our new Regional office Anand situated at 2nd floor, Maruti Solaris mall, Anand. Eligible firms/contractors may obtain the tender forms from the above mentioned address during working hours from **01.06.2022 to 21.06.2022**

The tender document along with detailed terms and conditions are also available during aforesaid period on Bank's website www.unionbankofindia.co.in and www.eprocure.gov.in. Interested bidders may submit applications in two bid format (technical bid and Commercial bid) along with non-refundable tender fees of Rs 2000/- and EMD RS.1,00,000/- latest before 3 PM , 21ST June 2022 at above mentioned address situated at Vadodara. Technical bids of all received bids will be opened in presence of all bidders/representatives at 3:30PM on 21ST June 2022.

Union Bank of India reserves the right to reject any or all applications received without assigning any reasons whatsoever.

Regional Head

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DISCLAIMER

The information is provided to prospective tenderer having Registered Branch Office in Distt Anand or nearby area (within a radius of 100 Kms), who intend to participate in bidding process for Interior furnishing, Civil, Electrical, Networking& AC works at ANAND REGIONAL OFFICE, 2ND FLOOR, MARUTI SOLARIS, ANAND 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.

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 WORK FOR UNION BANK OF INDIA, ANAND REGIONAL OFFICE, 2ND FLOOR, MARUTI SOLARIS, ANAND.

Sealed, Item Rate, tenders are invited in the prescribed format from contractors having registered Branch office in Anand or nearby area (within a radius of 100 kms) for completion of Office Interior Works, Internal furnishing, Electrical, Networking and Air Conditioning works for the Proposed Office Premises at 2ND FLOOR, MARUTI SOLARIS, ANAND as per following details:

Earnest Money Deposit : **Rs. 1,00,000/-** by way of pay order in favor of Union Bank of India and payable at Vadodara.

Period of Completion : **45 days**

Validity of Tender : **150 days**

Date of Issue of Tender : **From 01.06.2022 to 21.06.2022**

Pre-bid Meeting with Contractor : **3.30p.m. on 13.06.2022**

Last date of submission of Tender : **Up to 3.00p.m. on 21.06.2022**

Date & Time of opening the Technical bid.: **3.30 p.m. on 21.06.2022**

The tender document can be obtained from the office of the Client: Anand Regional Office, Peridot Hub, 24 Urmi Society, Near Urmi Crossing, Productivity Road, Akota, Vadodara and should be submitted in original, duly stamped, and sealed in the same office.

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.

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 and Tender fees of Rupees 2000/-, in favour of Union Bank of India and payable at Vadodara. Prequalification application with all supporting documents are also required to be submitted in Technical bid document.

The envelope No. 2 shall be marked as Price Bid and should contain only Financial bid strictly as per format given in this tender document. Any other format shall not be considered and the price bid is liable to be rejected.

All the above 2 envelopes to be put in 3rd envelope super scribing the subject tender before submitting. All Envelopes should be super scribed with name and contact number of the bides/contractor.

Envelope No.1. Will be opened on the due date of opening. Technical bids will be evaluated as per terms and conditions of the tender document and prequalification eligibility criteria of the advertisement and the requirement of Tenderfees, EMD and the terms/ conditions submitted, acceptance of technical bid, etc.. If required bank shall obtain confidential feedback from clients. Bidders qualifying in Technical evaluation will be invited to participate for Financial bidding.

Envelope No. 2 of the contractors qualifying in Technical evaluation and having satisfactory feedback will be opened at later date (to be intimated subsequently)

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 WORK FOR UNION BANK OF INDIA, ANAND REGIONAL OFFICE, 2ND FLOOR, MARUTI SOLARIS, ANAND**".

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 UNION BANK OF INDIA, Anand Regional Office, Peridot Hub, 24 Urmi Society, Near Urmi Crossing, Productivity Road, Akota, Vadodara. **Delivery of the tender through courier/ post shall be avoided and any disputes arising thereof shall not be entertained.**

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.

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.**

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.

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.

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.

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.

Tender submitted without EMD/Tender fees will be treated as incomplete and the same will be rejected outrightly. The EMD/tender fees shall be strictly in the form of Pay Order / Demand Draft. No Cheques will be accepted. Tenders submitted with the cheque as EMD will be treated as incomplete and will be rejected.

BIO - DATA OF CONTRACTING AGENCY

1. Name of the firm :

Address of office situated in :
Anand or nearby area
(attach proof document too)

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 :

2. Registration with Tax Authorities :

i) Income-tax (PAN) No. :
GST No. :
EPF Regn. No. :
ESI Regn. No. :
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 : Enclosed/ Not enclosed
Amount of 30% of estimated cost

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- : Enclosed/ Not enclosed
Sheet and Profit & Loss A/C. for
the last 3 years i.e. Assessment years-2018-2019, 2019-2020,2020-2021
as Annexure-IV-A, IV-B & IV-C.

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	2016-17				
2	2017-18				
3	2018-19				
4	2019-20				
5	2020-21				

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.

Sr. No.	Criteria	Weightages	Self rating marks
1	Should have executed one similar work of 40 Lacs during last 5 years OR Should have executed two similar work of Rs.30 Lacs during last 5 years OR Should have executed three similar works of Rs. 25 Lacs during last 5 years.	50	
2	Average turnover for the last three years shall be Rs.15 Lacs and above.	25	
3	Should have made Operational profit 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 Electrical, Networking, AC work only.

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.	
IIIA, IIIB, IIIC	Audited Balance Sheet & Profit & Loss A/c. Statement for 2018-2019, 2019-2020 & 2020-2021	
IV	Certificates of Registration with Govt. / Public Sector / Banks.	
V	Copies of work orders along with Xerox copies of relevant TDS certificate, satisfactory completion certificate mentioning value of work.	
VI	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.	
VIIA, VIIB, VIIC, VIID, VIIE	Copies of income-tax returns/ assessment orders for each year from 2018 to 2021	

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)

	NAME OF FIRM, ADDRESS, EMAIL AND CONTACT DETAILS FOR WHOM THE WORK IS EXECUTED	
	DETAILS OF WORK DONE BY THE FIRM	FURNISHING =Rs. _____ ELECTRICALS = Rs. _____ AC WORK = Rs. _____ NETWORKING= Rs. _____
	PHOTOGRAPHS OF WORK COMPLETED (PLEASE ENCLOSE COPY)	
	VALUE OF CONTRACT EXECUTED	
	BRIEF DISCRIPTION OF THE WORK	
	PERIOD DURING WHICH THE CONTRACT IS EXECUTED	
	WORK ORDER REFERENCE (PLEASE ENCLOSE COPY OF THE WORK ORDER)	
	COMPLETION CERTIFICATE REFERENCE (PLEASE ENCLOSE COPY OF THE COMPLETION OF WORK)	
	DELAY IN EXECUTION OF WORK	
	WHETHER TIME SCHEDULE IS ADHERED TO	
	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)

	NAME OF FIRM, ADDRESS, EMAIL AND CONTACT DETAILS FOR WHOM THE WORK IS EXECUTED	
	DETAILS OF WORK DONE BY THE FIRM	FURNISHING = Rs. _____ ELECTRICALS = Rs. _____ AC WORK = Rs. _____ NETWORKING= Rs. _____
	PHOTOGRAPHS OF WORK COMPLETED (PLEASE ENCLOSE COPY)	
	VALUE OF CONTRACT EXECUTED	
	BRIEF DISCRIPTION OF THE WORK	
	PERIOD DURING WHICH THE CONTRACT IS EXECUTED	
	WORK ORDER REFERENCE (PLEASE ENCLOSE COPY OF THE WORK ORDER)	
	COMPLETION CERTIFICATE REFERENCE (PLEASE ENCLOSE COPY OF THE COMPLETION OF WORK)	
	DELAY IN EXECUTION OF WORK	
	WHETHER TIME SCHEDULE IS ADHERED TO	

	ANY OTHER INFORMATION WHICH YOU CONSIDER WILL HELP US IN TAKING OUR DECISION.	
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PLACE:
DATE:

SIGNATURE WITH OFFICE SEAL

DETAILS OF PREQUALIFYING WORKS - III

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

	NAME OF FIRM, ADDRESS, EMAIL AND CONTACT DETAILS FOR WHOM THE WORK IS EXECUTED	
	DETAILS OF WORK DONE BY THE FIRM	FURNISHING = Rs. _____ ELECTRICALS = Rs. _____ AC WORK = Rs. _____ NETWORKING= Rs. _____
	PHOTOGRAPHS OF WORK COMPLETED (PLEASE ENCLOSE COPY)	
	VALUE OF CONTRACT EXECUTED	
	BRIEF DISCRIPTION OF THE WORK	
	PERIOD DURING WHICH THE CONTRACT IS EXECUTED	
	WORK ORDER REFERENCE (PLEASE ENCLOSE COPY OF THE WORK ORDER)	
	COMPLETION CERTIFICATE REFERENCE (PLEASE ENCLOSE COPY OF THE COMPLETION OF WORK)	
	DELAY IN EXECUTION OF WORK	
	WHETHER TIME SCHEDULE IS ADHERED TO	
	ANY OTHER INFORMATION WHICH YOU CONSIDER WILL HELP US IN TAKING OUR DECISION.	

PLACE:
DATE:

SIGNATURE WITH OFFICE SEAL

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:

Dy. General Manager,
Union Bank of India,
Anand Regional Office,
Peridot Hub, 24 Urmi Society,
Near Urmi Crossing,
Productivity Road, Akota.

3.

Sir,

4.

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:
made a complete and careful examination of the RFP;
received all relevant information requested from the Authority;
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;
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;
acknowledged that it does not have a Conflict of interest: and
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	:	SIGNATURE
Date	:	NAME & DESIGNATION
		SEAL OF ORGANISATION

INSTRUCTION WITH REGARD TO SUBMISSION OF TENDER

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.

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.

The different Schedules should be filled as follows:

The "Rate" Column wherever applicable to be legibly filled in ink in both figures and words.

The "Amount" Column also to be legibly filled in ink in both figures and words.

All corrections to be initialed.

No over writing is allowed.

The figure of Item of rate shall be legibly filled in ink in both figure and words.

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

In the event of any discrepancy between the rates quoted in words and the rates in figures the former shall prevail.

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.

All the errors in totaling in the amount column and in carrying forward the totals shall be corrected.

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.

The time allowed for completion of works is **3 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.

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.

Every tender shall be accompanied by earnest money of **Rs.1,00,000/- (Rupees One Lakh only)** by way of Demand Draft/Pay Order favoring UNION BANK OF INDIA, payable at Vadodara. 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 3% 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.

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.

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.

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.

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.

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.

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.

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.

Tenders shall remain valid for a period of 150 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 150 days.

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.

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.

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.

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.

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

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.

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.

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

Conditional tenders will be summarily rejected.

COMPLETION PERIOD OF THE PROJECT WILL BE **45 days** from the tenth day of the date of acceptance of work order.

Work to be carried out in the night time as the floors above and below are corporate floors, which will not allow any noisy work during office hours. The contractor shall be responsible for obtaining all the necessary statutory permissions for the same.

The Contractor may depute Supervisor for carrying out smooth progress of the work. Bank will not reimburse any amount for deployment of Supervisor.

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.

After opening of Commercial Bid, the lowest amount quoted by the bidder will be termed as

L1Bidder.The evaluation of the Commercial Bids will also be done by the Project Architect and tender evaluation committee.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).

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.

Dy. General Manager,
Union Bank of India,
Anand Regional Office,
Peridot Hub, 24 Urmi Society,
Near Urmi Crossing,
Productivity Road, Akota.

TENDER FORM

To,

Dy. General Manager,
Union Bank of India,
Anand Regional Office,
Peridot Hub, 24 Urmi Society,
Near Urmi Crossing,
Productivity Road, Akota.

TENDER FOR INTERIOR WORK FOR UNION BANK OF INDIA, ANAND REGIONAL OFFICE, 2ND FLOOR, MARUTI SOLARIS, ANAND.

Sir,

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

Notice Inviting Tender
Instructions to Tenderer
Conditions of Contract.
Supplementary Conditions.
Specifications

Drawings

Schedule of Quantities.

Addition condition of contract

We are well aware and familiar with CPWD/ PWD, Schedule of Rates as applicable 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.

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.

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

We are enclosing along with our tender an earnest money of Rs. _____ (Rupees _____ only) favoring Union Bank of India, payable at Vadodara (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.

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.

We undertake to complete and deliver the whole of the works within a period i.e. **45 days** 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.

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.

EMD Submitted by us shall be treated as Initial Security Deposit. EMD submitted shall be by way of DD/PO favouring UNION BANK OF INDIA and payable at Vadodara. We further agree for a deduction of 8% from the running bill as retention money till accumulating total security deposit.

Validity of the tender is 150 days from the date of opening of tender or it may be beyond 150 days if mutually accepted.

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

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.

Adherence to the PERT chart will be ensured by us as the project is to be executed in a very strict time frame.

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

INDEMNITY BOND

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.

INDEMNITY BOND

(On Non-Judicial Stamp Paper of Rs. 300/-)

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 _____ 2022.

WHEREAS Union Bank of India, (address of the office) _____, have appointed _____ as the Contractors for their Proposed Union Bank of India Project at _____.

THIS DEED WITNESS AS FOLLOWS:

I/We _____, duly authorised by Resolution dated.....(in case of a Company) 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.

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.

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 Act 1947, 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.

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 _____ 2022.

SIGNED AND DELIVERED BY THE	NAME AND ADDRESS
AFORESAID _____	(Contractor)

IN THE PRESENCE OF WITNESSES:

- 1.
- 2.

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 twenty two.

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 _____, represented by hereinafter called "the Bank/owner/employer" (which expression shall, unless it be repugnant to the context or meaning thereof, include its successors and assigns) of the **ONE PART**

AND

MS _____, having its registered office at _____, hereinafter called the "Contractor" (which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) of the **OTHER PART**.

WHEREAS

The Bank is desirous of _____ (Works) on its _____ at _____.

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.

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.

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.

The tender submitted by the Contractor was, after negotiations, modified/alterd 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 _____.

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.

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.

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.

NOW IT IS HEREBY AGREED as follows:

The Contract Document is comprising of

Tender document including technical bid (Vol.-I) and pre-bid (Vol.-II).
Notice Inviting Tender issued vide letter _____
Subsequent letters issued by the Bank vide _____
Clarifications submitted by the contractor vide letter dt. _____.
Minutes of Meeting held on _____
Rebate/ Discount offered by the contractor vide letter _____
Work Order issued by the Bank vide letter _____
Acceptance letter _____ from the contractor
Drawings numbering as mentioned in the Annexure 11 of the Tender document enclosed along with the tender document.

1.a Unless the context otherwise requires the contract documents above mentioned shall be harmoniously construed and in the chronological order.

1.b Unless otherwise expressly provided under these presents, contract documents (iii) to (ix) above 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.

1.c Unless otherwise stated expressly hereunder, all the general and special terms and conditions shall apply and binding on the contractor.

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.

All time limits stated in the Contract Document are of the essence of the contract where the work has to be completed within 3 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.

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.

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.

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.

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.

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

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.

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.

CONTRACTORS COVENANTS

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;

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;

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;

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.

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 :-

Bill of Quantities
Drawings
Technical Specifications

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.

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.

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.

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.

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.

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

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.

GENERAL CONDITIONS

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.

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.

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

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-

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.

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.

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.

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.

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)

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.

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.

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.

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.

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

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

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.

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.

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.

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 subcontractors/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.

MATERIALS, WORKMANSHIP, SAMPLES, TESTING OF MATERIALS

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

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.

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.

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.

SUBSTITUTION

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.

INSPECTION OF WORKS

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.

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.

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.

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

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.

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.

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.

NOTICE AND PATENTS OF APPROPRIATE AUTHORITY AND OWNERS.

The Contractor shall conform to the provisions of any Acts of the Legislature relating to the Work, and to the Regulations and Bye-laws of 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.

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.

ASSIGNMENT AND 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 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.

The Contractor shall not assign the Contract or any benefit or interest therein or thereunder, 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.

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 relieve 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.

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 Contractor 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. Default of Contractor

If the Contractor

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

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

if a Receiver of the Contractor's firm appointed by the court shall be unable, within fourteen days after notice to him requiring him to do so, to show to the reasonable satisfaction of the 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

if the Contractor shall suffer execution to be issued, or

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

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

shall agree to carry out the contract under a committee of inspections of his creditors, or shall have an execution levied on his goods, or

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

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

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

shall abandon the contract,

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

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

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

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)

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.

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.

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.

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.

NOTICES

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.

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.

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.

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, expensesfor loss, damage caused due to the bidder, by various means not limited to forfeiture of security deposit and unpaid bills .

ARBITRATION

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. 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.

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.

Signed by the said
In the presence of

Bank

Witness
Name:
Address

Signed by the said
In the presence of

Contractor

Witness
Name:
Address

DOCUMENTS ATTACHED TO THE AGREEMENT FORMING PART & PARCEL OF THE AGREEMENT
Tender document & tender drawings.

NIT vide

Addendum issued vide

Contractor's letter dated

Work order vide.

GENERAL INSTRUCTIONS TO CONTRACTORS
AND SPECIAL CONDITIONS

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

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.

EMD of Successful bidder will be returned after submission of Performance security. Performance Security should be for an amount of **three percent (3%)** of the contract value. Performance Security may be furnished in the form of an Account payee Demand Draft or bank Guarantee 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.

Performance Security deposit to be kept @ 3% of the contract value. This amount is kept with the bank. 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.

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 contract 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.

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.

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.

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.

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.

Time allowed for carrying out the work as mentioned in the Memorandum shall be strictly observed by the contractor and it 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. 3 Months, he shall be liable to pay compensation as defined in the conditions of contract.

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.

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.

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.

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.

(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.

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.

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

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.

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.

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

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.

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

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.

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.

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.

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 be deemed to be the fully legal and valid and binding on the contractor.

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.

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.

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.

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.

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.

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.

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.

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

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

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 except where the subject or context otherwise requires.

“Employer/ owner / Bank” shall mean “UnionBank of India, Government of India undertaking” having Regional Office at Peridot Hub, 24 Urmi Society, Near Urmi Crossing, Productivity Road, Akota, Vadodara and any of its employees representatives authorized on their behalf.

(b) “Architect / consultant” - shall mean “M/s. Mayur Shah & Associates having their Registered office at 803, Top floor, Center point, Alkapuri, Vadodara 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.....andtrading as partners in the name and style ofand 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.....andtrading in the name and style ofand shall include his / their heirs, legal representative assigns or successors.

“Contractors” (in case of company) shall mean.....a company incorporated under19.....and having its registered office atand 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.

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

“The works” shall mean the work or works to be executed or done under this contract.

“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.

“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.

“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.

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

“Priced Scheduled of Quantities” shall mean the schedule of quantities duly priced with the accepted quoted rates of the contractor.

“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 alter 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.

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

The work consists necessary Furnishing, Electrical, networking, Air conditioning and allied work required such as Carpentry,Civil work,Flooring, False Ceiling, Painting,

polishing, wiring, laying 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. 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 Mayur Shah & Associates, Architects. 803, Top floor, Center point, Alkapuri, Vadodara 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.

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:-

The variations or modifications of the design, quality or quantity of works or the additions or omission or substitution of any work.

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

The removal from the site of any defective materials brought thereon by the contractor and the substitution of any other materials thereof.

The removal and/or re-execution of any works executed by the contractor.

The dismissal from the works of any person employed thereupon.

The opening up for inspections of any work covered up.

The amending and making good of any defects under clauses 19 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.

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.

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.

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.

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 indemnify the Bank against such liabilities and shall defend all actions arising from such claims or liabilities.

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.

VARIATIONS TO BE APPROVED BY THE BANK/ CONSULTANT

Notwithstanding 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.

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.

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.

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.

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.

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.

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.

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 13 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.

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.

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.

6. 17. CONTRACTOR IMMEDIATELY TO REMOVE ALL OFFENSIVE MATTERS

6.1.1.1. 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.

6.1.1.2. 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;

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.

6.1.1.3. 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 thereof or any interest therein without the prior written consent of the Bank and no undertaking shall relieve 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

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.

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. TheBankwill release bill amount within 21days. If for some reason checking of the bill/ measurement is not completed, 75% of the bill amount atleast shall be released within 21 days and the balance within 30 days.

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.

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.

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.

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.

PROCEDURE FOR MEASUREMENT AND BILLING OF WORK IN PROGRESS:

30.1. No request for payment of advance amount will be entertained by the bank under any circumstances. However interim payment may be released on contractor's request and approved by the competent authority, after completion of at least 70 % of work (to be certified by the project Architect). The interim amount will not be more than 50 % of total project cost.

30.2. 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.

COMPLETION CERTIFICATE

APPLICATION FOR COMPLETION CERTIFICATE

The Consultant 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.

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 the 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 (detailed chart to be submitted along with rate chart as per Financial Bid 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 payableRs.

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.

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		
VII I	Date of Measurements		
XI	Present status of work		

Sno.	Items Description	Unit	Rate	Qty. as per measurement	Tender Amount Rs.

Up to previous RA Bill		Up to date gross		Present bill		remark
Qty	Amt.	Qty.	Amt.	Qty.	Amt.	

Note :

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

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

ENGINEER

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 authorized official 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.

DUTIES OF ARCHITECT/CONSULTANT

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.

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

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

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.

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

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.

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.

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

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

Daily Progress Record

Work Site Order Book.

Instruction by Bank's Officers.

Cement Statement (Receipt/Consumption/Balance).

Steel Register/any other costly Material Register.

Contract Pour Reports including Slump Test Record.

Concrete Cube Test Register.

Test Registers of other materials/fittings, fixtures, equipments as stipulated in the tender.

Register of Drawings and Working Details.

Log Book of Defects.

The Site Engineer should maintain in a Hindrance Register giving details of commencement and removal of each hindrance.

Dismantled Materials Account Register.

Supply and consumption register of scarce/costly materials like bitumen, lead, laminates, special paints etc.

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.

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.

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.

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

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.

To submit to the Competent Authority the Progress Report fortnightly.

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”.

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

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.

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.

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

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:

Record i.e. as completed drawings.

Record of Standard Measurements for periodical services.

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.

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.

(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.

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.

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.

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.

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.

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.

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:-

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.

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.

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.

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.

INSURANCE

IN RESPECT OF DAMAGE TO PERSONS AND PROPERTY

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.

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.

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.

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 therefrom.

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.

FIRE INSURANCE

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.

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.

The Contractors will have to take out following Insurance Policies:

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.

Third party Insurance Policy

For accidental loss or damage caused to the property of other persons.

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 or solely due to the construction of any property described in the Schedule.

3) Workmen's Compensation Insurance.

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.

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.

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

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

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

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

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

The contractor shall arrange for temporary 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,.

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

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

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.

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 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.

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 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.

TIME OF COMPLETION, EXTENSION OF TIME & PROGRESS CHART

Time of completion: The entire work is to be completed in all respects within the stipulated period i.e. **45 days**. 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.

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

By force majeure; or

By reason of any exceptionally inclement weather or

By reason of proceedings taken or threatened by or dispute with adjoining or Neighboring Owners or public authorities arising otherwise than through the Contractors own default or

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

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

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

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

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.

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.

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.

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.

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.

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:

Has abandoned the Contract, or

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

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

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,

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.

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 2 and 20 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.

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.

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 Vadodara and only the courts in Vadodara shall have jurisdiction to determine the same.

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 work 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.

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.

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 he might have derived from the execution of the whole works but which did not derive in consequence of the foreclosure of the whole or part of the work.

RETURN OF SURPLUS MATERIALS:

Notwithstanding 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.

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.

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.

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.

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

EMD	EMD shall be Rs. 1,00,000/- (one Lakh only) payable in form of Demand Draft/Pay Order drawn from Bank favoring Union Bank of India payable at Vadodara.
Initial security deposit	The amount of ISD shall be 3 % of the accepted value of the tender.
Date of commencement	10 th 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. 45 days

Retention money to be deducted from the bills.	5 % of the certified gross value of each running bill, till accumulating total security deposit including ISD.
Security Deposit	3 % 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.
Liquidated damages	Shall be 1 % of contract amount per week of delay subject to ceiling of 10% of the accepted contract amount.
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, equipments, cleaning of site and against Bank Guarantee. Balance 50% of retention money shall be released 15 days after satisfactory completion of defect liability period.
Recovery towards taxes.	As per rules applicable from time to time.

SAFETY CODE

Scaffolds

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).

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 properly bolted,

braced or otherwise secured, at least 1 m. above the floor or platform of such scaffolding or staging and extending along the entire length of the outside 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.

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.

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.

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.

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

Other Safety Measure

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.

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

Personal Safety Equipments

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.

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

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

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

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:

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.

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.

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.

Hoisting Machines

xiv. Use of hoisting machines and tackle including their attachments anchorage and supports shall conform 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.

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.

In case of departmental machines, the safe working load shall be notified by the Engineer. As regards contractor's machines, the contractor 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. Notwithstanding 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

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.

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.

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.

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.

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 contractors. 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.

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.

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 foot 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.

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.

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.

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.

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.

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.

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. 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.

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.

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.

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.

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.

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.

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.

Bank's decisions are final & binding on Contractor and Consultant:

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 bank in this regard shall be final and binding on both parties.

Settlement of dispute:

Wherever, in any of the document forming part of the contract, the bank 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.

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.

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.

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.

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.

Provisional Completion of works:

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

Contractor shall be responsible for obtaining approvals from local Authorities as required for temporary structures, temporary water connection and temporary electrical connection for construction purpose from the authorities/authority - Concerned Government Authority.

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.

Obtaining certificate of Completion from the Consultant.

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

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.

Certification of Bills in absence of 'Claimant's Engineer:

If the Contractor fails to attend or neglects or omits to send his representative 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 Consultant shall be taken to be correct, final and conclusive.

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 premises. He will leave the entire premises and nearby area 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 be entitled 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.

35. Time is the essence of the working contract and the bank is concerned about completion of work within given time frame. Request for further extension of time period for work completion will not be entertained under any circumstances other than force majeure

FURNITURE WORK: GENERAL SPECIFICATIONS

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

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

MATERIALS

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

GLASS:

All glass shall be float glass of the best quality, free from specks, bubbles, smokes, veins, air holes, blisters and other defects. The kind of glass to be used shall be as mentioned in the item or specification or in the special provisions or as shown in detailed drawings thickness of glass panel shall be uniform. All glass to be approved manufacture complying with IS: 3548-1966 or as per approved quality and sample. The compound for glazing to metal is to be special non-hardening compound manufacture for the purpose and of 9 brands and quality approved the Interior Designer. In cutting glass, proper allowance shall be made for expansion. Each square of glazing to be in one whole sheet and after cutting the edges to be properly filled. On completion, clean all glass inside and out, replace all cracked scratched or broken panes and leave in good condition to the satisfaction of the Architect. The contractor shall furnish all labor, materials, and equipment's required for the installation of glass and glazing items. The glass shall be of the type, quality and substance specified in the bills of quantities. In case of the glass being supplied by the owners, the contractor shall take the delivery of the glass at site and shall be responsible for proper handling

and stacking. We shall insure glass against theft, fire, etc. The contractor shall replace at his own expense all broken, damaged or disfigured glass caused in the execution of the work of faulty installation, before the virtual completion of the work. Patterned or translucent glass shall be 12 mm. In thickness and shall be approved by the Architects. The putty used for glazing metal door, window or ventilator shall conform to I.S. 420:1953.

Before installation of the glass, the contractor shall ensure against the following

All glazing rebates shall be square, putty, true in plane, clear, dry and free of dust.

The frames shall be adjusted before glazing. The weight of the glass in side hung casement causes it to drop slightly on its hinges. Before glazing shall be set in slightly high position in its frame.

Glass edges shall be clean and cut to the exact size, chipped or damaged edges shall be rejected.

7. Sashes shall be glazing in the closed position and shall not be open till the putty is set.

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

8.1.1.1. FASTENINGS AND HARDWARE:

3.1. The fixtures and fastenings, that is, but hinges, tined strap hinges, shading door bolts, door bolts, tower bolts, door latch, bath room latch, handles, door stoppers, casement window fasteners, casement stays and ventilators catch shall be made of the metal as specified in the item or its specification.

3.2. They shall be of iron, brass, aluminium, chromium plated iron, chromium plated brass, copper oxidized iron copper oxidized brass or anodized aluminium as specified.

3.3. The fixtures shall be heavy type. The fixtures and fastenings shall be smooth finished and shall be such as will ensure ease of operation.

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

3.5. Brass fittings should be proper polish finished.

3.6. Screws, nails, bolts, will be of brass or non-corrosive metal. In hardware, they will match with the hardware items.

3.7. Nails, in a finished surface shall be nearly punched and the holes filled with wood filler matching the finish. Screws, in a finished surface will be round head. Rose head or sunk beneath the surfaces and the hole plugged with a wood plug with matching colour and grain of the wood surface, unless especially detailed.

8.1.1.2. HARDWARE

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

10. HARDWARE AND METALS

11. The hardware throughout shall be of approved brand and supply well-made equal in every respect to the samples deposited with the architect. The contractor may be required to produce and provide samples from many different sources before the architect is able to make the decision and he should allow in his rates for doing so. Fittings generally are to match the finish of the article to be fixed and to be rounded or flat headed or countersunk as required. Screws are to match the finish of the article to be fixed and to be rounded or flat headed or counter sunk as required. Cover up and protect at the brass or powder coated surfaces with a thick grease or other suitable material, renew

12. as necessary and subsequently clean off and clear away on completion. All steel, brass, bronze, aluminium and stainless-steel articles shall be submitted to a reasonable test for strength, if so, required by the architect at the contractor expenses.

13. DOOR CLOSERS

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

14.1.1.1. TIMBER:

15. Timber generally is to be the best of its kind, well and properly seasoned, of mature growth, free from worm holes large loose or dead knots or other defects and sawn die square and will not supper warping, splitting or other defects through improper handling. The hardwood is to be C.P. teak weighting not less than 45 lbs per cubic foot with moisture content not exceeding 12% to 14%. The moisture content of timber shall be determined according to method described in paragraph 4 of IS:287 for "Maximum permissible moisture content of Timber used for different purpose in different zones". In measuring cross-sectional dimensions of the frame pieces tolerance upto 1.5 mm shall be allowed for each planned surface.

16. Superior Quality Indian Teak Wood:

17. Superior quality Indian teak wood means Dandeli, Balarshah and malabar Burma teak. It shall be of good quality and well-seasoned. It shall have uniform colour, reasonably straight grains and shall be free from large, loose dead knots, cracks, shakes, warp, twists, bends, borer, holes, sal wood or defects of any kind. No individual hard and sound knot shall be more than 1 cm. in diameter and aggregate area of all knots shall not exceed 1/2% of the area of the piece. It shall be close grained and there shall not be less than 6 growth rings per 2.5 cm width.

First Class Indian Teak Wood:

18. First class Indian teak means C.P. and Bulsar teak of good quality and well-seasoned. It shall have uniform colour reasonably straight grains and shall be free from

large, loose, dead knots, cracks, shakes, warp, sound knot shall be more than 2.5 cm. In diameter and aggregated area of all knots shall not exceed 1% of the area of the piece. There shall not be less than 4 growth rings per 2.5 cm width.

19. **Second Class Indian teak Wood:**

20. Second class Indian teak wood shall be similar to first class Indian teak wood except knot up to 4 cm diameter and aggregated area of all knots up to 1 1/2% of area of the piece shall be allowed. There shall not be less than 4 growth rings per 2.5 cm width.

21. **5.1 Timber** is to be cut to the required sizes and lengths as soon as practicable after the works are begun and stored under cover so that the air will circulate freely around it. Joinery is to be prepared, immediately after the placing of the contract, framed up (but not bonded) and stored until required for fixing in position, when it is to be bonded and wedged up. Any portions that warp or develop shakes or other defects are to be replaced before wedging up. The whole of the work is to be framed and finished in a proper and workmanlike manner, in accordance with the detailed drawings, and fitted with all necessary motifs, straps, belts, screws etc. Running bonded joints are to be cross-tongued with teak tongues and where over 1 1/2" thick double cross-tongued. Joiner's work generally is to be finished with fine class papered surfaces unless otherwise specified. Templates, boxes and moulds shall be accurately set out and rigidly constructed so as to remain accurate during the time they are in use. Grounds are to be clean shown, free from large knots, splayed as required, plugged and fixed to walls etc. at 1'6" centres. Wood plugs are to be put cut on twist. Patent wall plugs or plastic filling may be used in lieu of wood plugs with the approval of the Architect.

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

23. **Carpentry and Joinery:**

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

25. The timber shall be of the quality as described on the drawings or in the bills of quantities, shall be seasoned and uniform in texture, free from fungal growths, knots, wanes, open shake, borer holes, rot decay, discoloration, soft or spongy spots, holes, rot, decay, discoloration, soft or spongy spots, hollow pockets, patch or box heart and all other defects. Skilled workmen, using proper tools, shall carry out all the carpenter's work. All joints shall be securely nailed without splitting the wood. Wherever it is necessary the members shall be lapped or joined by G.I. Stapes or extra wood blocks. All joints and nailing shall be done in neatness and shall be approved by the Architects. All assembly be exactly at right angles.

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

27. All joinery work shall be securely mortised and tongued with synthetic resin conforming to I.S. 851-1957. Heads, posts, transoms, millions of door and window frames shall be made out of single pieces of timber only. The heads and posts shall be thought - tenoned

into the mortises not less than ½". Solid wood panels of not less than 5" and not more than 8" in width shall be used and jointed together with tongue groove joint. All interior wood finish doors, cabinet work shall be smoothly treated and sanded after erection, until all the defects are entirely removed. Assembled door frame without sills shall be fitted with temporary stretchers. All exposed wood and plywood shall be straight-grained method grain and colour and shall be approved by the Architects. Interior wood finished doors cabinets and other fixed wooden equipment's shall be properly installed, level plumb and true. But joints shall be avoided wherever possible, if unavoidable the joint shall be levelled. All exterior angles shall be mitered. Adjoining interior wood shall match and harmonies. All woodwork in contact with masonry shall be painted with bitumen paint or red oxide paint.

28. 5.2 JOINTS:

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

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

31. 5.3 FIRST CLASS TEAK WOOD:

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

33. 5.4 SECOND CLASS TEAK WOOD:

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

34.1.1.1. PAINTING

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

36. The surface shall be thoroughly brushed free from mortar droppings, and foreign matter. All steel work shall be cleaned of loose rust, mill scales, etc. so as to expose the original surface. All broken edges, cracks, loose-plaster and wavy surface be brought up either by patch plasterwork or by plaster of Paris. All materials viz. Dry distemper, oil bound distemper, oil paint, flat oil paint, synthetic enamel paint, plastic emulsion paint, cement primer, red lead and other primers and metallic paints shall conform to respective I.S. specifications and shall be obtained from approved manufacturers.

36.1.1.1. Painting- Flat / Plastic Emulsion etc.:

37. Ready mixed flat oil paint, plastic emulsion paint, ready mixed synthetic enamel paint, aluminium paint, etc. shall be brought in original containers and in sealed tins, if for any reason thinner is necessary, the brand and quality of thinner recommended

by the manufacturer or as instructed by the Architect shall be used. The surface shall be prepared as specified above and a coat of approved primer shall be applied. After 24 hours drying, approved or specified quality paint shall be applied evenly and smoothly. Filler putty coating may be given to give a smooth finish. Each coat shall be allowed to dry out thoroughly and then lightly rubbed down with sandpaper and cleaned of dust before the next coat is applied. Number of coats shall be as specified in the item and if the finish of the surface is not uniform, additional coats as required shall be applied to get good and uniform finish at no extra cost. After completion no hair marks from the brush or clogging of paint puddles in the corners of panels, angles or mouldings etc. shall be cleaned of stains. Pigmented priming coat (emulsion thinned with water) followed by three or more finishing coats of plastic emulsion paint. Pasted filler to be applied every coat exempting the final finishing coat and sanded.

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

38.1.1.1. ENAMEL PAINTS

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

40. All the paints shall meet with the following general requirements:

40.1. Paint shall not show excessive setting in a freshly opened and shall not easily redisposed with a

41. paddle with smooth homogeneous stage.

41.1. Paint as revived shall brush easily, possess good levelling properties and show no running or sagging

42. tendencies.

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

42.2. The paint shall dry to a smooth uniform finish free from roughness, grit, unevenness and other imperfections. Ready mixed paints shall be used exactly as received from the manufacturers and generally according to their instruction and without any admixtures what so ever.

42.2.1.1. POLISHING VARNISHING

42.2.1.1.1. French Polishing:

43. French spirit polish shall be approved make conforming to I.S.:348. If it has to be prepared on site, dissolving 0.7 Kg shall make the polish. Of best shellac in 4.5 litres of methyl spirit without heating. To obtain required shade pigment may be added and mixed. Surface shall be cleaned. All unevenness shall be rubbed down smooth with sand paper and well dusted. Knots, if visible, shall be covered with a preparation of red lead and glue. Resinous or loose knots and gaps shall be filled with seasoned timber pieces and made level with rest of the surface. Holes on surface shall be filled with putty made of whiting and linseed oil. Surface shall be given a coat of filler made of 2.25Kg. Of whiting in 1.5 litre of methyl spirit. When it dries, surface shall again be rubbed down perfectly smooth with sand paper and wiped clean. Piece of clean fine cotton cloth and cotton wool into shape of pad shall be used to apply polish. The pad shall be moistened with polish and rubbed hard on the surface applying the polish sparingly but uniformly and completely over the entire surface. It shall be allowed to dry, and another coat applied in the same way. To give finishing coat the pad shall be covered

with a fresh piece of clean fine cotton cloth, slightly dampened with methyl spirit and rubbed lightly and quickly with a circular motion, till the finished surface attains uniform texture and high gloss.

43.1.1.1.1. Wax Polishing:

44. Wax polish shall either be prepared on site or obtained ready made from market. Polish made on the spot shall be prepared from a mixture of pure bees wax, linseed oil, turpentine oil and varnish in the ratio of 2:1 ½:1 ½ by weight. The bees wax and the boiled linseed oil shall be heated over a slow fire. When the wax is completely dissolved the mixture shall be cooled till it is just warm, and turpentine oil and varnish added to it in the required proportions and the entire mixture is well stirred. Surface shall be prepared as described under "French Polishing" except that the final rubbing shall be done with sand paper, which has been slightly moistened with linseed oil. Mixture or polish shall be applied evenly, with a clean cloth pad in such a way that no blank patches are left and rubbed continuously for half an hour. When the surface is quite dry a second coat shall be applied in the same manner and rubbed continuously for an hour or until the surface is dry. Final coat shall then be applied and rubbed for two hours or more if necessary, until the surface has assumed a uniform and is quite dry showing no sign of stickiness when touched. Glass rubbing must be continuous and with uniform pressure and frequent change in direction.

44.1.1.1.1. Varnishing:

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

45.1.1.1. MELAMINE FACED PARTICLE BOARD:

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

46.1.1.1. PLYWOOD

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

47.1.1.1. LAMINATES:

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

49. TREATMENT AGAINST DECAY AND INSECT ATTACK

50. Treatment against 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.

51. The material used for treatment shall be clean, oil-free. Odorless and harmless to people, plants and animals, even when exposed to fire.

52. 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.

53. No coal-tar based products shall be used for preservative treatment.

54. The material used for preservative treatment shall be compatible with the material used for fire retardant treatment.

55. ALUMINIUM DOORS, WINDOWS & VENTILATORS.

56. 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.

57. 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.

58. 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.

59. 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.

60. 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.

61. 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.

62. 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.

63. 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.

64. 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.

65. **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.

66. SUBMITTALS

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

68. Required approvals from all concerned authorities

69. 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.

70. Equipment proposed to be used for demolition and dismantling.

71. Proposals for temporary works to partition and protect adjacent or nearby areas in use, including dust control and clean up procedures.

72. Proposal for temporary storage of salvaged material and for debris to be transformed off site.

73. CONTROL OF PROCEDURES AND SAFETY

74. 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.

75. HANDLING, STORAGE, TRANSPORTATION AND DISPOSAL

76. 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.

77. 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.

78. 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.

79. 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.

80. 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.

81. Scaffolding

82. 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.

TECHNICAL SPECIFICATIONS (MAKES/MODELS)

LIST OF APPROVED MAKES OF MATERIAL

The following are approved brand makes/manufacture's makes listed below. In case it is established that material as listed below is not available in the market, approved equivalent material and finished off any other specialized brand names/manufacture's makes may be used as per approval of BANK/Architect/Consultant. Contractors are instructed to submit the approved make list of items which they are using at site before starting the work.

SR. NO	ITEM	APPROVED MAKE
1	FALSE CEILING	
	GYPSUM BOARD	GYPROC (SAINT GOBAIN)
	FRAMING WITH COMPLETE SYSTEM	GYP STEEL ULTRA (SAINT GOBAIN), RAMCO FUJI
	HILUX BOARDS	RAMCO OR APPROVED EQUIVALENT
	MINERAL FIBRE TILES CEILING WITH COMPLETE SYSTEM	ARMSTRONG/SAINT GOBAIN/USG
2	GLASS/MIRROR	SAINT GOBAIN, MODI FLOAT
3	FURNITURE ITEMS	
	LAMINATES (IS-2046) / VENEER	GREEN LAM / CENTURY / SILICON-EVOKE / BELL / VIR / EURO / SAMRAT / FORMICA / SUNDEK OR APPROVED EQUIVALENT
	COMMERCIAL PLY (IS-303) / WATERPROOF PLY (IS-710) / BLOCK BOARD (IS-1659) / FLUSH DOOR (IS- 2202)	ANCHOR / AMUL / EURO / SILICON - EVOKE / GREEN OR APPROVED EQUIVALENT BY EIC.
	ADHESIVES	FEVICOL / BLUECOAT
	LOCKS	
	AUTO LATCH LOCK	P-ALL1-22 (EBCO)
	MULTIPURPOSE GROUP LOCK	E-MPL1-22 / E-MPL1C-22 (EBCO)
	NIGHT LATCH	8812 (GODREJ)
	CYLINDRICAL LOCK (SS MATT FINISH)	3792-WITH KEY AND 3786-KEYLESS (GODREJ) / C120SS (EUROPA)

	MORTISE DEAD LOCK (TWO WAY)	8815(GODREJ)
	MORTISE LOCK WITH DOOR HANDLE	MATIZ 8083(GODREJ)
	DRAWER CHANNELS	
	TELESCOPIC CHANNELS (ZINK PLATED)	STDS35(I)35/ STDS25(I)35/ STDS50(I)35/ STDS60(I)35 (EBCO)
	BOTTOM CHANNELS (POWDER COATED)	BMDS 35/ BMDS 37/ BMDS 55/ BMDS 60 (EBCO)
	GENERAL HARDWARE	SS MATT FINISH
	DOOR STOPPER	BLACK/IVORY/BROWN/SILVER COLOR POWDER COATED DS1 (EBCO) SPRING TYPE BLACK/BROWN/IVORY COLOR POWDER COATED (ECGL'S STERLING)
	'D' BRACKET	50X12 MM (OSWAL)
	HINGES	3"/4"/5"/6" 1.8MM TH. SS MATT FINISH (SUZU) 75X12X19 1.2 MM TH. SS MATT FINISH FOR STORAGE (SUZU) AUTO CLOSE HINGES - SLIP ON HINGE- EURO / CLICK ON HINGE-I (EBCO) FOR STORAGE
	HANDLES 'D' OR 'C' TYPE	3"/4"/6"10MM DIA SS 202 MATT FINISH (ANJALI)
	TOWER BOLT	3"/4"/6"/8" BRASS EXTRUDED SS MATT FINISH (OSWAL)
	SLIDING CHANNEL	EBCO MAKE APPROVED BY ARCHITEC/BANK.
	FLOOR SPRING	
	60 KG	7477 (GODREJ) / M-74 (HARDWYN)
	80 KG	8293 (GODREJ) / M-74 (HARDWYN)
	100 KG	8294 (GODREJ) / M-76 (HARDWYN)
	DOOR CLOSER	
	60 KG	DOUBLE SPEED 8292-SILVER, 7325- GOLDEN (GODREJ) / SCORPIO (HARDWYN)
	FIRE RATED 60 KG	1938 (GODREJ) / TRITON (HARDWYN)
	PATCH FITTINGS FOR DOOR AND FIXED GLASS PARTITION (TOP/BOTTOM PATCH, PIVOT, PATCH LOCK, L ARM, L CONNECT, CONNECTOR, FLOOR SPRING, HANDLE, PLASTIC PROFILE)	GODREJ / XL C SERIES(DORMA) / OPF SERIES (OZONE) OR APPROVED EQUIVALENT
	GLASS / MIRRORS	SAINT GOBAIN / MODI
	ALUMINUM SECTION	JINDAL / INDAL / BANCO
	WINDOW BLINDS	VISTA / AEROLUX/HUNTER DUGLUS / MAC
	POLISH / PAINT	ASIAN PAINTS / BERGER / NEROLAC
	PARTICLE BOARDS	NOVAPAN / DECO BOARD
	COMPUTER ACCESSORIES	
	KEYBOARD TRAY WITH MOUSE TRAY	KTE-1-25M (EBCO)
	CPU HANGER/ SHELF	SIDE MOUNTED IS CPU HL SM (INNOFITT) /CPUSM(EBCO) , 4/2-SMCS (ZIPCO)
	CABLE MANAGER (60MM)	METAL - CO60ZN1(EBCO) II) PVC - CO 60 (EBCO) BLACK/IVORY/GREY COLOR
	ACP PANEL	TIMEX / ALU DECOR / EURO OR APPROVED EQUIVALENT
	FOAM	SLEEPWELL / FEATHER FOAM

	WALL PAPER	WK STONE (GAEOLD PADRA ROAD I) / EXCEL (STREAMLINE) OR APPROVED EQUIVALENT
	WHITE FILM FOR GLASS	CRYSTAL / SONA MAKE VINYL FROSTED FILM

Note:

In case of non-availability of any material of specified make, the alternative should be used only after its due approved by the Bank/Architect.

The last decision of the choice of any of the agency rest with Architect / Bank.

For all items only exposed elevation measurement shall be taken for bill amount hidden supporting members of furniture / partition will not be taken in to account.

LAMINATION DETAILS		
COLOUR	STANDARD APPLICATION	SHADE & MAKE
WHITE LAMINATE	Base and on Table/Counter Top	Signature - 101 MT Nobel White, Formica - G324/1324 Super White, Heritage - 101 SD Super White, Silicon -101 MT White, Euro - 101 SF, Green Lam - 101 White, Century - 107 Snow White, New Mica - 3501 White.
RED LAMINATE	1" Band on Bottom of 4" Top & Bottom Skirting	Signature - 231 SF Deep Spice, Formica -G 566/1566, Heritage -1234 Oak Red, Silicon - 176 SF Vodafone Red.
BLUE LAMINATE	3" Band on Top of 4" Top & Bottom Skirting	Signature - 240 SF Royal Blue, Formica -G 457J/1457 Spectrum Blue, Silicon - 200 SF Blue, Euro - 192 SF, New Mica-3590 Blue.
BEIGE LAMINATE	For Table Top & Counter Top	Signature-White Chedar, Intal Beech (SF)- 507, Associate Laminates - White Chedar W 2085 ST 01, Amulya 2002 sf / Europa Beech.
<i>All Laminates Samples must be approved from Architect/Bank before Applications.</i>		

LAMINATE SAMPLE- SIGNATURE MAK



Shade No: 507 SF

Name: Intal Beech



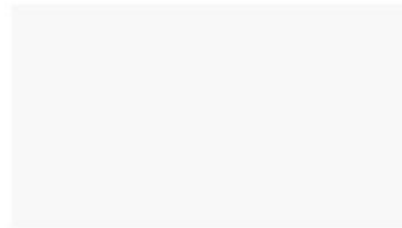
Shade No: 240 SF

Name: Royal Blue



Shade No: 231 SF

Name: Deep Spice



Shade No: 101 SF

Name: Noble White

MODE OF MEASUREMENTS FOR INTERIOR FURNISHING WORKS :

- a. **DOORS, WINDOWS AND GRILLS.**
 - i. Clear area over one face inclusive of frame shall be measured. Hold fasts and portion embedded in masonry or flooring shall not be measured.
- b. **PARTITIONS IN WOOD WORK**
 - i. The partition height shall be measured up to bottom of false ceiling and framing members / ply going above shall not be measured
- c. **DECORATIVE PANELLING OVERWALL OR OVER PARTITIONS**
 - i. The actual area of cladding shall be measured in square meter.
- d. **CARPETS**
 - i. The actual area covered by the carpet shall be measured. No extra shall be allowed for wastage. No deduction shall be made for columns up to 0.5 sq. meter.
- e. **PAVING AND TILE WORK**
 - i. 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.
- f. **ALUMINIUM SLIDING WINDOWS**
 - i. 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.
- g. **FALSE CEILING**
 - i. 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.
- h. **WOODWORK**
 - i. 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.

83. PAINTING AND POLISHING

84. IS 1477: Code of Practice for painting of ferrous metals in building

85. Part I: Pre-treatment

86. Part II: Painting

- 87. IS 2338: Code of Practice for finishing of wood and wood based materials
- 88. Part I: Operation and workmanship
- 89. Part II: Schedule
- 90. IS 2395: Code of Practice for painting, concrete, masonry and plaster surfaces
- 91. IS 3537: Specification for ready mixed paint, finishing interior, for general purposes to IS colors
- 92. IS 5410: Specification for cement paints colour, as required
- 93. IS 6278: Code of Practice for white washing and colour washing

93.1.1. TECHNICAL SPECIFICATIONS ELECTRICAL& NETWORKING

- 94. 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.
- 95. IS: 732 Code of Practice for Electrical wiring installation (System Voltage not exceeding 650V)
- 96. IS: 1646 Code of Practice for fire safety of buildings (General Electrical Installation)
- 97. IS: 9537 PART-II 1981 Rigid steel conduits for electrical wiring.
- 98. IS: 2667 Fittings for rigid steel conduits for electrical fittings.
- 99. IS: 2509 rigid non-metallic conduits for electrical installations.
- 100. IS: 1293 Pin Plugs and Sockets.
- 101. IS: 694 PVC insulated cables with copper conductors for voltages up to 1100 Volts
- 102. IS: 9532 Specification for conduits for Electrical Installation
- 103. IS: 3854 5A & 15A Switches.
- 104. IS: 3043 Earthing.
- 105. Indian Electricity Act, 1956 and Rules and Fire Insurance Regulations.
- 106. IS: 2026 Specification for power transformer----- Not applicable.
- 107. IS: 2099 Specification for high voltage porcelain bushings. ----- Not applicable
- 108. IS: 355 Specification for insulating oil. ----- Not applicable
- 109. IS: 3639 Specification for fittings and accessories for power transformer. ----- Not applicable
- 110. IS: 2274 Electrical wiring installations (System voltage exceeding 650 volt)

111. IS :7752 Guide for improvement of power factor consumer's installations
112. IS: 5216 Guide for safety procedures & practices in electrical work
113. IS: 3072 Installation & maintenance of Switch gear
114. IS: 2551 Guide for danger notice plates
115. IS: 8923 warning symbols for dangerous voltages
116. IS :13947 Specification for low-voltage switchgear & Control gear
117. IS :1777 Industrial luminaries with metal reflectors
118. IS :1913 General & safety requirement of luminaries
119. IS :116 Circuit Breakers for AC system
120. IS :3427 Metal enclosed switchgear & Control gear
121. IS: 3837 Accessories for rigid steel conduits.
122. IS: 4047 Heavy duty Air break switches & composite switch fuse units for voltage exceeding 100 volts.
123. IS :4237 General requirements for switchgears not exceeding 1000 Volts
124. IS :4615 Switch socket outlets
125. IS:159: Busbars & busbars connections
126. IS: 415 marking & arrangement for switchgear board's main connections & auxiliary wiring.
127. IS: 415 Tungsten filament lamp
128. IS: 722 Three phase watt hour meter with MDI
129. IS: 1248 Directing acting electrical indicating instruments
130. IS: 1293 three pin plugs & sockets outlets.
131. IS :1947 Floods lights
132. IS: 2147 Degree of protection provided for enclosure for switchgear
133. IS: 2418 Tubular fluorescent lamps for general lighting services
134. IS: 2509 PVC electrical Conduits
135. IS: 2075 Current Transformer
136. IS: 2834 LT Capacitors
137. IS: 3106 Code of practice for installation & maintenance of switchgear.
138. IS: 2607 Air break isolators for voltage not exceeding 1000 Volts
139. IS: 1753 aluminium Conductors for insulated conductor
140. IS: 3961 Recommended current ratings for cables
141. IS: 3480 Flexible steel conduits for electrical wiring
142. IS: 1646 Code of fire safety of building (General Electrical installation)
143. IS: 1913 General & safety requirements for electric lighting fitting.
144. IS: 1239 Mild steel tubular & other wrought steel pipe fitting
145. IS: 6381 Specifications for construction & testing of electrical apparatus.
146. IS: 1818 Isolator & Earthing switches
147. IS: 3106 Code of practice for selection
148. IS: HRC Cartridge fuse unit up to 650 Volts
149. IS: 10332 Part I to Part V Specification of Luminaries

150.

151.

SPECIFICATIONS FOR ELECTRICAL WORKS

153. COMPLETENESS OF TENDER:-

153.1.1. 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.

154. RATES: -

154.1.1. 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.

155. WORKS TO BE DONE BY THE CONTRACTOR :-

155.1.1. 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 -

- 156. Main Switches, Main L T Panels, meter board and external cable connection.
- 157. 11 KV HT Panel.
- 158. 11 KV / 0.433 KV Transformers.
- 159. D. G. Sets with fuel tank, piping, fuel pump, exhaust piping with lagging and supports, cooling system complete.
- 160. Sub and branch distribution boards, MCB's and RCCB's etc.
- 161. Mains and Sub mains between various panels, meter boards and distribution boards.
- 162. Point wiring with Conduits for all type of wiring including circuits, sub mains, light, fans, power and AC etc.
- 163. Switches and socket outlets for light, fans, plug, power, Tel, TV, computer network etc with suitable MS/GI boxes with accessories complete.
- 164. Earthing and Lightning Protection with earth leads/strips.
- 165. Conduits and wiring for Telephone, EPABX, TV system, PA system, Music system and Computer networking, fire alarm, broad band etc.

166. Cables and other allied works.
167. 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.
168. 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)
169. External lighting including underground cables and connection with the external cables and earthing.
170. Feeder pillars with circuit breakers.
171. Underground cables.
- 171.1.1. 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.
- 171.1.2. 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:
172. 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.
173. Transport vehicles necessary for efficient transportation of equipment from Owner's stores to site of erection and excess materials back to owner's stores.
174. Complete assembly, erection and connection, testing and commissioning, putting into successful and satisfactory commercial operations of above equipment.
175. The items of work to be performed on all equipment and materials shall include but not limited to the following:
- 175.1. Receiving, unloading and transportation at site. (To Owner or Contractor's stores and from their upto actual place of erection).
- 175.2. Opening, inspecting and reporting all damages and short supply items.
- 175.3. Arranging to repair and/or re-order all damaged and short supply items.
- 175.4. Storing at site with suitable all weather protection.
- 175.5. Assemblies, erection and complete Installation.
- 175.6. Necessary coordination between work done by other Contractors.
- 175.7. Final check-up, testing and commissioning in presence of Owner's representative.

175.8. Obtaining Owner's written acceptance of satisfactory performance.

176. INFORMATIONS REQUIRED FROM CONTRACTOR

177. Typical GA drawing of all equipment to be supplied and disposition of various fittings and loading.

178. All Annexures of this specification duly filled in and signed by the contractor.

179. Catalogue of all equipment and components explaining construction features.

180. Transportation/shipping dimensions and weights, space required for handling parts for maintenance.

181. Type test certificates for all equipment on similar type of equipment.

182. Final Single line diagram complete with cable sizes etc.

183. 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.

184. Detailed cabling layout showing cable trench / tray layout, earthing layout.

185. Detailed lighting layout showing position of fixtures / type of fixtures, circuiting and route of wires / cables / fixing details, DB details.

186. Protections relay settings.

187. Cable schedule & interconnection chart.

188. Foundation details and plan, loading details for all equipment.

189. Test certificates.

190. Instruction manuals of all major equipment.

191. Test Procedures at sites.

192. Test reports of all tests carried out at site.

193. 'AS BUILT' drawings (2 sets of soft copies on CD and six sets of hard copies duly wound).

194. All layout drawings shall be made in scale of 1:50 or 1:100 unless until agreed by the Owner/ Consultant.

195. PRICES

195.1. 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.

195.2. 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.

195.3. Prices quoted shall be firm and no variation shall be allowed during contract period.

195.4. 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.

196. ELECTRIC POWER SUPPLY AND WATER SUPPLY :-

196.1.1. 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.

197. PROVISIONS AGAINST ACCIDENTS AND SAFETY MEASURES

198. All safety rules and codes as applicable to work including rules applicable as per factory inspector shall be followed during execution of above work.

199. All safety appliances and protective devices including hand gloves, aprons, helmets, shields, goggles, safety belts etc. shall be provided by Contractor for his personnel.

200. The Contractor shall arrange to provide guards and prominent display caution notices if access to any equipment/ area is considered unsafe and hazardous.

201. SPECIFICATIONS

201.1.1. 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.

202. VARIATION IN QUANTITY

203. The Owner shall have right to delete or increase/ decrease quantity specified in this specification as specified in preamble to Bill Of Materials.

204. 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.

205. For procurement of any material & sequential delivery at site from point of view of erection etc. Contractor shall take prior approval from the employer.

206. 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.

207. SITE VISIT

207.1.1. It is recommended that contractor shall visit site before submission of his offer. Time and date shall be fixed with employer.

208. TOOLS FOR HANDLING AND ERECTION :-

208.1.1. 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.

209. CO-ORDINATION WITH OTHER AGENCY: -

209.1.1. 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.

210. CARE OF BUILDINGS :-

210.1.1. 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.

211. finish of the buildings.

212. STATUTORY REGULATION AND APPROVALS :-

212.1.1. 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.

212.1.2. 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.

212.1.3. 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.

213. STANDARDS AND CODE OF PRACTICE:-

213.1.1. 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 -

- 214. National Electrical Code
- 215. IS: 694 - 1977: PVC insulated cables for working voltage up to and including 1100 volts
- 216. IS: 732 -1989: Electrical wiring installation
- 217. IS: 1225 -1938: Installation and Maintenance of power Cables up to and including 33 KV Rating
- 218. IS: 1554: PVC insulated heavy-duty electrical cables.
- 219. IS: 1860: Installation operation and maintenance of passenger and goods elevator.
- 220. IS: 2309 -1989: Protection of building and allied structures against lightning.
- 221. IS: 3043 -1987: Earthing
- 222. IS: 3646 (Part-1) -1992: Interior Illumination
- 223. IS: 3661 (Part-2) -1967: Current rating for cable
- 224. IS: 3661 (Part-5) -1968: Current rating for cable
- 225. IS: 5216 (Part-1) -1982: Recommendations on safety procedures and practices in electrical work.
- 226. IS: 7098 (1 & 2): XLPE insulated cables
- 227. IS: 10028 (Part-1) -1985: selection, Installation and Maintenance of Transformers
- 228. IS: 10118 (Part-1) -1982: Selection, Installation and Maintenance of switchgear and Control gear
- 229. **MATERIAL SAMPLES AND SHOP DRAWINGS:-**

229.1.1. 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.

229.1.2. 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.

230. ELECTRICAL DRAWINGS: -

230.1.1. 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 far as the civil and other trades works are concerned.

230.1.2. 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.

231. TESTING AND COMMISSIONING: -

231.1.1. 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.

232. GUARANTEE

232.1.1. 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.

233. COMPLETION DRAWINGS

233.1.1. 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:

233.1.1.1.Run and size of conduits, inspection, junction and pull boxes.

233.1.1.2.Size of conductor in each circuit.

233.1.1.3.Location and ratings of sockets and switches controlling the light/fan and power outlets.

233.1.1.4.Location and details of distribution boards, mains, switches, switchgears and other particulars.

233.1.1.5.A complete wiring diagram as installed and schematic drawings showing all connections in the complete electrical system.

233.1.1.6. Location of telephone outlets, junction boxes and sizes of various conduits.

234. Location of all earthing stations, route and size of all earthing conductors etc.

235. Layout and particulars of all cables.

236. Location of all equipments with dimensions and connections.

237. INSPECTION

237.1.1. 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.

238. GENERAL & TECHNICAL

238.1.1.1.1. POINT WIRING:-

238.2. DEFINITION:-

238.2.1. 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.

239. Ceiling rose or connector (in the case of points for ceiling/exhaust fan points, pre wired light fittings and call bells).

239.1. Ceiling rose (in the case of pendants except stiff pendants)

239.2. Back plate (in the case of stiff pendants).

239.3. Lamp holder (in the case of goose neck type wall brackets, batten holders and fittings which are not pre wired).

239.4. SCOPE:-

239.4.1. Following shall be deemed to include in point wiring.

240. Conduit/casing and capping as the case may be, accessories for the same and wiring cables between the switch box and the point outlet.

240.1.1. ii. All fixing accessories such as clips, nails, screws, Phil plug, rawl plug etc as required.

240.1.2. iii. Metal switch boxes for control switches, regulators, sockets etc, recessed or surface type, and phenolic laminated sheet covers over the same.

- 240.2. Outlet boxes, junction boxes, pull-through boxes etc, but excluding metal boxes if any, provided with switchboards for loose wires/conduit terminations.
- 240.3. Any special block required for neatly housing the connector.
- 240.4. Control switch or MCB, as specified.
- 240.5. 3 pin or 6-pin socket, ceiling rose or connector as required.
- 240.6. Connections to ceiling rose, connector, socket outlet, lamp holder, switch etc.
- 240.7. Interconnecting wiring between points on the same circuit, in the same switch box or from another.
241. 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)
242. Bushes conduit or porcelain tubing where wiring cables pass through wall etc.

242.1. MATERIAL :-

- 242.1.1. 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.

243. MEASUREMENT:-

- 243.1.1. 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.
- 243.1.2. 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.
- 243.1.3. 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.
- 243.1.4. All bills for the work shall be submitted in the tender price bid format.

243.2. POINT WIRING (OTHER THAN SOCKET OUTLET POINTS) :-

244. 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.

244.1.1. 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.

245. 2.2 POINT WIRING FOR SOCKET OUTLET POINTS :-

245.1.1.1. 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.

245.1.1.2. The metal box with cover, switch/MCB socket outlet and other accessories shall be measured and paid as a separate item.

245.1.1.3. The power point outlet will be 15A/5A or 16A/6A six-pin socket outlet.

246. 2.3 GROUP CONTROL POINTS WIRING:-

246.1.1. 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.

246.1.2. ii. No recovery shall be made for non-provision of more than one switch in such cases.

247. 2.4 TWIN CONTROL LIGHT POINT WIRING: -

247.1.1.1. 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.

247.1.1.2. No recovery shall be made for non-provision of more than one ceiling rose or connector in such cases.

248. 2.5 MULTIPLE CONTROLLED CALL BELL POINTS WIRING:-

249. 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).

250. No recovery shall be made for non-provision of more than one ceiling rose or connector for connection to call bell in such cases.

251. CIRCUIT AND SUBMAIN WIRING:-

252. 3.1. CIRCUIT WIRING:-

252.1.1. 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.

253. 3.2. SUB MAIN WIRING:-

253.1.1. Sub main wiring shall mean the wiring from one main/distribution switchboard to another and from Distribution Board to Power Outlet/ AC Outlet.

254. MEASUREMENT OF CIRCUIT AND SUBMAIN WIRING:-

254.1.1.1.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.

254.1.1.2.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.

254.1.1.3.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.

255. 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.

256. 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.

257. 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.

258. SYSTEM OF DISTRIBUTION AND WIRINGS:-

258.1.1.1.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.

258.1.1.2.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.

258.1.1.3.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.

258.1.1.4. 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.

258.1.1.5. Wiring shall be separate for essential loads (i.e those fed through stand by supply) and non-essential loads throughout.

259. BALANCING OF CIRCUITS:-

259.1.1. The balancing of circuits in three wire or poly phase installations shall be arranged up to

259.1.2. the satisfaction of the Engineer-in-charge.

260. WIRING SYSTEM :-

261. 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.

262. 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.

263. The wiring throughout the installation shall be such that there is no break in the neutral wire except in the form of linked switchgear.

264. Surface wiring shall run, as far as possible, along the walls and ceiling so as to be easily accessible for inspection.

265. In no case, the open wiring shall be run above the false ceiling without the approval of Engineer-in-charge.

266. In all types of wiring, due consideration shall be given for neatness, good appearance and safety.

267. 8. PASSING THROUGH WALLS OR FLOORS:-

268. 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.

269. 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.

270. 9. JOINTS IN WIRING:-

270.1.1.1.No bare conductor in phase and/or neutral or twisted joints in phase, neutral, and/or protective conductors in wiring shall be permitted.

270.1.1.2.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.

270.1.1.3.Termination of multi-stranded conductors shall be done using suitable crimping type thimbles.

271. 10. CONFORMITY TO I.E. ACT, I.E. RULES AND STANDARDS:-

272. 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.

273. The work shall also conform to relevant Indian Standard codes of practice for the type of work involved.

274. In all electrical installation works, relevant safety codes of practice shall be followed.

275. The complete wiring installation shall conform to IS: 732 amended up to date.

276. 11. GENERAL REQUIREMENTS OF COMPONENTS:-

276.1. QUALITY OF MATERIALS :-

276.1.1. 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.

277. 11.2 RATING OF COMPONENTS:-

278. 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.

279. 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.

280. 11.3 CONFORMITY OF STANDARDS:-

280.1.1. 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.

281.

11.4 INTERCHANGEABILITY: -

281.1.1. 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.

282.

SWITCHES & RECEPTACLES (Modular Type)

282.1.

CONTROL SWITCHES FOR POINTS:-

283. 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.

284. 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.

285. 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.

286. 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.

287. The fan regulators can also be mounted on the switch box covers, if so directed by the Engineer-in-charge.

288. 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.

289. Only MCB's shall be used for controlling industrial type socket outlets.

290. 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.

291. 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.

292.

SOCKET OUTLETS: -

293. 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.

294. 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.

295. 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.

296. Outlet boxes for socket outlets (both 15A/16A and 5A/6A) points shall be of size 175 mm x 100mm.

297. Unless and otherwise specified, the control switches for the 5A/6A and 15A/16A socket outlets shall be kept along with the socket outlets.

297.1. SWITCH BOX COVERS :-

298. 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.

299. SWITCHES & BOXES (Modular Type)

300. 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.

301. Clear depth of the box shall not in a range of 50 mm to 65 mm depending upon the size of board and manufacturer.

301.1.1. 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.

302. 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.

303. Every socket outlet shall be controlled by a switch, as specified. The control switch shall be connected on the 'live' side of the line.

303.1.1. Vi The switches and sockets shall be manufactured using engineering plastic to make it fire retardant and highly resistant to impact.

304. The fan speed regulators shall be of electronic and stepped type

305. The RJ-45 data socket shall be suitable for cat5/cat 6 data cables.

306. Gold plated contacts shall be provided in all communication jacks to enhance data and voice transmission.

307. SWITCHGEAR AND CONTROLGEAR

307.1. GENERAL ASPECTS:-

308. All items of switchgear and distribution boards (DB's) shall be metal clad type.

309. The types, rating and/or categories of switchgear and protective gear shall be as specified in the tender schedule of work.

310. 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.

311. 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.

312. **Independent earth terminal block.**

312.1.1.1.1. 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.

313. 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.

314. 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.

315. 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.

315.1. MCB TYPE DISTRIBUTION BOARDS (MCB DB):-

316. 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.

317. 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.

318. 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.

319. 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.

320. 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.

321. MCB DB's shall have removal type end plates with knockouts at the bottom and top, and shall have hinged covers with locking arrangement.

322. Only the knobs of the MCB's shall protrude out of the front covers through openings neatly machine made for the purpose.

323. The bus bars used shall be solid electrolytic copper of appropriate sections.

324. Din bar(s) shall be provided for mounting the MCB's.

325. The complete board shall be factory fabricated and shall be duly pre-wired in the works, ready for installation at site.

326. 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.

327. 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.

327.1. MCCB TYPE DISTRIBUTION BOARDS (MCCB DB) :-

328. 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.

329. 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.

330. 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.

331. 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.

332. 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.

333. 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.

334. The bus bars used shall be solid electrolytic copper of appropriate sections.

335. Din bar(s) shall be provided for mounting the MCB's.

335.1. WORKMANSHIP:-

336. 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.

337. 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.

337.1. COMMISSIONING ON COMPLETION: -

337.1.1. Before the workman leaves the work finally, he must make sure that the installation is in commission, after due testing.

337.2. COMPLETION PLAN AND COMPLETION CERTIFICATE:-

338. For all works completion certificate after completion of work shall be submitted to the Engineer-in-charge.
339. 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.
340. General layout of the building.
341. Locations of main switch board and distribution boards, indicating the circuit numbers controlled by them.
342. Position of all points and their controls.
343. Types of fittings, viz. fluorescent, pendants, brackets, bulkhead, fans and exhaust fans etc.
344. 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.

344.1. **ADDITION TO AN INSTALLATION:-**

- 344.1.1. An addition, temporary or permanent, shall not be made to the authorised 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.

345. **CIRCUIT BREAKERS**

345.1.1. **MINIATURE CIRCUIT BREAKERS (MCB):-**

- 345.1.2. Miniature Circuit Breaker shall comply with IS-8828-1996/ IEC898-1995 amended upto date.
- 345.1.3. 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.
- 345.1.4. The breaking capacity shall not be less than 10kA at 415V AC.
- 345.1.5. MCBs shall be DIN mounted.
- 345.1.6. MCBs shall be current limiting type (class-3).
- 345.1.7. MCBs shall be C-curve.
- 345.1.8. MCBs shall have minimum power loss (watts) per pole defined as per the IS/IEC and the manufacturer shall publish the values.

345.1.9. 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.

345.1.10. All DP, TP, TPN and 4pole MCBs shall have a common trip bar independent to external operating handle.

345.1.11. 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.

345.1.12. Earth Leakage Circuit Breaker / Residual Current Circuit Breaker - Current Operated Type (ELCB / RCCB / RCBO)

346. System of operation

346.1.1. 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.

347. Mechanical Operation

347.1. 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.

347.2. Neutral Advance Feature

347.2.1. 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.

348. Testing Provision

348.1.1. 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.

348.1.2. MOULDED CASE CIRCUIT BREAKER (MCCB's)

348.1.3. The rated normal current should be specified at 40°C

348.2. General

348.2.1. 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 $\pm 10\%$. 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.

348.2.2. 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.

348.3. Construction.

348.3.1. 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.

348.3.2. 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.

348.4. **Contact tips** shall be made of suitable arc resistant, sintered alloy for long electrical life. Terminals shall be of liberal design with adequate clearances.

348.5. Accessories

348.5.1.1.1. 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.

348.6. Interlocking

348.6.1. Moulded case circuit breakers shall be provided with the following interlocking devices for interlocking the door of a switchboard.

348.6.2. Handle interlock to prevent unnecessary manipulations of the breaker.

348.6.3. Door interlock to prevent the door being opened when the breaker is in ON position.

348.6.4. Defeat-interlocking device to open the door even if the breaker is in ON position.

348.7. Rupturing capacity

348.7.1. 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 -

348.7.2. 100 / 125 Amp : 25 KA

348.7.3. 160/200/250 Amp : 35 KA

348.7.4. 300/400/630/800 Amp : 50 KA

348.8. 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.

348.9. Electrical Features

348.9.1. 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

348.9.2.	Rating of MCCB	Electrical Endurance	Mechanical
Endurance			
348.9.3.	Upto 160 A	7000 Opns	25000 Opns
348.9.4.	Above 160 A	4000 Opns	15000 Opns

348.10. 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.

348.11. Installation

348.11.1. 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.

348.11.2. 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.

348.11.2.1.1. Phase barrier should be provided as a standard feature.

348.12. Testing

349. Original test certificate of the MCCB as per BS 3871 or JS-C-8370 shall be furnished.

350. Pre-commissioning tests on the switchboard panel incorporating the MCCB shall be done as per standard specifications.

350.1.1. AIR CIRCUIT BREAKER

350.2. General

350.2.1. 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.

350.3. Type and construction

350.3.1. 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.

350.3.1.1. The draw out operation shall be possible through a closed door. Three positions of the moving part shall be possible:

350.3.2. 1 - Connected / service position - all auxiliary and main circuits engaged

350.3.3. 2 - Test position - all auxiliary circuits engaged all main circuits disconnected

350.3.4. 3 - Isolated position - all circuits disconnected.

350.3.5. All three positions should be indicated discreetly on the cradle. Safety shutter to be provided as standard

350.3.6. 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.

350.3.7. 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.

350.4. **Operating Mechanism**

350.4.1. 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.

350.5. **Interlocking and safety arrangement**

350.5.1. Air circuit breakers shall be provided with the following safety and interlocking arrangements:

351. It shall not be possible for breaker to be withdrawn when in Rs.ON" position.

352. 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.

353. The breaker shall be capable of being raked in to Rs.testing' isolated and maintenance positions and kept locked in any of these positions.

354. 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.

355. 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

356. The operating mechanism shall provide for raking the breaker in to connect, test and disconnected positions without opening the compartment door.

357. Mechanical interlocks shall be provided between the operations of different breakers (if specified in Bill of Quantities).

357.1.1. The circuit breaker shall provide as a standard feature, the following mechanical indicator in the front Panel

357.1.1.1.1. Contact portion indicator (on/off)

358. Stored energy status indicator

359. Trip indicator on fault

360. **Rating**

360.1.1. 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=Ics 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:

360.1.2. Rating of ACB	Electrical Endurance	Mechanical Endurance
360.1.2.1.Upto 1600 A	10000 Opns	20000Opns
360.1.2.2.2000-4000 A	5000 Opns	15000 Opns
360.1.2.3.Above 4000 A	1500 Opns	10000 Opns

361. **Accessories**

361.1.1. All the accessories like U/V, shunt opening, shunt closing shall be accessible from the front.

361.1.2. Circuit breakers shall be provided with the following Accessories: -

361.1.3. Under-voltage relay for the incoming ACB.

361.1.4. Microprocessor based Overload releases with IDMT characteristics.

361.1.5. Microprocessor based Instantaneous earth fault release.

361.1.6. Alarm switches (if specifically asked for)

361.1.7. Auxiliary switches

362. 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.

363. Mechanical indicators

363.1.1. Mechanical indication on the front of the air circuit breaker shall be provided to indicate the following:

- 364. main contacts closed "ON"
- 365. main contacts open "OFF"
- 366. springs charged
- 367. springs discharged
- 368. circuit breaker in "service" position (drawout only)
- 369. circuit breaker in "test" position (drawout only)
- 370. circuit breaker in "isolated" position (drawout only)

371. 9. Mounting

371.1.1. Circuit breakers shall be mounted as per the standard specification of power control centers.

372. 10. Testing

372.1.1. 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:

- 373. Impulse withstand test
- 374. Insulation test
- 375. Di-electric rigidity /Insulation test
- 376. Mechanical operation checking
- 377. Thermal protection with a current of 3Ith starting from cold conditions.

377.1. Protection

377.1.1. 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.

377.2. Setting range of protection release

377.2.1. 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.

377.2.2. 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.

377.2.3. 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.

378. PVC CONDUIT WIRING SYSTEM

378.1. SCOPE:-

378.1.1. This chapter covers the detailed requirements for wiring work in non-metallic conduits. This chapter covers both surface and recessed types of wiring work.

378.2. APPLICATION:-

379. 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.

380. Flexible non-metallic conduits shall be used only at terminations, wherever
380.1.1. specified.

381. Special precautions:-

382. If the pipes are liable to mechanical damages, they should be adequately
382.1.1. protected.

383. Non-metallic conduit shall not be used for the following applications:-

383.1.1.1. In concealed/ inaccessible places of combustible construction where ambient temperature exceeds 60°C.

383.1.1.2. In places where ambient temperature is less than 5°C.

383.1.1.3. For suspension of fluorescent fittings and other fixtures.

383.1.1.4. In areas exposed to sunlight.

383.2. MATERIAL:-

384. 3.1 CONDUITS:-

385. 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.

386. 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.

387. No non-metallic conduit less than 20 mm in diameter shall be used.

388. WIRING CAPACITY:-

388.1.1.1. 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.

389. 3.2 CONDUIT ACCESSORIES:-

389.1.1. The conduit wiring system shall be complete in all respect including accessories.

389.1.2. Rigid conduit accessories shall be normally of grip type.

389.1.3. Flexible conduit accessories shall be of threaded type.

389.1.4. 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.

389.1.5. Saddles for fixing conduits shall be heavy gauge non-metallic type with base.

389.1.6. The minimum width and the thickness of the ordinary clips or girder clips shall be as per Table-5.

389.1.7. For all sizes of conduit, the size of clamping rod shall be 4.5mm (7 SWG) diameter.

389.2. INSTALLATION:-

389.3. COMMON ASPECTS FOR BOTH RECESSED AND SURFACE CONDUIT WORKS.

389.3.1. The erection of conduits of each circuit shall be completed before the cables are drawn in.

389.3.2. CONDUIT JOINTS :-

390. 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.

391. The Engineer-in-charge, with a view to ensuring that the above provision has

391.1.1.1.1. been Carried out, may require that the separate lengths of conduit etc. after

391.1.1.1.2. they have been prepared, shall be submitted for inspection before being fixed.

391.1.2. BENDS IN CONDUITS:-

392. 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.

393. Radius of bends in conduit pipes shall not be less than 7.5 cm.

394. Care shall be taken while bending the pipes to ensure that the conduit pipe is

394.1.1.1.1. Not Injured, and that the internal diameter is not effectively reduced.

394.1.2. PAINTING:-

394.1.2.1.1. After installation, all accessible surfaces of metallic accessories shall be painted.

394.2. ADDITIONAL REQUIREMENTS FOR SURFACE CONDUIT WORK:-

395. 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.

396. 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.

396.1. ADDITIONAL REQUIREMENTS FOR RECESSED CONDUIT WORK:-

396.1.1. MAKING CHASE:-

397. chase in the wall shall be neatly made, and of ample dimensions to permit

397.1.1.1.1. theConduittube fixed in the manner desired.

398. In the case of buildings under construction, the conduits shall be buried in the

398.1.1.1.1. wallBefore plastering, and shall be finished neatly after erection of conduit.

399. In case of exposed brick/rubble masonry work, special care shall be taken to fix

399.1.1.1.1. the conduit and accessories in position along with the building work.

399.1.2. FIXING CONDUITS IN CHASE:-

400. 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.

401. At either side of the bends, saddles/staples shall be fixed at a distance of 15 cm from the center of the bends.

401.1.1. ERECTION IN RCC WORK :-

402. 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.

403. 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.

404. 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.

404.1.1. FIXING INSPECTION BOXES:-

405. Suitable inspection boxes to the minimum requirement shall be provided to

405.1.1.1.1. Permit inspection, and to facilitate replacement of wires, if necessary.

406. These shall be mounted flush with the wall or ceiling concrete.
Minimum 65

406.1.1.1.1.1. mm Depth junction boxes shall be used in roof slabs.

407. Suitable ventilating holes shall be provided in the inspection box covers.

407.1.1. FIXING SWITCH BOXES AND ACCESSORIES:-

407.1.1.1.1. 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.

407.1.2. FISH WIRE:-

407.1.2.1.1. 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.

408. BUNCHING OF CABLES :-

408.1.1.1. 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.

408.1.1.2. Where the distribution is for single phase loads only, conductors for these phases shall be drawn in one conduit.

408.1.1.3. 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.

409. EARTHING REQUIREMENTS:-

410. 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.

411. 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.

412. Gas or water pipes shall not be used as protective conductors (Earth medium).

413. **TABLE - 3**
414. **DIMENSIONAL DETAILS OF RIGID NON-METALLIC CONDUITS.**
415. (All dimensions in mm)

S . N o .	Nominal outside diameter (In mm)	Maximum outside diameter (In mm)	Minimum inside diameter (In mm)	Maximum permissibl e eccentrici ty (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

416. **TABLE - 4**
417. **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

418. **Note :-**

419. The above table shows the maximum capacity of conduits for a simultaneous drawing of cables.

420. **TABLE - 5**
421. **ORDINARY CLIPS OR GIRDER CLIPS.**

S . N o .	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)

422. **EARTHING**

422.1. **SCOPE:-**

422.1.1. 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.

422.2. **INSTALLATION:-**

422.3. **ELECTRODES:-**

423. 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.

424. When more than one electrode is to be installed, a separation of not less than 2 m shall be maintained between two adjacent electrodes.

425. a) The strip or conductor electrode shall be buried in trench not less than 0.5 m deep.

425.1.1. 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.

426. 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.

426.1. WATERING ARRANGEMENT:-

427. 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.

428. The watering funnel attachment shall be housed in a masonry enclosure of size not less than 30cm*30cm*30cm.

429. A cost iron/MS frame with MS cover, 6 mm thick, and having locking arrangement shall be suitably embedded in the masonry enclosure.

429.1. EARTHING CONDUCTOR (Main earthing lead):-

430. The earthing conductor shall be securely terminated on to the plate with two bolts, nuts, check nuts and washers.

431. 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.

432. 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.

433. The earthing conductor shall be securely connected at the other end to the earth stud/earth bar provided on the switchboard by:
434. Soldered or preferably crimped lug, bolt, nut and washer in the case of wire, and,
435. Bolt, nut and washer in case of strip conductor.
436. Earthing Terminal/ neutral point/ earth bus in case of equipments/ sub stations.

436.1. PROTECTIVE (Loop earthing/earth continuity) CONDUCTOR:-

437. 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).
438. Two protective conductors shall be provided for a switchboard carrying a 3 phase switch gear thereon.
439. 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.
440. 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.
441. 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.
442. 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.
443. 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.

443.1. EARTH RESISTANCE:-

444. 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.

445. 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.

446. 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.

446.1. MARKING: -

446.1.1.1. Earth bars/terminals at all switchboards shall be marked permanently either as "E".

446.1.1.2. Main earthing terminal shall be marked "SAFETY EARTH - DO NOT DISCONNECT".

446.1.2. CABLES

446.2. GENERAL

446.2.1. 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.

446.2.2. The recommendations of the cable manufacturer with regard to jointing and sealing shall be strictly followed.

446.2.3. The laying of cable shall be done as per IS 1255 amended up to date.

446.2.4. Cable Identification

446.2.5. Cable identification shall be provided by embossing on the outer sheath the following:

- 447. Manufacturer's name or trade mark
- 448. Voltage grade
- 449. Year of manufacture
- 450. Type of insulation
- 451. Printing of cable length on each meter

451.1.1. Core Identification

451.1.2. Respective cores of power/control cables shall be identified with the following pattern :

- 451.1.2.1.1. 2 core : red (R), black (BK)
- 451.1.2.1.2. 3 core : 5 core red (R), yellow (Y),blue (BL)
- 451.1.2.1.3. 4 core : red (R),yellow (Y),blue (BL), black (BK)
- 451.1.2.1.4. 5 core : red (R), yellow (Y),blue (BL), black (BK) & grey (GY)

451.1.2.1.5. 7&14 cores : cores shall be numbered.

451.1.3. Tests

451.2. Shop Tests

451.2.1.1.1.1. 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:

451.3. Routine tests on each drum of cables.

451.4. Acceptance tests on drums chosen at random for acceptance of the lot.

451.5. Type tests on each type of cable, inclusive of measurement of armour D.C. resistance of power cables.

451.6. MATERIAL

451.6.1. **11 kV HT Cables**

451.6.2. 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.

451.6.3. **L T Power Cables**

451.6.4. 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.

451.6.5. **Control Cables**

451.6.6. 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).

451.6.7. **Cable Termination**

451.6.8. HT Cable Terminations

451.6.8.1.1. 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.

451.6.9. L T power, control cable termination

452. L T cable termination shall be provided with compression cable glands of brass suitable for holding the armour of the cable.

453. Lugs shall be crimping type and shall be of copper suitable for copper conductor cable and of aluminum for aluminum conductor cable.

454. Termination shall be carried out as per details furnished in this specification.

454.1.1. Compression Glands

454.1.2. Cable glands shall be made of brass casting, machined accurately to the required size with protective coating of nickel.

454.1.3. 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.

454.1.4. 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.

454.1.5. Technical data sheets for above cables, including all electrical & mechanical parameters shall be furnished with offer.

455. L. T. PANEL

455.1.1.1. CONSTRUCTION FEATURES

456. Panels shall be indoor, metal clad, modular construction, fix type (except circuit breaker cubicles) air insulated and floor mounted type.

457. Unless otherwise mentioned, panels shall be of single front construction and shall be of dead front type.

458. All panels shall be extensible on both sides.

459. All panels shall be dust proof and vermin proof.

460. The panels shall have horizontal Busbar Chamber at top of the panel even for top cable entry.

461. 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.

462. All panels including capacitor panels shall be fully compartmentalized with metal! insulating partitions between individual compartments.

463. The Horizontal busbar chamber shall be separate & totally enclosed.

464. 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.

465. 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.

466. All doors and cutouts shall be provided with neoprene gaskets.

467. The back doors of the panels shall be double door leaf type where the panels have more than 400 mm width.

468. Strong concealed type hinges shall support all doors.

469. All relays, meters, and switches etc. shall be flush mounted type.
470. 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.
471. The complete structure shall be rigid, self-supporting free from vibration, twists and bends etc.
472. 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.
473. A suitable barrier shall be provided between the circuit breaker and the associated control.
474. 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.
475. In cable alley, outgoing terminals shall be identified with feeder number.

475.1.1.1.1. BUS AND BUS TAPS

476. 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.
477. 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.
478. 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.
479. 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. .
480. The busbar size shall be of similar size as of busduct.

480.1.1.1.1. CHANGEOVER SWITCHES

481. Changeovers switches shall be 4 pole, heavy duty, group operated load break fault make type with AC 23A duty.
482. 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.
483. The switches shall be able to withstand mechanical stresses caused by the peak short

circuit currents corresponding fault level specified.

484. 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 :

485. The door can be opened only when the switch is in OFF position.

486. It shall not be possible to close the switch when the door is open.

487. The switch shall be provided with pad-locking arrangement for 250A and above rating.

488. The switch shall be provided with defeat interlock facilities.

489.

489.1.1.1.1. FUSES

489.1.1.1.1.1. All fuses shall be HRC cartridge link type.

489.1.1.1.1.2. The fuses shall be provided with visible indication when they have operated.

489.1.1.1.1.3. 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.

489.1.1.1.1.4. Fuses and links functionally associated with the same circuit shall be mounted side by side.

489.1.2. Earthing and neutral links in main supply circuits shall be of silver plated copper & of bolted pattern.

489.1.2.1.1. CONTACTORS

489.1.2.1.1.1. Contactors shall be of double break, single throw and electromagnetic and non-gravity type.

489.1.2.1.1.2. Contactors shall be suitable for interrupted duty and shall be rated for class AC-3 duty.

489.1.2.1.1.3. Main contacts of contactors shall be silver faced.

489.1.2.1.1.4. Operating coils of contactors shall be suitable for operation on 220/240V AC, 1 phase, 50 Hz supply.

489.1.2.1.1.5. Contactors shall be provided with at least two pairs of 'NO' and 'NC' auxiliary contacts.

489.1.2.1.1.6. Contactors shall not drop out at voltages down to 70% of coil rated voltages and min. pick up voltage shall be 85%.

489.1.2.1.2. OVERLOAD RELAYS

489.1.2.1.2.1. Overload protection for each motor feeder (wherever required) shall be provided by thermal overload relay on each of the three phases.

489.1.2.1.2.2. The relay shall be duly compensated against fluctuations on ambient temp. and frequency and shall have single phasing preventer feature.

489.1.2.1.2.3. Relay shall be hand reset type from the front of the cubicle door.

489.1.3. Overload relay for fan applications shall be of heavy duty type with provision of bypassing the same during starting of the fan.

489.1.3.1.1. CAPACITORS

489.1.3.1.1.1. 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.

489.1.3.1.1.2. Capacitors shall be suitable for prolonged operation at an rms. voltage between terminals not exceeding 1.10 times the rated voltage, excluding transients.

489.1.3.1.1.3. 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.

489.1.3.1.1.4. 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.

489.1.3.1.1.5. Loss in the capacitors shall be kept as low as possible. (Max 0.5W/ KVAR).

489.1.3.1.1.6. 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.

489.1.3.1.2. AUTOMATIC POWER FACTOR CONTROL RELAY

489.1.3.1.2.1. Automatic Power factor control relay (APFCR) shall operate its auxiliary relay by sensing the power factor of the plant thru' current and voltage signals.

489.1.3.1.2.2. APFCR shall have no. of steps specified in drawings.

489.1.3.1.2.3. APFCR shall be provided with Built in PF meter (0.5 lag to 0.5 lead), calibrated setting dial.

489.1.3.1.2.4. APFCR shall be suitable for 5A secondary current.

489.1.3.1.2.5. APFCR shall be suitable for flush mounting in capacitor panel/MCCs.

489.1.3.1.2.6. 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.

489.1.3.1.3. COOLING

489.1.3.1.3.1. 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.

489.1.3.1.3.2. Louvers shall be provided on the door on rear side with a fine wire mesh.

489.1.3.1.4. CURRENT TRANSFORMERS

489.1.3.1.4.1. Current Transformers shall be cast - resin type .All secondary connections shall be brought out to terminal blocks where connection will be made.

489.1.3.1.4.2. Accuracy class of the current transformers shall be:
489.2. Class 5P20 for protection.
489.3. Class 1.0 for metering.
489.4. Class PS for differential Protection & REF.

489.4.1.1.1.1. Current transformer shall be provided with test links and shorting on both secondary leads for setting purpose.

489.4.1.1.1.2. All current transformers shall be earthed by a separate earth link on terminal blocks.

489.4.1.1.1.3. 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.

489.4.1.1.2. VOLTAGE TRANSFORMERS

489.4.1.1.2.1. Voltage transformers shall be cast-resin, fixed type and shall have an accuracy class of 1.0.

489.4.1.1.2.2. 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.

489.4.1.1.3. RELAYS

489.4.2. Relays wherever provided shall be of draw-out design with built-in testing facilities. Small auxiliary relays may be in non-drawout execution-.

489.4.2.1.1. CONTROL AND SELECTOR SWITCHES

489.4.2.1.1.1. Control and selector switches shall be of rotary type having enclosed contacts, which are accessible by the removal of cover.

489.4.2.1.1.2. Control and selector switches shall be of flush mounted type and on front of panels. .

489.4.2.1.1.3. Selector switches shall be of stay-put maintained contact type.

489.4.2.1.1.4. Control switches shall be provided with escutcheon plate clearly marked to show the position.

489.4.2.1.2. INDICATING METERS AND INSTRUMENTS

489.4.3. Indicating instrument (96 x 96 mm) shall be digital meter, switch board type and accuracy class of 1 (1 % full scale \pm 1 count).

489.4.3.1.1. INDICATING LAMPS

490. 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.

491. Bulbs and lenses shall be interchangeable and easily replaceable from the front of the panel.

491.1.1.1.1. PUSH BUTTONS

491.1.1.1.1.1. All push buttons shall be of the push to actuate the contact type.

491.1.1.1.1.2. All push buttons shall be oil tight and shall be provided with adequate no. of contacts.

491.1.1.1.2. POWER AND CONTROL CABLE TERMINATION

492. Suitable supporting arrangement shall be provided for all power and control cables entering the panel.

493. 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.

494. 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.

495. 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.

496. Wherever there is more than one equipment connected on the same feeder, separate terminals shall be provided.

496.1.1.1.1. INTERNAL WIRING

497. All internal wiring shall be carried out with stranded copper conductors, PVC insulated, 1100/650 V grade.

498. 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.

499. 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.

500. Wiring shall be terminated on terminal blocks using crimping type lugs and without joints or tees on their runs.

501. Power wiring shall be done either by phase identifying coloured wires or suitably coloured PVC sleeves shall be provided at each end of wire.

501.1.1.1.1. The following wiring codes shall be used.

501.1.1.1.2. Instrument Transformer : Red, yellow or blue

depending upon phase with which wire is associated.

501.1.1.1.3. A-C phase wire	:	White
501.1.1.1.4. A-C Neutral wire	:	Black
501.1.1.1.5. Earth connection	:	Green

501.1.1.2. 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.

501.1.1.3. Ferrules provided shall be oil tight and numbered from left to right.

501.1.1.3.1. TERMINAL BLOCKS

501.1.1.3.1.1. Terminal blocks for control wiring shall be 650V grade 10 sq.mm size.

501.1.1.3.1.2. Terminal blocks shall be grouped depending on circuit voltage. Different voltage groups of terminals blocks shall be segregated.

501.1.1.3.1.3. Terminals blocks shall be numbered for identification and provision shall be provided for terminal labels.

501.1.1.3.1.4. Terminal blocks requiring duplication shall be provided with solid bonding links.

501.1.1.3.1.5. Terminal blocks for current transformer secondary lead wires shall be provided with shorting, disconnecting / earthing facilities.

501.1.1.3.1.6. Terminal blocks and control wiring shall be so arranged that only one conductor of external wiring required to be terminated in at each terminal.

501.1.1.3.2. GROUND BUS

501.1.1.3.2.1. A ground bus, rated to carry maximum fault current, shall extend to full length of the panel.

501.1.2. 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. .

501.1.2.1.1.1. 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.

501.1.2.1.1.2. 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.

501.1.2.1.1.3. C.T. shall be earthed through removable links so that earth of one circuit may be removed without disturbing other.

501.1.2.1.1.4. Frames and noncurrent carrying metal parts of all equipment mounted shall be effectively to earth bus.

501.1.2.1.1.5. All hinged doors shall be connected to earth bus by flexible tinned bare copper wire.

501.1.2.1.1.6. Instrument and relay cabinets shall be connected to

earth by 2.5 sq.mm stranded copper insulated wire 1100 V grade.

501.1.2.1.2. SPACE HEATERS

501.1.3. Each cubicle shall be provided with thermostat controlled space heaters.

501.1.3.1.1. AC/DC POWER SUPPLY

501.1.3.1.1.1. The panels shall be suitable to receive following power supplies.

501.1.3.1.2. AC Supply : Single Feeder

501.1.3.1.3. DC Supply : Double Feeder

501.1.3.1.3.1. Isolating switch fuse units shall be provided at each switchgear for the incoming supplies, 4-pole, single throw for AC.

501.1.3.1.3.2. 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.

501.1.3.1.3.3. AC load shall be so distributed as to present a balance loading on three phase supply system.

501.1.3.1.4. NAME PLATES

501.1.3.1.4.1. Name plates of anodized aluminium shall be furnished at cubicle and at each instrument, device mounted on and inside the cubicle.

501.1.3.1.4.2. Caution notice on suitable metal plate shall be affixed at the back of each vertical panel.

501.1.3.1.4.3. Name plates for feeders shall be provided on front and back of the panel.

501.1.3.1.5. TROPICAL PROTECTION

501.1.3.1.5.1. All equipment, accessories and wiring shall have fungus protection, involving special treatment of insulation and metal against fungus, insects and corrosion.

501.1.3.1.5.2. Screens of corrosion resistant material shall be furnished on all ventilating louvers to prevent the entrance of insects.

501.1.3.1.6. PAINTING

501.1.3.1.6.1. All surfaces shall be sand blasted, pickled and grounded as required to produce a smooth, clean surface free of scale, grease and rust.

501.1.3.1.6.2. After clearing, the surfaces shall be given a phosphate coating followed by 2 coats of high quality primer and stoved after each coat.

501.1.3.1.6.3. The panels shall be finished with two coats of Siemens Grey (Shade RAL 7032) powder coated / Polyester enameled.

501.1.3.1.7. TESTS & INSPECTION

501.1.3.1.7.1. The following routine and acceptance tests shall be carried out during final acceptance list.

501.1.3.2. Mechanical operation test.

- 501.1.4. Electrical operation test.
- 501.1.5. High voltage test on power circuits.
- 501.1.6. High voltage test on control circuits.
- 501.1.7. Millivolt test on the circuit breakers.
- 501.1.8. Millivolt Drop test on Busbar joints

501.1.8.1.1.1. 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.

501.1.8.1.1.2. 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.

501.1.8.1.1.3. These inspections shall however, not absolve the vendor from the responsibility for making good any defect with may be noticed subsequently.

502. 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.

503. BATTERY & BATTERY CHARGER

503.1.1.1.1.1. BATTERY

503.1.2. General

503.1.2.1. The battery shall be maintenance free type

503.1.2.2. The plates shall be designed for maximum durability during all service conditions including high rate of discharge and rapid fluctuation of load.

503.2. BATTERY CHARGER

503.2.1. General

503.2.1.1. The charger shall be natural air cooled, solid state type with full wave, fully controlled, bridge configurations.

503.2.1.2. The charger shall be provided with automatic voltage regulation, current limiting circuitry smoothing filter circuit and soft start feature.

503.2.1.3. Voltage control shall be step-less, smooth and continuous.

503.2.1.4. The charger shall be self-protecting against all A-C and D-C transients and steady state abnormal currents and voltages.

503.2.1.5. 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.

503.2.1.6. There shall be separate transformers for float and boost charger.

503.2.1.7. Charger A-C input and D-C output shall be electrically isolated from each other and also from panel ground.

503.2.1.8. Isolation shall also be provided between power and control circuits.

503.2.1.9. Batteries shall also be housed into the Battery Charger cubical.

503.2.2. Construction

503.2.2.1.1. The charger shall be freestanding, floor mounted with sheet steel enclosure with all access from the front.

503.2.2.1.2. The panel shall conform to the degree of protection IP 42. Minimum thickness of sheet metal used shall be 2 mm.

503.2.2.1.3. Access door shall be with concealed hinges and neoprene gaskets. Ventilating louvers shall be covered with fine wire mesh.

503.2.2.1.4. All equipment within the panels shall be arranged in modular units and laid out with sufficient space for easy maintenance.

503.2.2.1.5. 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.

503.2.3. Charger Equipment

503.2.3.1. 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.

503.2.3.2. Blocking diodes shall be fully rated and redundant so that failure of a single diode shall not incapacitate the system in any way.

503.2.3.3. Isolating switches shall be heavy duty, load break type, operated by an external handle with provision for padlocking in ON and OFF position.

503.2.3.4. Changeover switch shall be 3 position, 4 pole, load break type with 2 NO + 2 NC auxiliary contacts.

503.2.3.5. Contactor shall be air-break type with thermal overload relays having in built single phase preventor.

503.2.3.6. Fuses shall be HRC type and arranged for easy replacement. Semi - conducting device fuses shall be fast-acting.

503.2.3.7. Indicating lights shall be low-watt filament type with series resistor. Both lamp and lens shall be replaceable from front.

503.2.3.8. Meters shall be 96 x 96mm switchboard type, 250 deg. scale, antiglare glass, ± 2% accuracy with zero adjuster on the front.

503.2.4. Alarms

503.2.4.1. One (1) ten-points alarm facia shall be provided on charger panel complete with proper actuating devices, circuitry and legends.

503.2.4.2. 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.

503.2.4.3. Each time a window lights up, a master relay will get energized to provide group alarm signals for Owner's remote panel.

503.2.4.4. Following minimum annunciation shall be provided:

503.2.4.5.A. C. Supply failure *

503.2.5. D. C. Voltage low *

503.2.6. D. C. Voltage high *

503.2.7. D. C. System ground *

503.2.8. Charger overload *

503.2.9. SCR fuse blown

503.2.10. Filter fuse blown

503.2.11. D. C. Output fuse blown

503.2.11.1. Alarm points marked with an asterisk (*) shall have electrically separate spare set of contacts wire_ up to the terminal block for Owner's use.

503.2.11.2. Alarm contacts shall be rated 2A at 24V D. C. And 5A at 240V A.C.

503.2.12. Outgoing Feeders

503.2.12.1. Each Outgoing feeder shall be provided with double pole switch and with HRC fuses.

503.2.12.2. Outgoing feeders shall be located in separate module forming part of charger panel with separate cable alley for terminated outgoing cable.

503.2.13. Lamp / Space Heaters / Receptacles

503.2.13.1. The charger panels shall be provided with:

504. Internal illumination lamp with door switch.

505. Space heater with thermostat control.

505.1.1.1. Lamp, heater circuits shall have individual switch fuse units.

505.1.2. Wiring/ Cabling

505.2. The panels shall be completely wired-up. All wiring shall be routed through wiring troughs. Wires shall be ferruled at both ends for identification.

505.3. Panels shall have removable gland plates at the bottom for cable entry. All incoming / outgoing cables shall be terminated in suitable terminal blocks.

505.4. Control terminal blocks shall be box-clamp type ELMEX 10 Sq. mm or approved equal.

505.4.1. Grounding

505.5. The charger panels shall be fully rated ground bus with two ground terminals, one at each end.

505.6. 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.

505.6.1. Tropical Protection

505.7. All equipment accessories and wiring shall have fungus protection, involving special treatment of insulation and metal against fungus, insects and corrosion.

505.8. Screens of corrosion resistant material shall be furnished on all

ventilating louvers to prevent the entrance of insects.

505.8.1. Painting

505.9. All surfaces shall be sand blasted, pickled as required to produce a smooth, clean surface free of scale, grease and rust.

505.10. After cleaning, the surfaces shall be given a phosphate coating followed by 2 coats of high quality primer and stoved after each coat.

505.11. The panels shall be finished in powder coated Siemens Grey, RAL7032.

505.11.1. Tests

505.12. 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:

505.13. Tests on battery charger.

506. Dielectric tests.

507. Voltage regulation check from 0 to 100% load with $\pm 10\%$ input voltage variation.

508. Ripple content measurement.

509. Heat run test on current limiting value.

509.1.1. Test Witness

509.1.2. 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.

509.2. REQUIREMENT

509.2.1. Battery

509.2.2. i) Type : Lead Acid

509.2.3. ii) Nos. of Cells per Battery : 12

509.2.4. iii) Battery nominal voltage : 24 V

509.2.5. iv) Ten hour rating to : 300 AH

509.2.5.1.1. 1.85 Volt/Cell at 27 deg. C.

509.2.6. Battery Charger

509.2.7. i) Charger : Float & Boost

509.2.8. ii) Type : Solid state, rectifier

509.2.9. iii) Rating : 40A

509.2.10. iv) A.C. Input Supply : 415V, 3ph, 4 w/230V, 1Ph., 50Hz.,

509.2.10.1.1.1.1.1.1. 2 wire.

509.2.11. v) Ripple content in charger DC output : $\pm 1\%$

509.2.12. vi) Outgoing feeders - 12 Nos : Each consisting of double pole

509.2.12.1.1.1.1.1.1.1. MCB of 32A.

509.2.13. INSPECTION SCHEDULE

509.2.14. 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.

510. NOTE

511. It is the obligation on the part of Contractor to inform actual date of inspection 2 weeks in advance.

512. Contractor's engineer shall be present in all inspection.

513. In some cases, Owner/ Owner's Representative may give waiver of inspection.

514. In all cases, test certificate shall be furnished by the contractor and the same shall be approved by owner/ Consultant.

515.

516. Bidder's Signature

517. 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 ERICSSON 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.

518.1.1. COMPUTER NETWORKING
518.1.2. SECTION - I INTRODUCTION

518.1.2.1.1. GENERAL REQUIREMENTS:

518.1.3. Computer Net Working System should adhere to relevant and recognized standards.

518.2. 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.

518.3. 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.

519. DATA CABLING - UNSHIELDED TWISTED PAIR

519.1. 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.

519.2. Unshielded Twisted Pair (UTP) CAT 6 cable and other relevant products shall be in accordance with EIA/TIA 568 standards.

519.3. 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.

519.4. All cables shall be fitted with strain relief boots.

519.5. Contractor shall furnish 25 Year warranty certificate to cover Bandwidth of the specified and installed cabling system and installation costs.

519.6. Cable shall be manufactured by using 24 AWG solid bare coppers with polyethylene insulation and Flame retardant PVC jacket.

519.7. Cable shall be suitable in operating temperature of -20° C to 60° C.

519.8. The cable shall be tested up to 350 MHz frequencies.

519.9. Delay skew should not be more than 25ns/100m.

519.10. Impedance of the cable shall be 100 Ω +/- 15 Ω .

519.11. Following installation practice shall be followed by the Contractor

519.11.1. While laying the cable.

520. Do not place cable near equipment that may generate high levels of electromagnetic interface.
521. Place cabling at a sufficient distance from equipment.
522. Do not over tighten cable ties, use staples or make sharp bend with cables.
523. Tie and dress horizontal cables neatly and with a minimum bend radius of 4 times the cable diameter.
524. Maintain the twist of horizontal and backbone cable pairs up to the point of termination. Do not leave any wire pairs untwisted.
525. Do not create multiple appearances of the same cable at several distribution points (called Bridging Taps)
526. Do not use connecting hardware that is of lower category than the cable being used.
527. Terminate each horizontal cable on a dedicated telecommunications outlet.
528. Use connecting hardware that is compatible with the installed cable.
529. 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 codes, 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.

530. CAT 6 RJ 45 MODULAR JACK

- 530.1. 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 contaminants.
- 530.2. One outlet/Double outlet of required color and type should be provided to each workstation as per the final approval of the consultant.
- 530.3. All outlets shall be modular type and made out of ABS plastic.
- 530.4. The outlet shall be provided with icons or circuit identification and labels for port identification.
- 530.5. All outlets should include cable management facilities as per standards.
- 530.6. The modular outlets shall be factory assembled.
- 530.7. The termination of the installed horizontal cable shall be by insulation displacement connectors.
531. UTP JACKS

531.1. UTP Jacks shall be suitable for CAT 6 cable, PCB Based and as per TIA/EIA 568 standards.

531.2. The durability of Modular jack shall be minimum 750 mating cycles and minimum 200 termination cycles for wire terminals.

531.3. 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.

532. UTP JACK PANELS

532.1. 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.

532.2. UTP Jack panel shall have Icons on each of 24 Ports.

532.3. 9mm or 12mm labels on each of 24 ports shall be provided as per the final approval of the consultant.

532.4. The durability of Modular jack shall be minimum 750 mating cycles and minimum 200 termination cycles for wire terminals.

532.5. 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.

533. 6.0 WORK AREA CABLING

533.1.1. Work area equipment and cables shall be as per ANSI/TIA/EIA-568-A and ISO/IEC 11801.

533.1.2. Equipment Cords are assumed to have the same performance as patch cords of the same type and category.

533.1.3. 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.

533.1.4. 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.

533.1.5. The patch cord shall be provided with matching colored snag-less, elastomeric polyolefin boot.

533.1.6. Housing of the plug shall be of Clear Polycarbonate and the Load Bar shall be of PBT polyester.

- 533.1.7. 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.
- 533.1.8. All cables shall be fitted with strain relief boots.
- 533.1.9. The onsite fabrication of work area cabling shall not be permitted.
534. 7.0 DATA RACKS
535. 7.1 The contractor shall also examine the location of the Data Rack to
- 535.1.1. Ensure the Air Flow around the same and sufficient clearance is available to allow access for inspection and maintenance.
536. 7.2 The specification for patching frames shall match that detailed in
- 536.1.1. UTP cabling.
537. 7.3 The patch panels shall meet or exceed the transmission
- 537.1.1. Performance requirements of ANSI/EIA/TIA 568-A5.
538. 8.0 TERMINATION AND CONNECTORS
539. 8.1 The wiring schedule used at the point of termination should be
- 539.1.1. Complete with ANSI/EIA/TIA 568-A.
540. 8.2 All termination shall be made using CAT 6 connectors and
- 540.1.1. Panels.
541. 8.3 When terminating both ends of the connection should be tested,
- 541.1.1. Labeled and documented according to the requirement of the OEM and site practices.
542. 8.4 All termination should be made by an approval installer so as to
- 542.1.1. Meet warranty.
543. 9.0 LABELING AND COLOR CODING CONVENTIONS
544. 9.1 All Cables shall be labeled so as to ultimately and the end user in
- 544.1.1. The maintenance and administration of the installed cabling system.
545. 9.2 Contractors shall make allowance for labeling of all cables at both
- 545.1.1. Ends and for the full labeling of all patch panels and outlets with a unique circuit identifier.
546. 10.0 INSTALLATION ACCEPTANCE TESTING SPECIFICATIONS
547. 10.1 Installed UTP Cabling system shall be tested with TIA/EIA 568

- 547.1.1. 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.
548. 10.2 The contractor shall after completion of the installation, submit a
- 548.1.1. Detailed documentation of the cable plant. The documentation shall cover minimum following:
549. As built diagrams of the Network.
550. Test results for UTP
551. Consolidated Bill of Materials with manufacturer's part Nos. and quantities used.
552. Warranty certificate from OEM Supplier.
- 552.1.1. **SECTION - II SUBMISSION**
- 552.1.1.1.1.1. SUBMISSIONS
553. Contractor to note that the following Minimum Documents shall be furnished along with the Bid.
- 553.1. UTP CABLING SYSTEM
554. ETL verification of the Cable as per TIA/EIA 568 B.1 standards.
555. Performance characteristics for Attenuation, Pair to Pair and PS NEXT, ELFEXT and PSELFEXR, Return Loss, ACR and PS ACR for 4 - Connector Channel.
556. Certificate of UL listing.
- 556.1. UTP JACKS
557. Certificate of UL listing.
- 557.1. Performance characteristics for Attenuation, NEXT, PS NEXT, 557.1.1.1.FEXT and Return Loss.
- 557.2. UTP JACK PANELS
558. Certificate of UL listing.
559. Performance characteristics for Attenuation, NEXT, PS NEXT, FEXT and Return Loss.
560. Certificate for termination pattern as per TIA/EIA 568 A and B.
561. 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.

562. 3.0 TELEPHONE WIRING

562.1.1. Telephone Wiring should be carried out with 0.5 Sqmm Tinned Copper flexible wire through PVC CassingCaping / Conduit. And terminated in the Jack on workstation and on the krones in the Krone Junction Box place at Server Room.

562.1.2. The Krone Junction Box should be joint less type.

563.1.1. AIR CONDITIONING SYSTEM

564. INTRODUCTION

564.1.1. These specifications spell out the complete requirement for the proposed Air-Conditioning System for facility of UBI, Anand Regional Office.

564.1.2. The interior of the facility is being done by consultant Architect M/s. Mayur Shah & Associates, Vadodara. 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.

564.1.3. And therefore, such offers, indicating of highly efficient system, will be preferred.

564.1.4. 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.

564.1.5. 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.

564.1.6. 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.

564.1.7. The system will be catering to a most modern facility accordingly the system offered shall be suitable for continuous trouble free operation.

564.1.8. 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.

565. 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-

565.1.1.1. Complete installation drawings showing details of the Indoor & Outdoor units, Refrigerant pipes and their sizes, electrical circuit diagrams, air distribution system etc.

565.2. Instruction books for operation, maintenance and servicing of all components.

565.3. List of recommended spares for two years of operation. M/s. Mayur Shah & Associates ,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.

566. Note

566.1.1. Before taking up the installation work at site the supplier should ensure that the installation drawings are approved by the Employer and Consultants.

567. 2.0 ERECTION

567.1.1. 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.

567.1.2. 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.

567.1.3. 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.

567.1.4. 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.

567.1.5. 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.

567.1.6. 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.

568. 2.1 TRAINING OF PERSONNEL

568.1.1. 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, Vadodara. 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.

568.2. GENERAL

568.2.1. 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.

568.2.2. Absence of any information on item will be assumed to be negative reply.

568.3. COMPLETENESS OF CONTRACT

568.3.1. 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.

568.4. SPECIFICATIONS

568.4.1. 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.

568.4.2. 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.

568.5. GUARANTEE

568.5.1. 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.

568.6. INSURANCE OF WORK

568.6.1. 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.

568.7. ITEMS INCLUDED IN THE CONTRACT

568.7.1.1.1. 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.

568.7.1.1.2. 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.

568.7.1.1.3. Earthing sets and earth conductors.

568.8. Drain piping suitably insulated where necessary to the drain points in the equipment rooms, as per drawing.

568.9. First fill of refrigerant, oil or other contingent material.

568.10. Any loss of refrigerant, oil etc. due to the defects of the equipment or installation system during guarantee period shall be made good.

568.11. Operation of system until the time, system is handed over.

568.12. CO-ORDINATION

568.12.1.1.1. 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.

568.12.1.1.2. 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.

568.13. DRAWINGS & LITERATURE / DOCUMENTATION AS PER ANNEXURE ATTACHED

568.13.1.1.1.1. Before proceeding with the work, the Contractor shall submit the following documents in duplicate

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568.14. 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.

569. General layout and assembly drawings.

570. Foundation drawings / frame details for all equipment.

571. Operational and maintenance manuals / instruction book.

572. Trouble shooting details.

573. All working drawings other than Consultants drawings.

574. Detailed BAR CHART with activity schedules.

574.1.1.1. 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.

574.1.2. 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.

574.1.2.1. 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.

574.1.2.2. The Contractor shall furnish and install in the machine room a neatly prepared set of operating instructions securely framed.

574.1.2.3. The Contractor shall furnish information required in the tender document.

574.2. VARIATION OF WORK

574.2.1. 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).

574.2.2. 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.

574.2.3. The variation required should never the less be carried out. The matter in difference shall be settled by arbitration.

574.2.4. The Employer shall give a reasonable notice to the Contractor to enable him to make arrangements for variation in work required by him.

574.3. NEGLIGENCE

574.3.1. 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.

574.3.2. 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.

574.3.3. 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.

574.4. PROGRAM OF WORK & PROGRESS SCHEDULES

574.4.1. 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.

574.4.2. 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.

574.5. INITIAL INSPECTION

574.5.1.1.1. The equipment offered shall be inspected by Employer/Consulting Engineers at site or at the Contractor's / Manufacturer's premises as per conditions.

574.5.1.1.2. 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 meeting the requirements of specifications.

574.5.1.1.3. 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.

574.5.1.1.4. Quality plan to be approved by Employer & Consultants.

574.6. EXTRA ITEM

574.6.1. 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.

574.7. COMPLETENESS OF ERECTION & COMMISSIONING OF THE SYSTEM & INSPECTION DURING ERECTION

574.7.1.1.1.1.1. Inspection during erection

574.7.2. The Employer is at liberty to inspect the system during installation and the Contractor free of cost shall remedy defects found.

574.7.3. 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.

574.7.3.1.1.1.1.1. Completeness of erection & commissioning

574.7.4. 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.

574.8. SEASONAL TESTS & TAKE OVER

574.8.1.1.1.1.1. "INITIAL TEST" for Air-conditioning Equipment-

574.8.2. 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.

574.8.3. The initial tests shall include but not be limited to-

575. Test & check the proper functioning & settings of switchgear, starters, contractors, safety controls and electrical motors etc, to ensure their proper functioning.

576. 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.

577. No load test to be carried out.

578. Operate and check the proper functioning of all Components viz, compressors, pumps, air handling units, water softening plant etc.

579. Check and adjust the water flow in the system to the original design through such components viz, chiller and cooling coils etc.

580. 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.

581. 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.

582. The initial test performs in the above manner, shall be concluded with reports specifying completeness of all supplied equipments.

582.1.1.1.1.1. “CONTINUOUS TEST” for Air-conditioning Equipment-

582.1.2. 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

582.1.3. Humidity are near their peaks. The Employer / Consultant will provide 3-Days notice for conducting the tests.

582.1.4. 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.

582.1.4.1.1.1.1. “PERFORMANCE TEST” -

582.1.5. 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-

582.1.5.1. TR PRODUCED:

582.1.5.1.1. By airflow, temperature & humidity of air.

582.1.5.1.2. By water circulation.

582.1.6. CFM specified at given temp. & R. H. conditions.

582.1.7. Static pressure.

582.1.8. Electric power consumption for each equipment.

582.1.9. Any other utilities required shall also have to be measured compared to the committed consumption.

582.1.10. Consumption of items whatsoever nature, not specified in the tender shall be considered as extra consumption and will disqualify the performance test.

582.1.11. Delta T and Delta P to be checked and noted.

582.1.12.	viii)	Canvass Temperature	-	°C / °F
582.1.12.1.1.		Grille Temperature	-	°C / °F
582.1.12.1.2.		Return Air Temperature	-	°C / °F

582.2. REJECTION OF DEFECTIVE SYSTEM

582.2.1.1.1.1. 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.

582.2.1.1.1.2. 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.

582.3. TAKING OVER

582.3.1. After completion of the installation and satisfactory commissioning of the system, the same shall be taken over by the Employer.

582.4. WARRANTY

582.4.1. Period of 12 months begins from the date of take over.

582.5. CLEAN-UP OF THE WORK SITE

582.5.1. 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.

582.6. WORK AND SERVICES TO BE PROVIDED BY THE EMPLOYER

582.6.1. Unless otherwise agreed, the Employer shall provide the following work and services to the Contractor for carrying out the erection work.

582.6.2. 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.

582.6.3. The Employer shall provide raw water connection to the expansion tank and cooling tower basin.

582.6.4. Electrical cable of sufficient length up to the entire switchboard shall be supplied and laid by the Employer with suitable earthing. The Contractor shall connect the cable to the incoming side of all the panels on the main switch, which shall be supplied by him.

582.6.5. False ceiling and boxing for concealing pipes etc.

582.6.6. Electrical power for welding machines for site work.

582.6.7. Wooden frame for grilles and diffusers.

582.7. WORK AT SITE

582.7.1. 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.

582.8. DEFECT LIABILITY

582.8.1.1.1.1.1. 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.

582.8.2. 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.

582.8.2.1.1.1.1. 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.

582.8.2.1.1.1.2. 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.

582.9. IMPORT LICENSE

582.9.1. The Employer shall not provide any import license and / or permit for controlled material.

582.10. CONTRACTOR'S CONDITIONS OF CONTRACT

582.10.1. Conditions of contract in Contractor's offer will be treated as null and void unless specifically agreed by the Employer in writing.

582.11. SUBMISSION OF TENDER

582.11.1. The tendered shall make out his offer in two parts as TECHNICAL and COMMERCIAL.

582.11.2. 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.

582.11.3. 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.

582.11.4. 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.

582.11.5. 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.

582.11.6. Tenderer shall reduce to the minimum, the enclosure of printed general conditions to avoid confusion.

582.11.7. Tenderer shall submit BAR CHART of the project along with the tender.

582.12. SAFETY

582.12.1. 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.

- 582.12.2. 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-
- 582.12.3. Belt Guards
- 582.12.4. Belt guards shall be designed with approved provision to facilitate belt inspection, adjustment, replacement and general servicing.
- 582.12.5. All couplings are to be covered with an approved guard, fabricated from welded plate and structural steel.
- 582.12.6. Access Ladders and Platforms
- 582.12.7. 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.
583. GENERAL DESCRIPTION / BASIS OF DESIGN
584. 5.1 SCOPE
- 584.1.1. 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,Anand Regional Office.
- 584.2. BASIS OF DESIGN
- 584.2.1. Project :M/s. UBI,Anand Regional Office
- 584.2.2. Application :Comfort Air-Conditioning & Active Ventilation.
- 584.2.3. ROOF
- 584.2.4. 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.
- 584.2.5. WORK TO BE DONE BY AIR CONDITIONING CONTRACTOR
- 584.2.6. 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.
- 584.3. POWER SUPPLY

584.3.1. 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.

584.4. DESCRIPTION OF THE WORK TO BE CARRIED OUT

584.4.1. 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.

584.4.2. 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.

585. SPECIFICATION OF EQUIPMENT / MATERIAL AND INSTALLATION STANDARDS

586. REFRIGERANT PIPING

586.1.1. 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.

586.1.2. DRAIN PIPING

586.1.3. Condensate from the evaporator unit shall be drained through properly installed drain piping designed to prevent any accumulation of condensate in the drain pan.

586.1.4. 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.

586.1.5. TESTING

586.1.5.1. After completion all such system shall be tested for leakage.

586.1.5.2. 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.

586.1.6. PAINTING

586.1.7. 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.

586.2. ELECTRICAL WORK

586.2.1. 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.

587. ANNEXURE - I

587.1. TESTING OF AIR CONDITIONING SYSTEM

587.2. 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.

587.3. 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.

587.4. The contractor shall operate test and adjust the air conditioning system units, fans, motors, all air conditioning appliances including adjustment of regulators, dampers etc.

587.5. 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 have been made.

587.5.1. 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.

587.6. PROCEDURE

587.7. Design Conditions

587.7.1. 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 psychrometric chart. The inside Dry Bulb Temp. And relative humidity shall fall within the specified limits.

587.8. CAPACITY OF THE SYSTEM

587.8.1. The following aspects shall be checked before conducting the performance tests

587.8.1.1.1. The outside conditions shall be as close to the design values as possible. The tests shall be arranged during the peak summer and monsoon.

587.8.1.1.2. The internal loads of various spaces shall be close to the design values as far as possible.

587.8.1.1.3. The system shall be fully loaded and the temperatures stabilized.

587.8.1.1.4. Hourly readings of airflow shall be recorded by a calibrated flow meter.

587.8.1.1.5. Hourly readings of pressure, temperature, electrical current. Voltage and power factor shall be properly recorded.

587.8.2. The capacity of the system and various other equipment and accessories shall be ascertained as follows.

587.9. Cooling coil of Indoor units

587.9.1. 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 an anemometer.

587.10. FUNCTIONAL TESTS

587.11. Electrical equipment

587.11.1.1.1. 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,

588. ANNEXURE - II

589. MODE OF MEASUREMENT

589.1.1.1.1.1. The following measurement code shall apply to this contract

589.2. PIPING

589.2.1.1.1.1.1. Piping will be measured in running lengths (meters)

- 589.2.2. 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.
- 589.2.2.1.1.1.1. The length of the piping including accessories and fittings will be measured along the center line of piping.

589.2.2.1.2. Electrical Work

- 589.3. All cables shall be measured in running lengths as finally installed at site. No wastage measurement will allow.
- 589.4. Control Cable / wiring for a plant inside the plant room shall be treated as a lump sum item.
- 589.5. All measuring instruments indicating lamps etc shall form part of the equipment specified and no separate measurement shall be made for such items.

590. 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.

591.

Note:

	The bidding Contractor should have their registered branch office in Distt Anand or in nearby area (within a radius of 100 Kms) and Should have executed at-least one similar work of Interior, Furnishing, Electrical, Networking and Airconditioning work in Anand or nearby area (within 100 Kms radius)
	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)

	The full floor will be handed over for work to the contractor. Full Floor shall be emptied for construction. 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 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 proof. Electrical Contractors should have local valid Licenses.
	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.
	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. During office hours noise making work to be avoided.
	Work to be carried out in the night time as the floors above and below are corporate floors, which will not allow any noisy work during office hours. The contractor shall be responsible for obtaining all the necessary statutory permissions for the same.
	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.
	Liasoning for usage of Lift for raw material movement is to be carried out by the contractor with the Landlord. The same may be used as per approval from Landlord and 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 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.
	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 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.
	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 .NoRft 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.

SUBJECT: INTERIOR WORK FOR UNION BANK OF INDIA, ANAND REGIONAL OFFICE, 2ND FLOOR, MARUTI SOLARIS, ANAND.

TENDER FOR INTERIOR FURNISHING/ELECTRICAL/NETWORKING WORKS/AC WORKS.

PART-II

TENDER SPECIFICATION AND BILL OF QUANTITIES

PRICE BID

issue of Tender	Date of : From 01.06.2022 To 21.06.2022 During office hours.
Last date for submission of tender	: 21.06.2022 upto 3.00 pm.

<u>Owner:</u> Union Bank of India, Anand Regional Office, Peridot Hub, 24 Urmi Society, Near Urmi Crossing, Productivity Road, Akota. Contact Person:- Mr Mrutyunjaya Biswal, Chief Manager (Operations) Email:- cb8831ssd@unionbankofindia.bank Ph:- 0265 2343602, 655	<u>Consultant:</u> M/s Mayur Shah & Associates. 803, Top Floor, Center Point, Alkapuri, Vadodara - 390007. (M) 9377213854 Email - msa.baroda@gmail.com
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ABSTRACT OF COST

SUBJECT: INTERIOR WORK FOR UNION BANK OF INDIA, ANAND REGIONAL OFFICE, 2ND FLOOR, MARUTI SOLARIS, ANAND.

Details of tender amount quoted by the contractor:

Sr.No	Particulars of works	Amount

1	FURNITURE WORKS	Rs.	
2	ELECTRICAL WORKS	Rs.	
3	A.C. WORK	Rs.	
4	TOTAL AMOUNT (1+2+3)	Rs.	
	GST WILL BE APPLICABLE EXTRA		

(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

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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.

BOQ FOR FURNITURE WORKS ESTIMATE OF UNION BANK OF INDIA - ANAND REGIONAL OFFICE, ANAND.

SR. NO.	DESCRIPTION	QTY.	UNIT	RATE	AMOUNT
	PARTITION				
	Class II Teak wood Batons fixed at 2' Center to center covered with 6 mm commercial ply confirming to IS 303. The exterior surface to be finished with Laminate as specified in drawing enclosed. For low height partition & full height fully/ partially glazed partition, the Glazing shall be done with 08 mm thick float glass confirming to IS 14900, enclosed in frame.				
	The thickness of all Laminates shall be uniform, within a tolerance of ± 5 percent. Corresponding Laminates on either side of the centre one shall be of the same thickness and species. Confirming to IS 14616.				
	White laminate :- Signature - 101 MT nobel white, Formica - G324/1324 super white, Heritage - 101 SD Super white, Silicon - 101 MT White, Euro - 101 SF, Green lam - 101 white, Century - 107 snow white, New mica - 3501 white, or equivalent of similar shade.				
	Red laminate :- Signature - 231 SF Deep Spice, Formica - G 566/1566, Heritage - 1234 Oak red, Silicon - 176 SF Vodafone red, or equivalent of similar shade.				
	Bule laminate :- 240 SF Royal blue, Formica - G457J / 1457 Spectrum blue, Silicon - 200 SF Blue, Euro - 192 SF, New mica - 3590 blue, or equivalent of similar shade.				
	Plywood :- ANCHOR / AMUL / EURO / SILICON – EVOKE / GREEN OR APPROVED EQUIVALENT BY EIC.				
1	LOW HT PARTLY GLAZE PARTITION (Ht. 4'-3")				
1.1	CM 5 & PA cubical	105.15	SQFT		
1.2	CM 4 & OFFICER cubical	181.10	SQFT		
1.3	CM 3 & OFFICER cubical	333.91	SQFT		
1.4	CM 2 & OFFICER cubical	192.73	SQFT		
1.5	CM 1 & OFFICER cubical	136.17	SQFT		
2	FULL HT PARTLY GLAZE PARTITION (Ht. 8'-0")				
2.1	Regional manager cabin (including 1 door)	239.28	SQFT		
2.2	AGM cabin (including 1 door)	92.00	SQFT		
2.3	Vigilance cabin (including 1 door)	86.00	SQFT		
3	SOLID PARTITION (Ht. 8'-0")				
3.1	Conference room (including 2 door)	245.28	SQFT		
3.2	Executive Dining & store room (including 3 door) (Ht. 10')	357.50	SQFT		
3.3	Between officer & executive dining	86.00	SQFT		
3.4	Between AGM & Reception	86.64	SQFT		
4	Providing and fixing Isolated solid flush door shutter with Aluminium Frame and both side Bison panel for UPS Room	345.8	SQFT		

	Providing and fixing aluminium frame of 65mm x 38mm x 1.5 mm thick and door shutter made out of 50x25x1.5mm thick framing at maximum 1'-6" C/C both way with 8 mm thick Hilux Board on both side with painting. Providing 6 mm thick clear float glass vision panel secured with 12 mm thick steam beach beading, 31x 12 mm thick steam beach periphery patti around shutter edges, aluminium stopper patti on frame including 3 Nos 5" long SS hinges with countersunk SS screws, Approved make Ded Lock, S.S Handles, Door stoppers, doorstop of approved make etc. complete as per drawing & instructions				
5	RM CABIN WOODEN PLANK FLOOR	240.00	SQFT		
	Providing and applying Wooden flooring 8 mm thk as per Architect / Bank's Engineer selection and drawing.				
	Wooden flooring of make action Tesa or equivalent				
6	TABLES				
	Made out of 18mm commercial ply board outer façade finished with 01mm laminate as per drawing enclosed storage unit with 3 drawers, keyboard and pencil drawer on channels, cable manager, and laminated apron to match décor. Drawer unit and verticals made out of 18mm commercial ply board with Keyboard drawers. PC stands for PC below worktop and 18mm ply board footrest finished with enamel paint. All Drawers to be provided with Godrej lock & SS handle of approved make. The exposed side of front façade, drawer front shall be finished with 01mm laminate as per drawing enclosed. The inside shall be 0.8mm laminate to give a smooth finish.				
6.1	RM Table (8'-0" X 3'-6") 1 NOS.	8.00	RFT		
6.2	AGM Table (6'-0" X 3'-0") 1 NOS.	6.00	RFT		
6.3	CM Table (5'-0" X 2'-6") 5 NOS.	25.00	RFT		
6.4	CONFERENCE Table (19'-0" X 3'-0") 1 NOS.	19.00	RFT		
6.5	OFFICER Table (4'-6" X 2'-3") 30 NOS.	135.00	RFT		
6.6	RECEPTION Table (7'-6" X 2'-3") 1 NOS.	7.50	RFT		
6.7	PA Table (4'-6" X 2'-3") - 1 No.	4.50	RFT		
6.8	EXECUTIVE DINING Table (6'-0" X 3'-0") 1 NOS.	6.00	RFT		
7	SIDE UNIT & BACK STORAGE				
	Made out of 19 mm commercial ply board as per drawing enclosed including storage unit with 3 drawers, keyboard on channels, cable manager. Drawer unit and verticals made out of 19 mm commercial ply board. PC stands for PC below worktop and 19mm ply board footrest finished with enamel paint. All Drawers to be provided with Godrej lock & SS handle of approved make. The exposed side of front façade, drawer front shall be finished with 01 mm laminate as per drawing enclosed. The inside shall be melamine polished to a smooth finish. and fitted with Godrej locks and approved SS				

	fittings & Hardware. The Height and Length shall be as per site.				
7.1	RM Cabin (7'-0" x 3'-0") & (3'-6" x 2'-6") 18" wdth	29.75	SQFT		
7.2	PA Cubicle (4'-6" x 3'-0") & (3'-5" x 2'-6") 16" wdth	22.03	SQFT		
7.3	AGM cabin (8'-0" x 3'-0") & (3'-6" x 2'-6") 16" wdth	32.75	SQFT		
7.4	CM Cubicle (7'-6" x 3'-0") & (3'-6" x 2'-6") - 5 nos. 16" wdth	156.25	SQFT		
7.5	Officer Side unit - Total 105.24 rft & ht. 30" & 16" wdth	263.10	SQFT		
7.6	Conference room (5'-6" x 2'-6" + 3'-0") 24" wdth	30.25	SQFT		
7.7	Reception (4'-4" x 2'-6") & (3'-6" x 2'-6") 16" wdth	19.58	SQFT		
7.8	Dining room Crockery table (8'-9" x 2'-6") 16" wdth	21.88	SQFT		
7.9	OVERHEAD STORAGE UNIT (12'-9" x 2'-6") 16" wdth	31.88	SQFT		
7.10	OVERHEAD STORAGE UNIT (11'-9" x 2'-6") 16" wdth	29.38	SQFT		
7.11	Conference room below TV storage unit (6'-0" x 2'-6") 16" wdth	15.00	SQFT		
7.12	Full Height storage unit at store room 1 (8'+8'+5' x 7'-0") 16" wdth	147.00	SQFT		
7.13	Full Height storage unit at store room 2 (8'+8'+5' x 7'-0") 16" wdth	217.00	SQFT		
8	FALSE CEILING				
	4" sunk false ceiling equivalent of Armstrong, Tridon, Conwed, Comceil etc. 600x600 / 15mm dune supreme RH 99 prima tiles with regular edge frame work as specified by Armstrong, Tridon, Conwed, Comceil etc. company / equivalent, thus covering 40% of area whereas the balance area to be covered with gypsum board (IS2095-1982) false ceiling about 60% area coverage and vertical sunk areas.				
8.1	GYPSUM CEILING (ht. : 8'-0")	2516.25	SQFT		
8.2	ARMSTRONG GRID CEILING (ht. : 8'-6")	840.00	SQFT		
8.3	VEENEER POLISH FINISH OR SHERA PLANK CEILING AT RM, AGM CABIN (ht. : 8'-6")	160.00	SQFT		
9	COLUMN CLADDING				
	Providing and fixing columns panelling made out of 2" x 1" Aluminium frame in both ways ,12mm thick ply finish on front with 1.0mm thick lamination finish and as per the instructions.	552.16	SQFT		
10	PIN UP BOARDS (SOFT BOARDS)				
	Providing and fixing softboard made out of 12mm thick softboard with 1.5"x 1.5" thick T.W. Frame and 4mm thick hard board for back with tapestry (basic rate @175/mtr) with paint and polish etc. complete.	48.00	SQFT		
11	ELECTRICAL PANEL BOARD SHUTTER (Size : 4'-0"x8'-0")	32.00	SQFT		
	Providing and fixing electrical panel board area shutter (openable and partly louvered) made out of teak wood frame work, 12mm thick IS : 710 ply and 1.0mm thick laminate finish on front, brass hinges, handles etc. and as per the details.				
12	PANTRY PLATFORM CUB BOARD SHUTTER (BELOW PLATFORM)				

	Providing and fixing cupboard shutters below pantry platform using 38 x 63 MM (1 1/2" x 2 1/2") second grade T.W members for frame, 18 mm thick waterproof plywood with 1.0 mm laminate for shutters and 0.6 mm thick balancing laminate on internal surfaces. Providing 18 X 6 mm th T.W beading all around shutter. Providing S S perforated jali, 75 mm long S.S hinges, 100 mm long Handles, stoppers and magnetic catch as directed. All non laminate surface shall be polished/ synthetic enamel paint as directed.	30.25	SQFT		
13	SOFA				
	Providing and fixing sofa same design as per Architect drg. & as per Description below : RED Tapestry cloth The basic structure of sofa shall be made of solid plywood members with flat spring and 18/12mm thick commercial ply and wooden frame. It shall be made out of 4" thick PU foam of 32 densities in seat and back in 3" thick rubber foam with 1" thick high density PU foam rounded as per design with approved upholstery of Rs 250/- complete as per design and instructions from engineer-in-charge.				
13.1	RM & AGM CABIN SOFA	17.00	RFT		
13.2	RECEPTION SOFA	7.66	RFT		
14	WINDOWS BLINDS				
	Window / Fixed glazed opening on external side shall have Rolling Blinds or vertical blinds of 4" Strips of Vista or equivalent make in Ivory/white colour.	1437.37	SQFT		
15	Bank branding Showcase wall	10.58	RFT		
	Bank's logo (cnc cut) made of acrylic or stainless steel sheet & 12" wide glass shelf As per architect's drawing.				
16	TOILET ACCESSORIES SET				
16.1	Mirror : Providing and fixing 1'-6" x 2'-0" Mirror above wash basin 6 mm thick Mirror of approved make shall be fixed with 4 nos. S.S. Studs complete as directed.	3.00	NOS		
16.2	S.S. Soap Dispenser : Providing and fixing Soap Dispenser at wash basin of approved make shall be fixed complete as directed.	3.00	NOS		
16.3	S.S. Towel Ring Holder : Providing and fixing Towel Ring at wash basin of approved make shall be fixed complete as directed.	3.00	NOS		
17	CORNER TABLE				
	wooden Table with 8mm Glass Top over Teak Wood or mat finished SS Frame.				
17.1	at RM cabin (36" x 21")	1.00	NOS		
17.2	at RECEPTION (30" x 21")	1.00	NOS		
17.3	at AGM cabin (24" x 21")	1.00	NOS		
18	RM CABIN BACK WALL PANELING	68.30	SQFT		
	Providing and fixing wall panelling made out of 2" x 1" Aluminium frame in both ways ,12mm thick MDF PU DUCO finish and as per the instructions.				
19	CHAIRS				

	High / Medium back chairs with M.S. Stand with castors, P.U.Arms, revolving / tilting, Suspa / MDI Gas Lipped, molded foam seat (60 density 2.5" molded foam) and back (50 density 2" molded foam).Tapestry cloth shall be Red casmet.				
	Brands : HOF, Amardeep, wipro, Godrej				
19.1	RM CABIN (High back)	1.00	NOS		
19.2	AGM CABIN (High back)	1.00	NOS		
19.3	CM CUBICLE (High back)	5.00	NOS		
19.4	32 OFFICERS + 1 PA + 2 RECEPTION + 2 SUB STAFF (Medium back)	36.00	NOS		
19.5	CONFERENCE ROOM - RM chair (High back)	1.00	NOS		
19.6	CONFERENCE ROOM - OFFICERS (Medium back)	39.00	NOS		
19.7	DINING ROOM (Medium back)	6.00	NOS		
19.8	VISITOR CHAIRS (Low back)	17.00	NOS		
	PVC Chairs (stackable) as per bank's & architct selection.				
	Brands : HOF, Amardeep, wipro, Godrej				
19.8	2 OPEN TERRACE	16.00	NOS		
20	Table top : 21" Width	14.75	RFT		
	Made out of 18mm commercial ply board top & all side finished with 01mm laminate as per drawing. The bottom / inside shall be 0.8mm laminate to give a smooth finish. Table top have 21"x30" bottom vertical support made of 18mm commercial plywood.				
21	READY MADE S.S 4 SEATER 3' ROUND TABLE AT OPEN TERRACE (HOF, Amardeep, wipro, Godrej)	4.00	NOS		
22	Artificial plant				
22.1	medium size at Reception, RM & AGM Cabin	9.00	NOS		
	BASIC TOTAL				
	LESS : DISCOUNT IF ANY%				
	NET TOTAL GST WILL BE APPLICABLE EXTRA				

**BOQ FOR ELECTRICAL WORKS ESTIMATE OF UNION BANK OF INDIA - ANAND
REGIONAL OFFICE, ANAND.**

SR. NO	PARTICULARS	QTY.	UNIT	RATE	AMOUNT
	NOTE :All zharis or chases in wall/columns/slabs, cone cutting etc. of conduits the filling of the same will be done by the contractor including all necessary material &labour				
A	INTERNAL WIRING :				
1	P and M point wiring in concealed in walls, furniture's & for above false ceiling, or on ceiling, on beams shall be fixed with saddles & spacers etc., with conduits taken in slab with 20 mm dia PVC Rigid conduits 1.5 mm thick ISI mark with 2 nos. of 1.0 sq. mm. & 1 nos. of 1 sq. mm. with modular switch with company made flush metal box/surface PVC box etc. comp. with nec. main lines for switch board from LDB of mains of 2 nos. of 2.5 sq.mm wire and 1 no.of 1.0 sqmmpvc Insulated copper conductor wire laying in with 20 mm/25 mm dia PVC rigid conduits 1.5 mm thick ISI mark .These will be used with point wiring of light, fan, ex. fan, callbell points, etc { Max. 3 Switchboards in one circuit - One Sp MCB }.				
1.1	One 5A switch controlling one light/fan point	125	NOS		
1.2	One switch controlling Two light points	3	NOS		
1.3	5A socket outlet with 5A switch (on common board) (1 FOR WATER COOLER)	8	NOS		
1.4	5A socket outlet with 5A SP switch (as an independent point) [ex. Fan, extra points.]	50	NOS		
1.5	Call bell point with bell push complete.	3	NOS		
2	SITC of 6/16 Amp. Switch and socket complete with necessary require wiring from PDB of 2 no of 4.0 sqmm wires and 1 no of 2.5 sqmm PVC Insulated copper conductor wire laying in with 20 mm/25 mm dia PVC rigid conduits 1.5 mm thick ISI mark. These will be used with point wiring of power points ,etc	45	NOS		

3	SITC of 20 A/ 25 A , 230 V, with DP MCB all enclosed in a prefabricated M S boxes complete to the satisfaction of E.I.C. For SPLIT AC 1.5TR / 2.0 TR unit with necessary require wiring from ACDB of 2 no of 4.0 sqmm wires and 1 no of 2.5 sqmm PVC Insulated copper conductor wire laying in with 20 mm/25 mm dia PVC rigid conduits 1.5 mm thick ISI mark. These will be used with point wiring of A.C. points ,etc . [This point should be installed near Split / window AC in concealed manner.] The height of switchboard must be at reachable point for easily operation. - from that point to Split AC , empty conduit + necessary bends must in concealed mode by ele. contractor.	15	NOS		
B	LIGHTING FIXTURES :				
	(NOTE : ANY OF FIXTURES AND FITINGS SHALL BE RE-CONFIRMED WITH THE ARCHITECTS / CONSULANTS BEFORE ORDERING THEM.				
4	Supply, installation, testing and commissioning (including supply and fixing flexible wires from holder to fixtures hardwares etc.) of.... - <u>The LED/CFL lamps should be of same make as fixture make. - The marking & cutting of fixtures should be in ele. contractor's scope..</u>				
4.1	Supply and installation Compact Fluorescent (2'x2') 36 W LED RECESS MOUNTED DIRECT - INDIRECT DOWN LIGHT LUMINAIRE with tubes, rotor, bi-pin holders, starter, choke and making earthing conection complete to be recessed in false ceiling with all necessary hardwares, chains, hook etc. complete. (EESL or Equivalent make)	40	NOS		
4.2	Supply and installation Compact fluorescent down lighter 18 W LED fixture to be recessed in false ceiling with all necessary hardwares, chains, hook etc. complete. (EESL or Equivalent make)	50	NOS		
4.3	Supply and installation LED tube light 1 x 11 W Surface mounting type with LED tube, complete. (WIPRO or Equivalent Philips / POLYCAB / Havells make)	5	NOS		
4.4	Supply and insallation of Call bell with Indicatore. (Max or equivalent make)	6	NOS		
4.5	Supply and installation of Exhaust fan of 300 mm, fresh air vantilator type with louver complete & 6 Amp. 3 pin TOP. (Crompton/ Khaitan / Havells / Luminous make) [Wooden mounting frame should be fixed in coordination with carpenter - furniture contractor.]	8	NOS		

4.6	Supply and installation 48" Ceiling Fan with fan step socket modular regulator, Max. 3 feet Fan Rode, Anchor Fastner, etc.(WHITE COLOUR) (Orient PSPO or equivalent approved make in Crompton / Havells / Luminious.)	3	NOS		
4.7	Supply and installation 36 W LED slim tube light Batten Fixture with LED tube complete with necessary hardwares, etc. (WIPRO or Equivalent Philips / POLYCAB / Havells make)	11	NOS		
4.8	Supply and installation of 450 mm sweep wall mounted fan with metal body, metal stand, guard and blade, 6 a. 3 pin top With on site 2 years warranty. (Crompton / Havells make -. Offwhite colour) .	18	NOS		
C	COMPUTER POWER SUPPLY & NETWORK - TELE. SYSTEM.:				
5	SITC of 2 nos. of 6 A, 5 pin Sockets and 1 no. of 6 \ 16 A socket below table outlets with one 16 A switch with indicator Computer power supply with concealed company made metallic boxes or PVC flush box on walls / furniture's / trunking etc complete all respect with necessary wiring of mains of 2 no of 2.5 sq mm and 1 no of 1.5 sqmm pvc insulated copper conductor multi-stranded flexible wire with 20/25 dia. PVC conduits with accessories duly buried under floor with necessary chasing / breaking in floor and to be refinished with all necessary civil material etc. complete from UPSDB to Computer power supply boards.{Maxi. 3 computers in one circuit}. complete with necessary termination etc. complete.[White Colour Outer Plate For These Switchboards]. LOOP POINTS MUST BE OF SAME SIZED WIRES.	48	NOS		
6	S & I of 2 nos. of 6 A, 5 pin Sockets and 1 no. of with one 6 A switches row power supply with concealed company made metallic boxes or PVC flush box on walls / furniture's / trunking etc complete all respect with necessary wiring of mains of 2 no of 2.5 sq mm and 1 no of 1.5 sqmm pvc insulated copper conductor multi-stranded flexible wire with 20/25 dia. PVC conduits with accessories duly buried under floor with necessary chasing / breaking in floor and to be refinished with all necessary civil material etc. complete from PDB to Computer power supply boards.{Maxi. 3 Raw Power Points in one circuit}. complete with necessary termination etc. complete..[Black Colour Outer Plate For These Switchboards]. LOOP POINTS MUST BE OF SAME SIZED WIRES.	48	NOS		

7	Providing, installing, testing, commissioning of CAT 6 UTP pvc insulated copper conductor data cable of D - Link with 20/25 dia. PVC conduits with accessories duly burried under floor with necessary chasing / breaking in floor and to be refinished with all necessary civil material etc. or to be cleated on wall / ceiling with saddles / spacer etc. necessary termination etc. with ferrule numbering at both ends of each piece of cable complete.[2 Lines from BSNL Krone to new krone & 2 Lines from BSNL Krone to DATA RACK].	900	MTR		
8	Supply, installation, testing and commissioning of CAT 6, RJ 45 information outlet (I/O) of D-linkmke with front modular cover plate, flush box metallic or PVC for trucking system etc. complete with terminations etc. complete with Providing, installing, testing, commissioning of CAT 6 UTP pvc insulated copper conductor data cable of D-link make with 20/25 dia. PVC conduits with accessories duly burried under floor with necessary chasing / breaking in floor and to be refinished with all necessary civil material etc. or to be cleated on wall / ceiling with saddles / spacer etc. necessary termination etc. with ferrule numbering at both ends of each of piece of cable etc. complete as per the requirement from metal rack to table I / O points complete. (one for LCD & two for ATM & one for IP tele. in BM CABIN.)	48	NOS		
9	Supply, installation, testing and commissioning of 6 U metal rack for computer clamping switch etc complete with Tray Mounting Fan + power supply board. Bank's hardware - port switch / patch panel must be installed by ele. Contractor in this rack.	2	NOS		
10	SITC of 24-port ithubernet switch	2	NOS		
11	SITC of 24 port patch panel for computers mounting in metal rack.	2	NOS		
12	Supply and crimping of RJ 45 connector with proper testing.	48	NOS		
13	Supply & fixing the Patch cord 1 mtr. Long (factory built) .-When supplying , then first ask to BM / Consultant / Architect / Bank Authority.	1	NOS		
14	Supply & fixing the Patch cord 2 mtr. Long (factory built) .-When supplying , then first ask to BM / Consultant / Architect / Bank Authority.	48	NOS		
15	Supply and installing telephone point with Telephine socket outlets of RJ 11 of aapproved make with company made concealed boxes in walls / furniture's etc. complete with Providing, installing, testing, commissioning of 2 pair of 0.51 cross section pvc insulated copper conductor telephone wire of ITI approved with 20/25 dia. PVC conduits with accessories duly burried under floor with necessary chasing / breaking in floor and to be refinished with all necessary civil	48	NOS		

	material etc. or to be cleated on wall / ceiling with saddles / spacer etc. necessary termination etc. complete. from kroone box to table tele. points, etc. complete. for Intercom / fax / direct Tele. facility.				
16	Supply, installation, testing and commissioning of 10 pair krone telephone tag block duly enclosed in sheet metal powder coated box with locking arrangement complete with necessary terminations	2	NOS		
D	DISTRIBUTION BOARD AND PANELS :				
19	Supply, installing, testing and commissioning of metallic double door type distribution board with all necessary connection complete to be installed concealed in wall / surface mount complete to the satisfaction of the Engineer in charge. The DB should be of same make as MCB make.				
19.1	12 - WAY SPN DB : (LDB)	3	NOS		
	incoming : 40A FP ELCB, 100 mA -1 NO				
	outgoing : 10 to 20 A SP MCB (8 nos)				
19.3	6 WAY TPN DB : (ACDB - PDB)	3	NOS		
	incoming : 63A FP MCB - 1 NO				
	outgoing : 16 A SP MCB (6 nos)				
	outgoing : 25 A DP MCB (6 nos) for HI- WALL SPLIT AC				
	(15 A power point, , Raw Power)				
19.4	8 WAY SPN DB : (UPS DB) OUTPUT	3	NOS		
	incoming : 40 A DP 100 mA ELCB				
	outgoing : 10 to 20 A SP MCB (6 nos)				
19.5	UPS 6 WAY SPN DB (For all computers)	3	NOS		
	incoming : 63A FP MCB - 1 NO FOR 1 - phase UPS.(big)				
	incoming : 32A DP MCB -1 NO FOR 1 - phase UPS.(small)				
	outgoing : 25A DP MCB -1 NO FOR SERVER OUTPUT.				
	MAIN PANEL :	1	NOS		
	125 A FP SFU (1 No.) as Incoming				
	* 100 A, FP Change over switch (1 No.)				
	* 160 AMP. 500 Volts, 3 phase 50 Hz FP Copper bus bars of suitable length - Current ratio shall be 1 sq mm = 1.2 A				
	* Ammeter and Voltmeter with selector switches, control fuses. - digital type meter C.T. shall be of 15VA class 1 type and shall be resin cast type				

	* Phase indicator lamps LED phase wise. * Outgoing feeder: * 25 A DP MCBS (1 no - SERVER AC) * Timer of L & T make Cat. No. 67DDTO digicom Timer with 16A. 4P contactor /Theben make Cat no. SUL 180 a - T180 0 001 ANALOGTimer with L & T make contactor MNX 18 (operating coil voltage 230V, 50 Hz). (24 hrs).-1 No for signage light * 25 A DP MCBS (1 no - Sign board) * 63 A FP MCB (1 NO - ACDB - PDB) * 40 A FP MCB (1 NO - LDB) * 63 A FP MCB (1 NO - UPSDB) * 63 A FP MCB (1 NO - ATMDB) * 40 A FP MCB (1 NO - SPARE MCB)				
22	Providing and Installing of 125A MCCB FP Unit compartment with hinged door & locking arrangement duly fabricated from 18 SWG sheet metal box duly painted with one coat of red-oxide paint and two coats of approved enamel paints with 125A OPEN TYPE MCCB FP UNIT with Phase indicator lamps phase wise , control fuses & wooden back complete. THIS WILL BE INSTALLED NEAR MAIN DOOR - INSIDE OR OUTSIDE - OF THE BANK. (first ask to BM / Consultant / Architect / Bank Authority.)	2	NOS		
E	EARTHING SYSTEM:				
23	Providing and making Earthing Pit with all necessary material and making masonry kundi, watering arrangement etc complete as per ISI 3043-1987 (FOLLOWING ITEMS MAY OPERATE)				
23.1	600 x 600 x 6.35 mm thick G.I. Plate type (DB - PANEL)	4	NOS		
23.2	600 x 600 x 3.18 mm thick Cu. Plate type. (UPS)	4	NOS		
24	Supply, laying and jointing of following wire / strip / earth cable on walls, ceiling etc. With necessary non rusting clamps, washers, nuts and bolts etc complete				
24.1	8 SWG G.I. Wire with 20 mm dia. PVC rigid conduit duly cleated / concealed / buried in floor etc. complete for ELE. PANEL, ALL DBS , ETC.	60	Rmt		
24.3	25 x 3 mm G.I. Strip - From G. I. Earhpit to Main Panel + From Cu. Earhpit to UPS I / P DB.	75	Rmt		
24.4	25 x 3 mm CU.strip				
F	CABLES & CABLE TERMINATIONS:				
25	Supply, Lying, installation, testing and commissioning of following sizes of PVC insulated PVC sheathed copper / aluminum conductor armoured cable to be laying in existing cable trench or to be laid in existing pipes of with necessary clamps, spacers with cleating on wall				

	ceilling etc. complete to the satisfaction of EIC. All types of cable excavation works should be in contractor's scope.(LENTH TO BE VERIFIED AT SITE)				
25.1	4 C x 2.5 sq. mm Cu . Conductor YWY cable. (for Signboard)	45	MTR		
25.2	4 C x 4 sq. mm Cu. Conductor YWY cable. (Main panel to LDB.)	45	MTR		
25.3	4 C x 6 sq. mm Cu. Conductor YWY cable. (Main Panel to UPS DB).	45	MTR		
25.5	4 C x 16 sq mm Alu. Conductor AYFY cable. (Main Panel to ACDB - PDB , PDB & ATMDB.)	45	MTR		
25.6	3.5 C x 50 sq. mm Alu. Conduktor AYFY cable. (main cable from Panel to main mccb nr. energy meter) (LENGTH as per site contition)	45	MTR		
25.9	3 C X 10.0 sq. mm flexible Cu. cable with 20 mm/25 mm dia PVC rigid conduits 1.5 mm thick ISI mark .(UPS to UPS O/P DB & UPS I/P DB to UPS).				
25.10	3 C X 6.0 sq. mm flexible Cu. cable with 20 mm/25 mm dia PVC rigid conduits 1.5 mm thick ISI mark .(UPS O/P DB in UPS ROOM to UPS O/P DB in HALL AREA).	65	MTR		
25.11	3 C X 4.0 sq. mm. flexible PVC Insulated copper conductor cable laying in with 20 mm/25 mm dia PVC rigid conduits 1.5 mm thick ISI mark from AC indoor unit to AC outdoor unit. (For SPLIT AC 1.5 TR 2.0 & 3.0 TR Casatte unit -OUTDOOR SUPPLY) .	120	MTR		
26	End termination of following PVC insulated armoured cables incluming supply and fixing of brass single compression type cable glands and crimping type aluminum / copper lugs suitable for terminations of armoured cables of following overall diameters, incl				
26.1	4 C x 2.5 sq. mm Cu . Conductor YWY cable. (for Signboard)	8	NOS		
26.2	4 C x 4 sq. mm Cu. Conductor YWY cable. (Main panel to LDB.)	10	NOS		
26.3	4 C x 6 sq. mm Cu. Conductor YWY cable. (Main Panel to UPS DB).	25	NOS		
26.4	3.5 C x 50 sq. mm Alu. Conduktor AYFY cable. (main cable from Panel to main mccb nr. energy meter) .	8	NOS		
26.5	4.0 C x 25 sq mm Alu. Conductor AYFY cable. (Main Panel to DG SET)	8	NOS		
26.6	25 sq.mm single core end termination with copper lugs.	20	NOS		
26.7	3 C X 10.0 sq. mm flexible Cu. cable with 20 mm/25 mm dia PVC rigid conduits 1.5 mm thick ISI mark .(UPS to UPS O/P DB & UPS I/P DB to UPS).	2	NOS		

26.8	3 C X 6.0 sq. mm flexible Cu. cable with 20 mm/25 mm dia PVC rigid conduits 1.5 mm thick ISI mark .(UPS O/P DB in UPS ROOM to UPS O/P DB in HALL AREA).	4	NOS		
G	MISCELLANEOUS ITEMS :				
27	Supply and installation of 300 x 300 x 40 mm size GI box duly fabricated from 18 SWG m.s. sheet with top cover of s. s. sheet complete with necessary knock outs at all the sides of box for conduit entries duly fixed in floor, including breaking in floor and re-finished the same etc. complete (Wire Draw Box).	5	NOS		
28	Supply and installation of 150 x 150 x 40 mm size GI box duly fabricated from 18 SWG m.s. sheet with top cover of s. s. sheet complete with necessary knock outs at all the sides of box for conduit entries duly fixed in floor, including breaking in floor and re-finished the same etc. complete (Wire Draw Box).	5	NOS		
29	Supply and installation of 2.5 sq. mm. 3 core flexible cable of approved make (4 mtr. Length) with M. S. flexible pipe & 15 amp. 3 pin top of approved make for the supply of locker room.	1	NOS		
30	Supply & laying of the empty conduit	90	MTR		
	<u>TOTAL (A TO G)</u>				
	LESS : DISCOUNT IF ANY %				
	<u>NET TOTAL</u>				
	GST WILL BE APPLICABLE EXTRA				
1	THE CONTRACTOR SHOULD DEPUTE ONE PERSON AT SITE FROM START OF WORK TO FINISH FOR GIVING TEMPORARY CONNECTIONS & ATTENDING PROBLEMS				
2	THE CONTRACTOR SHOULD WORK ACCORDING TO THE FINAL LAYOUT.				
3	THE CONTRACTOR SHOULD CHECK ELE. APPROVED MAKE LIST BEFORE QUOTE.				
4	THE CONTRACTOR SHOULD SUBMIT CERTIFICATE OF CPRI APPROVED PANEL BUILDER CERTIFICATE.				

BOQ FOR AC WORKS ESTIMATE OF OF UNION BANK OF INDIA - ANAND REGIONAL OFFICE, ANAND.

SR. NO.	DESCRIPTION	QTY.	UNIT	RATE	AMOUNT
	All A.C should be of either Hitachi, Daikin, Voltas, Carrier & Bluestar make.				
	All A.C should be same brand irrespective of individual capacity. Mention the model no. and brand of A.C and R32 gas.				
	Have copper condensing coil and scroll compressor for A.C.				
	Star rating should be 3 star according to guideline by BEE. (latest guideline (JAN 2022)).				
	Contractor shall mark location of indoor and outdoor unit and coordinate with other agencies for electric supply.				
	Contractor shall provide authorised dealership certificate from concerned company				
1	Providing approved quality make hi wall split A.C of 1.0 ton capacity (copper condenser & minimum 3 star rating) with remote, 4mt of copper pipe.	3	Nos.		
2	Installing pressure testing, gas charging, vaccuming commissioning 1.0 ton hi wall split A.C (indoor & outdoor unit). (instalation should be done as per company specification.)	3	Nos.		
3	Providing approved quality make hi wall split A.C of 1.5 ton capacity (copper condenser & minimum 3 star rating) with remote, 4mt of copper pipe.	3	Nos.		
4	Installing pressure testing, gas charging, vaccuming commissioning 1.5 ton hi wall split A.C (indoor & outdoor unit). (instalation should be done as per company specification.)	3	Nos.		
5	Providing approved quality make Cassette A.C of 2.0 ton capacity (copper condenser & minimum 3 star rating) with remote, 4mt of copper pipe.	4	Nos.		
6	Installing pressure testing, gas charging, vaccuming commissioning 2.0 ton Cassette A.C (indoor & outdoor unit). (instalation should be done as per company specification.)	4	Nos.		
7	Providing approved quality make Cassette A.C of 3.0 ton capacity (copper condenser & minimum 3 star rating) with remote, 4mt of copper pipe.	4	Nos.		

8	Installing pressure testing, gas charging, vaccuming commissioning 3.0 ton Cassette A.C (indoor & outdoor unit). (instalation should be done as per company specification.)	4	Nos.		
9	Providing & fixing 16 guage MS powder coated wall hung/floor mounted (table top) A.C outdoor unit stand of minimum 24" length.	14	Nos.		
10	Providing & laying concealed refrigerant copper piping with proper 6/9 mm nitrile rubber insulation (k-flex, armcell make) & FRLS (RR cable,Finolex or equivalent make) 1.5/2.5 sq mm 3/4 core power control cable (depending on AC make & capacity & as per company specification) from indoor unit to outdoor unit. the laying shall be done using clamps & hangers to fix paipes to wall/slab piping shall not be fixed to flase ceiling channel. quantity may differ considering site conditions.	700	RFT		
11	Providing & laying concealed water drainage piping from indoor to specified outdoor location using upvc (Astral,Supreme,Dutron make) pipe quantity may differ considering site conditions.	770	RFT		
	BASIC TOTAL				
	LESS : DISCOUNT IF ANY%				
	NET TOTAL				
	GST WILL BE APPLICABLE EXTRA				
	NOTE:				
*	All zharis or chases in wall/columns/slabs, cone cutting etc. of conduits the filling of the same will be done by the contractor including all necessary material &labour.				

CONTRACTOR'S STAMP & SIGNATURE

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