INSTITUTE FOR DEVELOPMENT AND RESEARCH IN BANKING TECHNOLOGY
(ESTABLISHED BY RBI)

E-TENDER FOR
PROPOSED RENOVATION OF LECTURE HALL IN ROOM NO. 212 AND CREATION OF NEW LECTURE HALL IN ROOM NO. 307 AT ADMINISTRATIVE BUILDING, IDRBT PREMISES, MASABTANK, HYDERABAD, TELANGANA-500057

IDRBT Ref. No: IDRBT/EST/MDHU/196/2025 – 2026 Date: 03.10.2025
MSTC Ref No: IDRBT/Head Office/Procurement/12/25-26/ET/12[Renovation and Creation of Halls]

TENDER SCHEDULE

THROUGH TWO BID E-TENDERING PROCESS

Name of Bidder: _____

Address: _____

_____

Date of Release of Tender : 15:00 Hours on 03.10.2025
Last date of Submission of tender : Before 15:00 Hours on 23.10.2025

CLIENT:	CONSULTANTS:
Institute of Development and Research in Banking Technology (IDRBT), Castle Hills, Road No-1, Masab Tank, Hyderabad-500057. Ph No: 040-23294182 **Email:** allestate@idrbt.ac.in	**Aspire Architects & D'Zignners** **Plot # 12, Sainikpuri, Secunderabad Telangana - 500094 Mobile No. 9945704022** E-Mail : lakshmicv.aspire@gmail.com KAKADA RAJU Digitally signed by KAKADA RAJU Date: 2025.10.03 20:07:11 +05'30'

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Important Instructions to Bidders

1. This tender is for the "**Proposed Renovation of Lecture Hall in Room No. 212 and creation of New Lecture Hall in Room No. 307 at Administrative Building, IDRBT Premises, Masab Tank, Hyderabad, Telangana-500057**". It is a Two Bid containing Technical Bid and Price Bid.

2. In their own interest the contractors are advised to use their own specific seals and desist from using currency coins for the purpose. Tenders with incomplete or broken seals are liable to be rejected, the matter solely resting at the discretion of the Employer / Architects. If a contractor does not quote for one or more items, the Tender will be considered as incomplete and will be rejected.

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

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

5. The term "The Architects" in the said conditions shall mean Aspire Architects & D'Zignners, Plot # 12, Sainikpuri, Secunderabad, Telangana – 500094.

6. Employer or Client shall mean Institute of Development and Research in Banking Technology (IDRBT), Castle Hills, Road No-1, Masab Tank, Hyderabda-500057

7. The prospective Bidders shall submit the Bid through e-bidding only on the e-Portal - https://www.mstcecommerce.com/eprocn/

8. The details of the Helpdesk, System Settings, and other useful video guides are available on the e-portal itself.

9. The bidder shall require a class 3 signing and encryption type DSC for submission of the bid.

1. Notice Inviting Tender (NIT)

The bidders desirous of taking up the work of are requested to submit their offer (Technical & Commercial) in the prescribed format in response to this tender notice. The criteria and the actual process of evaluation and subsequent selection of the successful bidder will be entirely at the Institute's discretion.

This Tender document is not an offer by IDRBT, but only an invitation to receive responses from the bidders. No contractual obligation whatsoever shall arise from the tender process unless and until a formal contract is signed and executed by duly authorized official(s) of IDRBT with the successful bidder.

S.No.	Details	Description
1	Name of work	Proposed Renovation of Lecture Hall in Room No.212 And Creation of New Lecture Hall in Room No.307 at Administrative Building, IDRBT Premises, Masab Tank, Hyderabad, Telangana-500057.
2	Nature of work.	Civil & Interior works including Electrical, VRF AC.
3	Earnest Money Deposit	**Rs 1,90,000.00** (To be submitted along with the tender. To be submitted in the shape of DD in favour of **"IDRBT, Hyderabad"** and should have validity of minimum 120 days. Tender documents without EMD will be rejected. Also **"Please note that incomplete tenders / tenders with conditions will be rejected and the EMD will be forfeited".** EMD of Unsuccessful bidders shall be returned on completion of tendering process. The original DD must be submitted at IDRBT before closing of Tender i.e. on or before 15:00 hours on 23.10.2025.
4	Total Security Deposit Amount.	1. Initial Security Deposit (ISD) – 2% of the Tender value including EMD. 2. Retention money of 10% of the value of the work done will be deducted from every running bill, till total retention, including EMD and initial SD paid earlier, comes to 5% of the contract value, and same shall be held by the IDRBT as Total Security Deposit. On the Architect's certifying the completion of work, 50% of the total security deposit shall be released to the contractor along with the final certificate of payment, and the balance amount will be refunded after completion of defects liability period of 12 months. No interest will be paid on the Security Deposit amount.
5	Eligibility of the Bidder.	As per Eligibility Criteria mentioned below.
6	Validity of the Offer.	120 days from the date of opening of Price Bid.
7	Time allowed for completion.	90 days from the date of placing work order. They should commence the work within 7 days on receipt from date of Handing over the site.
8	Payment terms	As per tender conditions enumerated in this tender documents
9	Defects liability period.	12 months from the date of handing over the site by the Bidder after completion of the work.

10	Clarifications if any.	Any clarification in this regard may be sought from the Estate Department, IDRBT through email ID allestate@idrbt.ac.in / Phone no. 040-23294182.

11	Last Date of submission of bids along with EMD.	**On or before 15:00 hours of 23.10.2025**
12	Place of submission of tender documents.	The dully filled in tender document downloaded from the web site along with all copies of supporting documents shall be Uploaded in the MSTC website before the last date and time mentioned above.
13	Pre Bid Meeting	**Pre Bid Meeting** will be Conducted on **14.10.2025 @ 11.00AM** at Institute of Development and Research in Banking Technology (IDRBT), Castle Hills, Road No-1, Masab Tank, Hyderabda-500057. No technical Clarifications shall be entertained after the Pre bid Meeting. No Conditional Tenders shall be allowed, if any shall be summarily rejected.
14	Minimum interim	Each running bill of Minimum **Rs. 25.00 Lacks and above**
15	(Penalty clause) Liquidated Damages	@ 1.0% of the value of work per week of delay.
16	If Abnormal rates quoted by the bidder.	If the final L1 bid is below 15% of the estimated cost, then the L-1 contractor has to submit Additional Security Deposit (ASD)/Additional Performance Guarantee (APG). The amount of such ASD / APG shall be the difference between Quoted cost and estimated cost. Bank Guarantee or FDR receipt favoring IDRBT, Hyderabad.
17	Eligible Taxes	1. A) Income Tax & GST IT will be deducted at source as per Govt. Guidelines. 2. B) Reimbursement of GST will be made only on submission of proper GST invoice as per applicable GST provision. The contractor should comply with the following; 3. Contractor should have GST Registration Number 4. Invoice should specifically/separately disclose the amount of GST levied at applicable rate as per GST provision 5. In case of Correction in the bills after scrutiny, contractor should submit fresh bills for payment 6. Contractor should timely file his GST return in accordance with GST provisions to enable the bank to claim the credit of GST paid to the contractor 7. The GST Number of IDRBT 36AAAAI0204K1Z4

18	Evaluation of Price Bids and Finalization	1. Only those Bidders who qualify in Technical evaluation would be shortlisted and the online price bid submitted by the bidder will be opened. 2. The L1 Bidder will be selected on the basis of net total of the price evaluation as quoted in the Online bidding. 3. In case, the L1 amount quoted by two or more contractors is the same, such lowest contractors will again be asked to submit sealed / online "Revised + Percentage Offers" on the original Estimated Cost of tender but the revised percentage shall, in no case, be higher than the percentage quoted during their initial offer for the project. The L1 shall be decided on the basis of revised offers.

		4. The process of online rebidding amongst the two or more contractors offering same rates shall continue till L1 bidder is discovered. If required, PL shall conduct reverse auction to discover the L1 bidder. 5. In case, any of such contractors or all contractors (who have quoted same tender amount in the initial bidding or subsequent bidding) refuse to submit revised offer, it shall be treated as "Withdrawal of tender" by the Contractor before acceptance by PL and the EMD of such contractors shall be forfeited and they shall not be allowed to participate in the re-tendering process for the work. 6. If the final L1 bid is unreasonably low i.e. L1 bid is less by 15% or more of the Estimated Cost, the contractor shall submit additional Security Deposit in the form of PBG/DD for an amount equal to difference in the estimated cost vis-a-vis final tender amount quoted by the L1 contractor. PBG/DD to be submitted within 7 days from issue of letter from /IDRBT. 7. If the L1 bidder refuses to give the PBG, then the EMD will be forfeited and the tender will be re-invited. The L1 bidder will not be allowed to participate in the retendering process.
19	Working Hours	**From 7.00 AM to 8.00 PM on all days (working days and Holidays)** The Contractor has to work in the Premises of an office which is functional and no in convenience to be created for effective functioning of office during office hours and the office staff. The Contractor should make necessary arrangements for this.
20	Any additional Information	The quoted rate should be inclusive of materials, labour, wages, fixtures, transportation, installation, all taxes (excluding GST), wastages, Octroi, machinery, temporary works such as scaffolding, cleaning, over heads, profit, statutory expenses, incidental charges, lead and lift charges and all related expenses to complete the work.

		Important Notes for Execution of Work: • Works are to be executed in 2nd and 3rd floor. • Lifting of all the work materials shall be done through the staircase only. • Use of lift in any circumstances shall be avoided / prohibited. • All materials shall be stored at one place as shown to the contractors. • Accommodation for Labour shall be done outside the Office Premises. • Power and water shall be provided by the IDRBT, but will be charged as per the actual. • Every contractor is expected before quoting rates to inspect the site of proposed works and discuss with Project Architect Consultant and /or IDRBT. The material must strictly comply with the relevant specifications. Sample of materials as specified shall be submitted for the approval of the Architect/IDRBT before supplying the site.
21	**The Institute reserve its rights to accept or reject any or all the tenders, either in whole or in part without assigning any reason(s) for doing so and no claim / correspondence shall be entertained in this regard.** **The Institute may use its discretion as it deems fit to award the work to any of the bidder without assigning any reason whatsoever.**	

IMPORTANT:

It is mandatory that the bidder shall sign and certify with seal on each page of the tender documents as well as all the supporting documents as a token of having read and understood the terms & conditions contained therein. The bidder should fill up the information in clear and legible terms. Wherever, the prices are to be quoted, they shall be written in figures and in words as well. No additions/ modifications/ deletions in the tender documents and other related supporting documents shall be entertained.

The Bidders shall upload the following information / documents on **MSTC** site for examination by Institute to satisfy about the Bidder's eligibility:

(a)	Work experience & Completion of similar works of specified value during the specified period.	As per Eligibility criteria.
(b)	Turnover / Credit worthiness of the bidder and their turnover during the specified period	As per Eligibility criteria.

- In the event of intending Bidder's failure to satisfy the Institute with documentary evidence in support of their possessing required eligibility; the Institute reserves the right to refuse their participation in the tendering process.

- **The bidders may visit the site from 03.10.2025 to 23.10.2025 between 10.00 AM to 4.00 PM (on working days only) after making a prior intimation on our e mail (allestate@idrbt.ac.in) to understand the scope of the work.**

- A pre-bid meeting of the intending Bidders will be held **11.00 AM on 14.10.2025** at Estate Department, Academic Building, IDRBT, Hyderabad.

All prospective bidders / Bidders or their authorized representatives are required to attend the pre- bid meeting to seek clarification, if any, regarding this tender. No deviation in Institute's terms and conditions mentioned in the tender shall be accepted.

- The duly filled in tender documents shall be uploaded on MSTC site on or before 15:00 hours on 23.10.2025.

- Any amendments / corrigendum to the tender, if any, issued in future will only be notified on the MSTC website.

Hyderabad
Date: 03.10.2025 Director

2. Eligibility Criteria

Section – 1

S.No.	Criteria	Documents Required
1	The contractor should be registered with **RBI or Public Sector Banks** for **Composite works** (Civil , Interior, Electrical and VRF Air Conditioning etc.) for value of Rs 2.00 Crores and above.	A copy of valid registration certificate from respective authorities.
2	The Contractor should have minimum of 07 (Seven) years' experience in the field as on 30.09.2025.	Copy of Registration of the Firm or Copy of incorporation. At least one copy of the work order from the clients prior to 01.10.2018.
3	Bidder should have a minimum of **Rs. 3 ,00,00,000.00** annual average turnover per year during last three financial years i.e. 2022-23, 2023-24 and 2024-25 from the related business.	Audited balance sheet and certificate from the Charted Accountant.
4	The Tenderer should have executed the following work in a single contract COMPOSITE NATURE (Civil, Interior, Electrical and VRF AC etc.) during the last Five (5) years ending with 30.09.2025 for at least, One similar completed work costing not less than **Rs.83 lacs.** The work contains Civil, Interior, Electrical and VRF Air Conditioning etc. should not be less than 15% of the value of work executed. Excluding GST / Service tax or any other taxes. **(OR)** Two similar completed works costing not less than the amount equal to **Rs. 52.00 Lakh** each work. Each work contains Civil, Interior, Electrical and VRF Air Conditioning etc. should not be less than 15% of the value of work executed. Excluding GST / Service tax or any other taxes.	Satisfactory completion certificates of the works clearly indicating the cost & nature of work executed, date of commencement & completion issued by the Clients. The works shall Mandatorily be supported with form 26AS regarding the bills claimed for the Certificate submitted.
5	The contractor must have valid GST registration, PAN number.	Copy of the GST registration certificate and copy of PAN card.
6	The contractor should submit the Labour License.	Copy of the certificate of Govt Labour department License shall be Submitted by the successful tenderer.
7	The bidder should not have been black-listed/ barred by any Public Sector Bank, RBI or IBA or any other Government/PSU agencies during last Seven years.	An undertaking in this regard is to be submitted to the Bank by the Bidder on Rs.200/- Stamp Paper. IDRBT will verify the same.
8	The contractor (Proprietor / Partner/ Director) should have a valid from Electrical Licensing Board Class –A license.	Valid license to be submitted for carrying out the work Telangana state Electrical Licensing Board Class –A license is mandatory.

9	The Contractor should have local presence and demonstrated execution capability (completion certificates of past work order at Greater Hyderabad Municipal Corporation or adjoining districts) at least during last 5 years from the last date for bidding .	Proofs for the same should be submitted. (Work orders, GST Certificate, Lease Agreement of Office Premises, property tax receipts etc.).
10	The Company/ Brand of the AC'S should be Mentioned .	An Authorization letter or Dealership certificate from the manufacturer shall be provided.

NO JOINT VENTURE PROJECTS ARE PERMITTED / ALLOWED.
PARTIAL COMPLETION CERTIFICATES WILL NOT BE CONSIDERED

NOTE:

- **BIDDER MUST COMPLY WITH ALL THE CRITERIA MENTIONED ABOVE. NON-COMPLIANCE OF ANY OF THE CRITERIA WILL ENTAILED TO REJECTION OF THE BID SUMMARILY. THE INSTITUTE RESERVES THE RIGHT TO VERIFY / EVALUATE THE DOCUMENTS / CERTIFICATES SUBMITTED AS EVIDENCE BY THE BIDDER.**

- **RELEVANT COMPLETION CERTIFICATES OF HAVING COMPLETED SIMILAR WORKS (WORK ORDERS WILL NOT BE CONSIDERED) ISSUED BY COMPETENT AUTHORITY MUST BE ENCLOSED FAILING WHICH YOUR TENDER WILL BE SUMMARILY REJECTED.**

- **CERTIFICATES ISSUED BY THE PRIVATE BUILDERS, SUB CONTRACTUAL WORKS ARE NOT ELIGIBLE.**

- **COMMITTEE OF IDRBT WILL INSPECT THE SITES OF WORKS / OFFICES OF CLIENTS FOR WHICH RELEVENT CERTIFICATES ARE ENCLOSED IN PRE QUALIFICATION TENDER.**

Section - 2
Structure and Organization

Name of the Tenderer:

Address

The tenderer is

1. An Individual

2. A Proprietary firm

3. A limited company or limited corporation

4. A member of a group of companies (If yes, give names, address and present description of other companies)

5. A Subsidiary of large organization
   (If yes, give name and address of the present organization) if the company is subsidiary, State what involvement if any, will the parent company have in the project.

   Attach the organization chart showing the structure of the organization including the names of the directors and position of officers.

6. Number of years of experience

- **As a prime contractor**

   i. In own country

   ii. Other countries (specify country)

7. How many years your organization been in business under your present name? Add what were your fields when you established your organization.

8. Were you ever required to suspend construction for a period of more than six months continuously after you started? If so, give the names of project and reasons of failure.

9. Have you ever not completed any work awarded to you? If so, give name of project and reasons for not completing work.

10. In how many projects were imposed penalty for delay? Please give details.

Signature of Contractor

Section – 3

Financial Details

Annual Turnovers for The Last Three Years:

S. No.	Year	Turnover from Similar works (in lakhs)	Turnover from all other sources (in lakhs)	Remarks
1	2022-23			
2	2023-24			
3	2024-25			

1. List your sources of finance

   - Own resources
   - Bank credit
   - Other sources specify if any?

2. Name and address of Bank from whom reference can be obtained.

   Name:

   Address:

   Ph.

Note:

1. Please attach certified/attested copies of the latest IT and/or Profit and Loss account statement to support the information furnished, failing which your firms will be summarily rejected.

2. Please attach certified Certificate of financial Soundness by Bank.

Signature of Contractor

Section – 4

Experience profile

Details of similar works composite nature interior, electrical, Ac and civil works completed in last five years									
S. No	Description of the work	Name and address of the Employer	Contract No. and date.	Date of award of work	Stipulated date of completion	Actual date of completion	Value of completed work (in lakhs)	Reasons for delay	Penalty if any
Similar Works									
1									
2									
3									
4									

Note:

1. Tenderer must attach copies of the certificates issued by the Client.

2. Only those works shall be considered for evaluation for which copies of the certificates issued by the client are attached

Relevant certificates of having completed similar works issued by competent authority must be enclosed failing which your tender will be summarily rejected.

Signature of Contractor

Details of other works completed in last five years

S. No	Description of the work	Name and address of the Employer	Contract No. and date.	Date of award of work	Stipulated date of completion	Actual date of completion	Value of complete d work (in lakhs)	Reasons for delay	Penalty if any
Other Works									
1									
2									
3									

Note:

1. Tenderer must attach copies of the certificates issued by the Client.

2. Only those works shall be considered for evaluation for which copies of the certificates issued by the client are attached.

Relevant certificates of having completed similar works issued by competent authority must be Enclosed failing which your tender will be summarily rejected.

Signature of Contractor

Section – 5

Resources Personnel

Details of skilled and trained manpower including engineers and technical staff presently employed:

S. No.	Name	Qualification	Designation	Total Experience (in years)	Remarks
1					
2					
3					
4					
5					
6					
7					
8					

Signature of Contractor

Details of engineers and technical staff proposed to be deployed on the project along with bio-data of key personnel

S. No.	Name	Qualification	Designation	Total Experience (in years)	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Note:

Tenderers are also required to attach the complete organization chart of the Engineering and Technical Staff proposed to be deployed on the project.

Signature of Contractor

Section – 6

Details of tools, plant and machinery (in working conditions) owned by the tenderer								
S. No.	**Description**	**Make**	**Model & Year of Manufacture**	**Capacity**	**Condition**	**Nos. Available**	**Any other relevant information**	**Remarks**
1								
2								
3								
4								
Note:								

Signature of Contractor

Section – 7

Details of ongoing works								
S. No.	Description of the work	Name and address of the Employer	Contract No. and date.	Date of award of work	Stipulated date of completion	Value of work as per order (in lakhs)	Value of work completed so far (in lakhs)	Remarks
1								
2								
3								
4								
5								

Note:

1. Please attach copies of the certificates issued by the Client.

2. Only those works shall be considered for evaluation for which copies of the certificates issued by the client are attached

Signature of Contractor

SECTION – 8

Documents to be attached with the Tender by the Tenderer

1. Details of all works and similar works completed in last FIVE years.
2. Annual Turnover for the last three years with supporting documents.
3. Registration of Company.
4. Partnership deed/Memorandum and Articles of Association of the firm.
5. Registration under Labour Laws.
6. GST Registration Certificate.
7. Details of Skilled and Trained Manpower including Engineers and Technical staff presently employed.
8. Details of Tools, Plants and Machinery (in working conditions) owned.
9. Details of Testing, Measuring and Inspection Equipment and facilities for calibration owned.
10. Details of Safety Appliances and Equipment owned
11. ISO 9000 certificate (if any).
12. **General Service Tax Registration certificate to be enclosed COMPULSORY**
13. Original Power of Attorney of the person signing the tender documents or photocopy duly attested by Notary Public.
14. Details of on-going works & supporting Documents.
15. Details of Plants and Machinery proposed to be deployed on the project.
16. Details of Engineers and Technical staff proposed to be deployed on the project along with organization chart and bio-data of key personnels.
17. Programme for execution of works.
18. Month wise Cash flow requirements.
19. Valid Electrical licence.

Signature of Contractor

3. FORM OF TENDER

Place:_____

Date: _____

The Director

Institute for Development and Research in Banking Technology
Estate Department
Castle Hills Road # 1,
Masab Tank, Hyderabad-500057.

Sir,

We have carefully examined the specifications, designs and schedule of quantities relating to the works specified in the memorandum hereinafter set out and having visited and examined the installation site of the works specified in the said memorandum and having acquired the requisite information relating thereto as affecting the tender. We hereby offer to execute the works specified in the said memorandum within the time specified in the said memorandum at the rates mentioned in the attached Schedule of Quantities and in accordance in all respects with specifications, designs and instructions in writing referred to in articles of agreement, general instructions to the bidders and special conditions, conditions hereinbefore referred to, specifications, data sheet and schedule of quantities and with such materials as are provided for, by and in all other respects, in accordance with such conditions so far as they may be applicable.

MEMORANDUM

(a)	Description of works	Proposed Renovation of Lecture Hall in Room No. 212 and creation of New Lecture Hall in Room No. 307 at Administrative Building, IDRBT Premises, Masab Tank, Hyderabad, Telangana-500057.
(b)	Mode of payment	As per Tender conditions enumerated in the tender documents.
(d)	Earnest Money Deposit (EMD)*	**Rs.1,90,000.00**
(e)	Time allowed for completion of work.	90 Days from the date of placing the work order.

*EMD will be forfeited if the Bidder:
a) withdraws the bid after opening of the commercial bid,
b) fails to commence the work awarded to him within the prescribed time limit.

2. We also agree that our tender will remain **valid for acceptance by the Institute for 120 days from the date of opening of Price Bid** and this period of validity can be extended for such period as may be mutually agreed between the Institute and us in writing.

3. Should this Tender be accepted, I/we hereby agree to abide by and fulfil all the Terms and Conditions of the Tender and in default thereof, to forfeit and pay to you or your successors, or assignees or nominees such sums of money as are stipulated in the conditions contained in the tender together with the written acceptance of the Contract.

4. I/We understand that you reserve the right to accept or reject any or all the tender either in full or in part without assigning any reason therefor. We have submitted a DD for a sum of **Rs.1,90,000.00** as

earnest money with the Institute, which amount is not to bear any interest. Should we fail to execute the Contract when called upon to do so, we do hereby agree that this sum shall be forfeited by us to the Institute.

5. The tenders shall be uploaded in two parts. Part I contains all commercial terms and conditions and technical particulars and Part II contains only the price bid in the Institute's Proforma.

Dated: _____day of _____2025.

For and on behalf of M/s _____

_____
(Signature with seal)

Name _____
Designation _____
Place _____
Date _____

(Certified true copy of the Power of Attorney of the above signatory should be enclosed).

Witnesses

(1) Signature with
name, address and date _____
_____
_____

(2) Signature with
name, address and date _____
_____
_____

4. Notice to Contractor

Address:

_____

_____

_____

Project: Proposed Renovation of Lecture Hall in Room No.212 and creation of New Lecture Hall in Room No. 307 at Administrative Building, IDRBT Premises, Masab Tank, Hyderabad, Telangana-500057.

Ref: Civil, Interior, Electrical and VRF AC works etc.

Dear Sir,

On behalf of our clients, **Institute of Development and Research in Banking Technology (IDRBT), Castle Hills, Road No-1, Masab Tank, Hyderabda-500057, we** have pleasure in inviting you to tender for the aforesaid work.

The scope of work broadly as given below is for "Proposed Interiors for Proposed Renovation of Lecture Hall in Room No.212 and creation of New Lecture Hall in Room No. 307 at Administrative Building, IDRBT Premises, Masab Tank, Hyderabad, Telangana-500057".

1. Tender Documents should be filled and uploaded on the site of MSTC.

2. The tenderer must obtain for himself, on his own responsibility and at his own expenses, all the information which may be necessary for the purpose of filling this tender and for entering into a contract for the execution of the same and must examine the drawings and inspect the site of the work and acquaint himself with all local conditions and matters pertaining thereto.

3. Each of the tender documents page is required to be signed by the person or persons submitting the tender in token of his/their having acquainted himself/themselves with the General conditions etc., as laid down. Any tender with any of the documents not so signed will be rejected.

4. The tender documents must be filled in English and all the entries must be made by hand and written in ink. If any of the documents are missing or un-signed, the tender shall be considered invalid.

5. Each and every one of all erasures and additions/alterations made, while filling the tender, must be attested by initials of the tenderer. Over-writing of figures must be attested by initials of the tenderer. Overwriting of figures is not permitted. Failure to comply with either of these conditions will render the tender void. After submission of the tender no advice or any change in rate or conditions will be entertained. All the rates should be quoted both in figures and words. In-case of any discrepancy in rates quoted in words/figures and the amounts, the rate quoted in words shall be taken as final and binding.

6. The tender shall be valid for a period of 120 days from the date of opening.

7 TOTAL SECURITY DEPOSIT: shall comprise of:

a. Earnest Money deposit
b. Initial Security deposit
c. Retention money

7.1 The intending tenderer shall deposit on IDRBT, by Demand Draft a sum of **RS. 1,90,000.00/-** as the Earnest Money, as a guarantee of good faith, which amount shall be forfeited as liquidated damages, in the event of any evasive/direct refusal or delay in starting the work and or signing the contract. The deposit of the unsuccessful tenderers will be returned, without interest, immediately after a decision is taken regarding the award of the contract. The Earnest money of the successful tenderer will be adjusted towards Security Deposit. A tender not accompanied by Earnest money deposit will not be considered.

7.2 The successful tenderer will have to pay further sum equivalent to 2% of his contract value, as initial Security Deposit (ISD) by means of a D.D./Banker's cheque in favour of The IDRBT Within 14 days from the date of issue of work order to commence work. The EMD and Security deposit thus paid shall be held by the IDRBT as Security deposit, for due execution and fulfillment of the contract, till the completion of the work and defect liability period in all respects and shall not bear any interest.

7.3 Together with the money paid under clause 7.1 & 7.2 above, further retention of 10% of the value of the work done will be deducted from every running bill, till total retention, including EMD and initial SD paid earlier, comes to 5% of the contract value, and same shall be held by the IDRBT as Total Security Deposit. On the Architect's certifying the completion of work, 50% of the total security deposit shall be released to the contractor along with the final certificate of payment, and the balance amount will be retained in the manner stated elsewhere for a further period of twelve months after the completion date recorded in completion certificate, issued by the Architects and agreed to by the IDRBT.

8.Within 15 days on receipt of intimation from the Architects of the acceptance of his/their tender, the successful tenderer shall be bound to sign an agreement, on a stamp paper in accordance with the Draft Agreement and conditions of contract attached herewith, but the work order or the written acceptance of a tender by the Employer will constitute a binding agreement between the Employer and the person tendering whether such formal contract is or not signed by the contractor.

9.All compensation or other sums of money payable by the contractors to the clients, under the terms of this contract, may be deducted from the Security Deposit or from any sum that may be or may become due to the contractor on any account whatsoever, and in the event of the Security deposit being reduced by reasons of any such deductions, the contractor shall within 15 days of being asked to do so make good in cash or cheque, any sum which have been deducted from his security deposit.

10.The rates quoted by the Contractor shall include all eventualities, such as heavy rain, sudden floods, accidents, fire, riots etc., which may cause damage to the executed work or which may totally wash out the work. Until the completion certificate is issued to the Contractors, neither the Architect nor the clients will be responsible for such damage or wash out of the construction work.

11.Time is the essence of the contract. The work should be completed within stipulated time as per NIT. The date of commencement shall be within 7 (Seven) days from the date of handing over the site.

The successful contractor will have to give a CPM/PERT chart of various activities of work to be

done so that the work gets completed within the stipulated time as per NIT. The chart shall be submitted within 15 days from the date of acceptance of the tender.

12.If the contractor fails to complete the work by the Scheduled date of completion or within any sanctioned extended time, they will have to pay liquidated damages at the rate of 1.00% of contract amount for each week of delay the work remains incomplete beyond the completion (Original / extended date), as per clause 31 of the General conditions of contract.

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

14.The unit prices shall be deemed to be fixed prices. In case of extra items, a record of labour charges paid shall be maintained and shall be presented every month for extra/substituted items regularly to the Architects for checking. The settlement will be made based on figures arrived at jointly and taking into account unit prices of items of work mentioned in the contract assigned to the successful tenderers. In case, of extra items, where similar or comparable items are quoted in the tender, extra rates shall invariably be based on those tender rates to the extent reasonable.

15.Our clients, Institute of Development and Research in Banking Technology (IDRBT), Castle Hills, Road No-1, MasabTank, Hyderabda-500057, do not bind themselves to accept the lowest or any tender and reserve to themselves the right to accept or reject any or all tenders, either in whole or in part, without assigning any reason whatsoever for doing so.

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

17.The tenderer, apart from being a competent contractor must associate himself with agencies of the appropriate class who are eligible to tender for (1) INTERIOR (2) Electrical (3)Air conditioning works (4) Firefighting systems & (5) Interiors (fixed furniture), as the case maybe.

18.Release of security deposit:

100% of Retention money will also be released as noted under(i) above, subject to submission of a Bank Guarantee, to the satisfaction of IDRBT for an equivalent amount. This Bank Guarantee shall be valid upto completion of defects/removal liability period plus 3 months.

ARCHITECTS: Aspire Architects & D'Zignners
Plot # 12, Sainikpuri,
Secunderabad,Telangana - 500094
Mobile No. 9945704022

5. ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT made the _____day of _____2025 between _____ _____ of _____ _____ (hereinafter called the "Employer") of the one part and _____ of _____(hereinafter called "The Contractor") of the other part, whereas the Employer is desirous of getting the work of "Proposed Renovation of Lecture Hall in Room No. 212 and creation of New Lecture Hall in Room No. 307 at Administrative Building, IDRBT Premises, Masab Tank, Hyderabad, Telangana-500057" executed and has caused drawings, conditions of contract, specifications and schedule of quantities etc., describing the works prepared by Aspire Architects & D'Zignners, Plot # 12, Sainikpuri, Secunderabad, Telangana – 500094.

AND WHEREAS the SAID DRAWINGS numbered as per list attached inclusive of and the conditions of contract, specifications and schedule of quantities etc., have been signed by or on behalf of the parties hereto.

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

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the said sum to be paid at the times and in the manner set forth in the said conditions, the contractor shall upon and subject to the said conditions, execute and complete the work shown in the said drawings and described in the said specifications.

2. The Employer shall pay the contractor the said sum or such sums as shall become payable hereunder at the times and in the manner specified in the said conditions. The term "Architect" in the said conditions shall mean the said Aspire Architects & D'Zignners, Plot # 12, Sainikpuri, Secunderabad,Telangana – 500094 or in the event of their ceasing to be the Architect for the purpose of this contract, such other person as shall be nominated for that purpose by the Employer, not being a person to whom the contractor shall object for reasons considered to be sufficient by the Arbitrator mentioned in the said conditions provided always that no persons subsequently appointed to be the Architect under this contract shall be entitled to disregard or over-rule any previous decision or approval or direction given or expressed by the Architect for the time being.

3. Tender documents containing work order Notice to the Contractor, Conditions of Contract, Appendix thereto, Special Conditions of Contract, Specifications and Schedule of Quantities with the rates entered therein, shall be read and studied as forming part of this agreement and the parties hereto shall respectively abide by and submit themselves to the conditions and stipulations and perform the agreement on their part respectively in such conditions contained.

4. The contract is neither a fixed lumpsum contract or a piece work contract, but is a contract to carry out work in respect of the entire works to be paid for according to actual measured quantities, including variations from BOQ at the rates contained in the Schedule of rates and Probable bill of quantities or as provided in the said conditions.

5. The Employer through the Architect, reserves to himself the right of altering the drawings and natures of the work, of adding/substitution to or omitting any items of work or having portions of the same carried out through alternate agencies without prejudice to this contract.

6. Time shall be considered the essence of this agreement and the contractor hereby agrees to commence the work soon after the site is handed over to him but within 7 days reckoned from the date of handing over the site, as provided for in the said conditions and complete the entire work **AS PER NIT** subject to nevertheless to the provisions for extension of time.

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

AS WITNESS our hand this _____day of _____2025

Signed by the said in the presence of:

WITNESS: SIGNATURE

NAME :

ADDRESS: EMPLOYER

WITNESS: SIGNATURE

NAME :

ADDRESS:

6. GENERAL CONDITIONS OF CONTRACT

1. **INTERPRETATIONS:**

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

a. "Employer" shall mean **Institute of Development and Research in Banking Technology (IDRBT), Castle Hills, Road no-1, MasabTank, Hyderabda-500057** and shall include his/their heirs, legal representatives, assignees and successors.

b. "Contractor" shall mean the individual or firm or company whether incorporated or not, undertaking the work and shall include legal personal representative of such individual or partners of the firm or Directors or authorized employees of the company and the permitted assignees of such individual or firm or company.

c. "Engineer" shall mean any Engineer who is employed by IDRBT or any other Engineer appointed from time to time by the Employer, and certified in writing to the Architect and the contractor, to act as Engineer for the purpose of the Contract in place of the said engineer.

d. "Architects" shall mean any Engineer/ representative appointed by

Aspire Architects & D'Zignners, Plot # 12, Sainikpuri, Secunderabad, Telangana – 500094

e. "Works" shall mean the works to be executed in accordance with contract specifications, quantities etc.

f. "Contract" shall mean the Articles of Agreement, the General Conditions, Special Conditions, the Appendix, the Schedule of Quantities, Specifications and drawings, work order etc., attached hereto and duly signed.

g. "Contract Price" shall mean the sum named in the Tender, subject to such amount additions thereto or deductions there from as may be made under the provisions, hereinafter contained.

h. "Site" shall mean the Premises, on which the works are to be, provided, by the Employer or Architect for the purpose of the Contract.

i. "Drawings" shall mean the drawings referred to in the contract etc., and any modifications of such drawings approved in writing by the Architect and the IDRBT and such other drawings as may from time to time be furnished or approved in writing by the Architect and Employer.

j. "Notice in Writing" or written notice shall mean a notice in writing, typed or printed characters sent (unless delivered personally or otherwise provided to have been received) by registered post to the last known private or business address or registered office of the address and shall be deemed to have been received, when in the ordinary course of post, it would have been delivered.

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

l. "Net Prices" if in arriving at the Contract Amount, the contractor has added to or deducted from the total of the items of the Tender any sum, either as a percentage or otherwise, then the net price of any items, in the tender, shall be the sum arrived at by adding to or deducting from the actual figure appearing in the Tender, as the price of that item, a similar percentage or proportionate sum. Provided always that in determining the percentage or proportion of the sum so added or deducted by the contractor, the total amount of any Prime cost items and provisional sums of money shall be deducted from the total amount of the Tender. The expression "net rates" or "net prices" when used with reference to the contract or account shall be held to mean rates or prices so arrived at.

m. "Virtual Completion" shall mean that the building is in the opinion of the Architect and Employer, sufficiently completed for occupation by the Employer, in relation to the scope of work of this contract.

n. Words importing persons include firms and corporations. Words importing the singular only, also include the plural and vice versa, where the context requires.

2. SCOPE OF CONTRACT:

The contractor shall carry out and complete the said work in every respect in accordance with this contract with the directions of and to the satisfaction of the Architect and Employer. Architect, with the approval of the Employer, may issue further drawings and/or written instructions, details, directions and explanations, which are hereafter collectively referred to as "Architect's Instructions" in regard to:

a. The variations or modifications of the designs, quality or quantity of works or the addition or omission or substitution of any work.

b. Any discrepancy in the drawings or between the Schedule of Quantities/ or drawings and/or specifications etc.

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

d. The removal from the site of any material brought there on by the contractor, and the substitution of any other material there from.

e. The dismissal from the works of any person employed thereupon.

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

g. The amending and making good of any defects under clause 24 "Removal of Improper works and Materials".

The contractor shall forthwith comply and fully execute any work comprised in such Architect's instruction, provided always that instructions, directions and explanations given to the contractor or his representative upon the works by the Architect shall, if involving a variation, be confirmed in writing by the contractor or within 7 days, and if

not dissented from in writing within further 7 days by the Architect, such shall be deemed to be the Architects instructions within the scope of contract.

If compliance with the Architect's instructions as aforesaid involved work and/or expense and/or loss beyond that contemplated by the contract, then unless the same were issued owing to some breach of this contract by the contractors, the employer shall pay to the Contractor on the Architect's certificate, the price of the said work (as an extra to be valued as herein after provided) and/or expense and/or loss.

3. **DRAWINGS AND SPECIFICATIONS:**

The works shall be carried out to the entire satisfaction of the EMPLOYER and the Architect, in accordance with the signed contract document, drawings and specifications and such further drawings and details as may be provided by the Architect, and in accordance with such written instructions, directions and explanations, as may from time to be given by the Architect and the IDRBT, whose decision as to the sufficiency and quality of the work and materials shall be final and binding on the contractor. If the work shown on any such further drawings or work that may be necessary to comply with any such instructions, directions or explanations, be in the opinion of the contractor outside the scope of work or reasonably could not be inferred from the contract, he shall before proceeding with such work, give notice in writing to this effect to the Architect and the IDRBT, and in the event of the Architects and the IDRBT agreeing to the same in writing, the contractor shall be entitled to an allowance in respect of such extra work as an authorized extra. If the Architect and the contractor fail to agree, as to whether or not there is an extra, then, if the Architect decided that the contractor is to carry out the said work, the contractor shall do so, and the question whether or not there is any extra and if so, the amount thereof, shall failing agreement be settled by Arbitration as hereinafter provided, but such reference shall in no way delay the fulfillment of this contract.

No drawing shall be taken as in itself an order for variation, unless in addition to the Architect's signature, it bears express works stating that it is intended to be such an order or bears a remark "VALID FOR CONSTRUCTION". No claim for payment for extra work shall be allowed, unless the said work shall have been executed under the provisions of clause 8 (Authorities, notices, patents, rights and royalties) or by the authorities, of directions in drawing of the Architect as herein mentioned.

One complete set of the signed drawings and a copy of contract document (specifications and schedule of quantities etc.,) shall be furnished by the Architect to the contractor. The Architect shall furnish within such time as he may consider reasonable, one copy of any additional drawings, which in his opinion may be necessary for the execution of any part of the work. Such copies shall be kept at the works, and the Architect or hiss representatives shall, at all reasonable times have access to the same and shall be returned to the Architect by the Contractor, before the issue of the final certificate. The original contract documents shall remain in the custody of employer.

4. **SCHEDULE OF QUANTITIES:**

The Schedule of Quantities unless otherwise stated shall be deemed to have been prepared in accordance with the Standard Procedure of the Architects and shall be considered to be approximate and no liability shall attach to the Architect for any error/variations that may be discovered therein.

5. **SUFFICIENCY OF SCHEDULE OF QUANTITIES:**

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

6. ERRORS IN SCHEDULE OF QUANTITIES:

Should any error appear in the Schedule of Quantities, other than in the Contractor's prices and calculations, it shall be rectified and such rectification shall not vitiate the contract but shall constitute a variation of the contract and be dealt with as an authorised extra or deduction.

7. CONTRACTOR TO PROVIDE EVERYTHING NECESSARY:

The contractor shall provide everything necessary for the proper execution of works according to the true intent and meaning of the drawings, specifications and the Schedule of Quantities etc., taken together, whether the same may or may not be particularly shown or described there in, provided the same can be inferred therefrom. The several document forming the contract are to be taken as mutually explanatory to one another; detailed drawings and figured dimensions in preference to scale, and special conditions in preference to General conditions and particular specifications in preference to General specifications.

In case of discrepancy between the Schedule of Quantities, the specifications and/or the drawings, the following order of preference shall be observed: -

i) Description of Schedule of Quantities.
ii) Particular specifications and special condition, if any.
iii) Drawings.
iv) C.P.W.D. specifications.
v) Indian Standard specifications of B.I.S.

If there are varying or conflicting provisions made in any document forming part of the contract, the Architect shall be the deciding authority, with regard to the intention of the document and his decision shall be final and binding on the contractor.

Any error in description, quantity or rate in schedule of quantities or any omission therefrom shall not vitiate the contract or release the contractor from the execution of the whole or any part of the works expressed therein according to drawings and specifications or from any of his obligations under the contract.

The contractor shall make his own arrangements for providing water, for carrying out the work, at his own cost. If water from any source other than Municipal main is to be used for construction, the same shall be tested at the contractor's cost, and a report submitted to the Architect for his approval, before such water is used for the works. Temporary internal connections shall be obtained by the contractor to facilitate execution and completion of work at their cost and all the charges there of should be borne by them.

The contractor shall supply, fix and maintain at his cost, during the execution of any works, all the necessary scaffolding, staging, hoarding, watching and lighting during nights as well as by day required not only for the proper execution and protection of the said works, but also for the protection of the public and the safety of any adjacent road, streets, cellars, vaults, pavements, walls, houses, buildings and all other erections, matters or things. The Contractor shall take

down and remove any or all such scaffolding, staging, etc., as occasion shall require or when ordered or so to do, and shall fully reinstate at his own cost and make good all the matters and things disturbed during the execution of the works to the satisfaction of the Architects.

8. **AUTHORITIES, NOTICES, PATENT RIGHTS AND ROYALTIES:**

The contractor shall conform to the provisions of the statutes relating to the works, and to the regulation and by laws of any local authority, and of any water, lighting and other companies or authorities, with whose systems the structures are proposed to be connected; and shall before making any variation from the drawings or specifications, that may be necessitated by so conforming, give to the Architects a written notice, specifying the variations proposed to be made and the reason for making it and apply for instruction thereon. In case, the contractor shall not within ten days receive such instructions, he shall proceed with the work conforming with the provisions, regulations or by laws in question.

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

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

9. **MATERIALS AND WORKMANSHIP TO CONFORM DESCRIPTION:**

All materials and workmanship shall, so far as procurable be of the respective kinds specified in the Schedule of Quantities and/or specifications and in accordance with the Architect's instructions and the contractor shall on the request of the Architects furnish to them all invoices, accounts, receipts and the other vouchers to prove that the materials comply therewith. The contractor shall at his own cost arrange for and/or carry any test of any materials, which the Architect & Employer may require. The costs of materials used for testing, packing, transportation and testing shall be borne by the contractor and his quoted rates/amounts shall include all such expenses/contingencies.

9a. In case of non-availability of specified Make/brand of any material the alternate make/brand will be given by the Employer/Architect.

10. THE SETTING OUT:

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

shall from time to time be inspected by the Architect and/or his representatives, but such inspections shall not exonerate the contractor in any way from his obligation to remedy any defects, which may be found to exist at any stage of the work or after the same is completed, at his own cost.

11. **REMOVAL OF ALL OFFENSIVE MATTERS:**

All debris arising out of the work shall be disposed of as per the rules and regulations of the Local authorities concerned.

12. **OPENING UP WORKS:**

In the event of the Architect / Employer feels that the work is not carried out as per tender specifications, contractor at his cost shall open the concealed work at his cost for which no Extra cost will be paid.

12. **CONTRACTOR'S SUPERINTENDENCE & REPRESENTATIVE ON THE WORKS:**

The contractor shall give all necessary personal superintendence during the execution of the works and so long thereafter as the Architect may consider it necessary until the expiration of the "Defects Liability Period". The Contractor shall meet the Architect or his representative, whenever required and so informed by the Architect.

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

13. **DISMISSAL OF WORKMEN:**

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

14. **ACCESS TO WORKS:**

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

15. **EMPLOYER'S REPRESENTATIVE/PMC:**

The Employer may appoint an assistant to the Engineer, any Site Engineer or Project Management Consultant (PMC), who shall be the representative of the Employer. The duties of the Employer's representatives are to watch and supervise the works and to test any materials to be used and of workmanship employed in connection with the works. He shall have no authority either to relieve the contractor of any of his duties or obligations under the contract, or except those expressly provided hereunder, to order any work involving delay or any extra payment by the Employer or any variation of or in the works.

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

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

16. **ASSIGNMENT OF SUB-LETTING:**

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 thereof or interest therein without the written consent of the Architect and Employer, and no undertaking shall relieve the contractor from the full and entire responsibility of the contract or from active superintendence of the works during their progress.

17. **SUB-CONTRACTORS:**

All specialists, merchants, tradesmen, and others, executing any work or supply 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 and employer and hereby declared to be sub-contractors employed by the Contractor, are herein referred to as nominated sub-contractors. No nominated sub-contractors shall be employed on or in connection with the works, against whom the contractor shall make reasonable objection or (see where the Architect and contractor shall otherwise agree), who will not enter into a contract provided.

a. The nominated sub-contractors shall indemnify the contractor against the same obligations in respect of the sub-contract as the contractor is under, in respect of this contract.

b. The nominated sub-contractors 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 Workman's Compensation Act in force.

c. Payment shall be made by the contractor to the nominated sub-contractor, within 14 days of receipt of the Architect's certificate, provided that before any certificate is issued, the contractor shall upon request furnish to the Architect proof that all nominated sub-contractor's account included in the previous certificates have been duly discharged; in default whereof the Employer may pay the same upon a certificate of the Architect and deduct the amount thereof from any sums due to the contractor. The exercise of this power shall not create any contract between Employer and Sub-contractor.

18. VARIATIONS NOT TO VITIATE CONTRACT:

The contractor shall when have directed in writing by the Architect, omit from or vary works shown upon the drawings or described in the specifications or included in the priced schedule of quantities, but the contractor shall not make any alterations or additions to or omissions from the works or any deviations from the provisions of the Contract without such authorizations or direction in writing from the Architect and Employer.

No claim for any extra item or deviations shall be allowed, unless it shall have been executed by the Authority of the Architect and Employer as herein mentioned. Any such extra item or deviation is hereinafter referred to as an authorised extra item or deviation. No variations i.e., additions, omissions or substitutions shall vitiate the contract.

The rate of items not included in the bill of quantities shall be settled by the Architect and Employer in accordance with the provisions of clause 21, hereof.

19. MEASUREMENTS OF WORKS:

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

Should the contractor no attend or neglect or omit to send such an agent, then the measurements and calculations, and to furnish all particulars or give all assistance required by either of them.

Should the contractor not attend or neglect or omit to send such an agent, then the measurements taken by the PMC/Architects representative approved by them shall be taken to be the correct measurements. The mode of measurements wherever not mentioned in contract documents be taken in accordance with the Indian Standard of Method of measurements of building works (I.S.1200 – 1958) and its revisions, if any. In case of any discrepancy between various contract documents on mode of measurements, the mode given in Bill of Quantities will take precedence over others.

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

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

20.PRICES FOR SUBSTITUTIONS/EXTRA ETC., ASCERTAINMENT OF:

Should it be found after the completion of the works from measurements taken (in accordance with the previous paragraph) that any of the quantities or amounts specified for the works in the priced schedule of quantities of work thus ascertained are less or greater than the amounts and/or tender or that any variations, is made, and any substituted/ extra (new) items have been executed, the valuation of such quantities/items, amounts or variations, unless previously or otherwise agreed upon, shall be made in accordance with the following rules:

a. The net rates or prices in the original tender shall determine the valuation of the extra (additional quantities and or extra/substituted item of work), where that work is of a similar character and executed under similar conditions of the work priced therein. This applied to extra and substituted items of work to the extent, they are similar in nature to the items in the contract.

b. The net prices given in the original ender shall determine the value of the items omitted, provided if omissions vary the conditions under which any remaining items of work are carried out, the prices for the same shall be valued under thereof.

c. Where extra/substituted item of works are not of similar character (either partly & fully) 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 any omission or additions relative to the amount of the whole of the contract works or to be any part thereof shall be such that in the opinion of the Architects the net rate or price contained in the priced schedule of quantities or tender or for any item of the work involves less or more beyond that reasonably contemplated by the Contractor or is by reason of such omission or addition rendered unreasonable for in-applicable, the Architect shall fix in consultation with the Employer such other rates or prices as in the circumstances he shall think reasonable and proper, which shall be final and binding on the contractor. For extra and substituted items this will apply for portions of the items for which, items of similar nature are not available in the contract.

d. Where extra and or substituted items of work cannot be properly measured or valued, the contractor shall be allowed based on the net local day work rates and wages for the district and prevalent market rates for materials etc., at the time of ordering that item; provided that in either case vouchers for wages paid specifying the daily time (and if required by the Architect, the workmen's name) and materials employed at or before the end of the week following that in which the work has been executed.

   The measurements and valuations in respect of the extra and substituted items of work shall be completed within the "Period of final measurement" or within 3 (three) months from the completion of the contract works as defined under clause No.26 (certificate of virtual completion.

21.UNFIXED MATERIALS:

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

22.REMOVAL OF IMPROPER WORK AND MATERIALS:

The Architect shall, during the progress of the works, have power to order in writing from time to time the removal from the works, within such reasonable times as may be specified in the order, of any materials which in the opinion of the Architect and Employer are not in accordance with the specifications or the instructions of the Architect and Employer; and the substitution with proper materials and the removal and proper re-execution of any work, which has be executed with materials or workmanship, not in accordance with the contract/drawings and specifications or instructions etc., the contractor shall forthwith carry out such orders at his own cost. In case of default on the part of the contractor to carry out such orders, the Employer 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 borne by the Contractor, and shall be recoverable from the contractor by the Employer, or may be deducted by the Architect, from any money due or may become due to the contractor for this work or on any other account.

Instead of this procedure for work not done in accordance with the contract, the Architect and Employer may allow such work to remain, and in that case may make allowance for the difference in value together with such further allowance for damages to the Employer, as in his opinion may be reasonable. This allowance shall be recoverable from the contractor by the Employer, or may be deducted by the Architect, from any money due or may become due to the contractor for this work or on any other accounts. The decision of Architects in these matters shall be final and binding on the contractor.

23.DEFECTS AFTER COMPLETION:

Any defect, shrinkage, settlement or other faults which may appear with in the "Defects Liability Period" stated in the abstract of terms and Conditions in tender i.e. within 12 months after the virtual completion of the works arising in the opinion of the Architect and the IDRBT, from materials or workmanship not in accordance with the contract, shall upon the directions and writing of the Architect and Employer and within such reasonable time as shall be specified therein, be rectified and made good by the Contractor at his own cost. In case of default, the Employer may employ any other person to amend and make good such defects, shrinkage, settlements or other faults. All damages, loss and expenses consequent therein or incidental thereto shall be made good and borne by the contractor and such damage, loss and expenses shall be recoverable from him by the employer or may be deducted by the Employer, the damages, loss and expenses from any sums that may be due to the contractor or amount retained under Certificate & payment and in event of the amount retained being insufficient recover the balance from the amount held against EMD & Security deposit under clause of NIT or any other amounts due or may become due later.

24.CERTIFICATE OF VIRTUAL COMPLETION:

The contractors shall intimate in writing to the Architects, as and when the works are complete in all respects in order to enable the Architect to intimate the Employer to take possession of the same. The works shall not be considered as virtually completed, until the Architect has certified in writing that the same have been "Virtually completed" and accepted by the employed. The defects liability period shall commence, only from the date of such virtual completion certificate.

25.OTHER PERSONS ENGAGED BY THE EMPLOYER:

The Employer reserves the right to use the premises and any portions of the site for the execution of any work not included in this contract which he may desire to carry out through other persons, and the contractor is to allow all reasonable facilities for the execution of such work, except by special arrangement with the Employer. Such work shall be carried out in such a manner a not to impede the progress of the works included in the contract, and the contractor shall not be responsible for any damage or delay which may happen to or be occasioned by such work.

26.INSURANCE IN RESPECT OF DAMAGE TO PERSONS AND PROPERTY:

The contractor shall be responsible for all injury to persons, animals or things and for all structural and decorative damage to property, which may arise from operation or neglect of himself or any of his or sub-contractor's employees, whether or any other cause whatever in any way connected with the carrying out of this contract. This clause shall be held to include, interalia any damage to buildings, whether immediately adjacent or otherwise, any damage to roads, caused to the buildings and works forming the subject of this contract by frost or other inclement weather. The contractor shall indemnify the employer and hold him harmless in respect of all and any expenses arising from any such injury or damage to persons or property as aforesaid and also in respect of any claim made in respect of injury or damage under any acts of government or otherwise, and also in respect of any award of compensation or damages consequent upon such claim.

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

The contractor shall indemnify the Employer against all claims which may be made against the Employer, by any member of the Public or other party, in respect of anything which may arise in respect of the works or in consequence thereof and shall at his own cost, effect and maintain until one month after the works are taken over by the Employer or three months after the date of completion of the contract with an approved office, a policy of Insurance in the joint names of the Employer and the contractor against such risks and signing of the contract. The contract shall also indemnify the employer against all claims which may be made upon the Employer whether under the Workmen's compensation act or any other statute in force during the currency of this contract or at common law in respect of any employees of the contractor or of any sub-contractor and shall at his own expense effect and maintain until one month beyond the virtual completion of the contract, with an approved office. A policy of Insurance in the joint names of the Employer and the Contractor against such risks and deposit such policy or policies with the Architects from time to time, during the currency of the contract. In default of the contractor insuring as provided above, the Architect on behalf of the Employer may so insure and may deduct the premiums paid from any money due or which may become due to the contractor.

The contractor shall be responsible for anything which may be excluded from the Insurance Policies above referred to and also for all other damages to any property arising out of and incidental to the negligent or defective carrying out of this contract however, such damage shall be caused.
The Contractor shall also indemnify the Employer in respect of any costs, charges or expenses arising out of any claim or proceedings and also in respect of any Award of or compensation of damages arising therefrom.

The Employer with the concurrence of the Architect shall be at liberty and is hereby empowered to deduct the amount of any damages, compensations, costs, charges and expenses arising or occurring from or in respect of any such claims of damages from any sums due or to become due to the contractor.

27.CONTRACTOR'S ALL RISK POLICY:

The contractor shall within 7 (seven) days from the date of commencement of the work insure the works at his cost and keep them insured until one month after the works are taken over by the Employer or three months after the date of completion whichever is earlier, against loss or damage by fire and usual risks other than fire against which insurers generally provide cover in a CONTRACTOR'S ALL RISK POLICY, with an insurer to be approved the Architects, in the joint names of the Employer and contractor (the name of the former being placed first in the policy), progressively for the full amount of the contract, in three stages, beginning with 1/3 of the contract value, and for any further sum as called upon to do so by the Architect, with the prior written consent of the Employer, the premium of such further sum being allowed to the contractor as an authorised extra. Such policy shall cover the property of the Employer only and Architects and surveyor's fees for assessing the claim and in connection with his services generally in reinstatement and shall not cover any property of the contractor of any subcontractor or employee. The contractor shall deposit the policy and receipts for the premiums paid with the Institute within 15 days of the date of commencement of work, unless otherwise instructed, as provided above failing which the employer or the Architect on his behalf may insure and may deduct the premium paid from any money that may be due or that may become due to the contractor. The contractor shall as soon as the claim under the policy is settled, or the work reinstated by the insurers should they elect to do so, proceed with all due diligence with the completion of the works in the same manner as though the fire or other such risk had not occurred and in all respects under the same conditions of contract.

The contractor in case of rebuilding or reinstatement after fire or other such usual risk shall be entitled to such extension of time for completion as recommended by the Architect.

Please refer Special Conditions of Contract, clauses.

28.MINIMUM AMOUNT OF THIRD PARTY INSURANCE:

Such insurance shall be effected with an insurer and in terms approved by the IDRBT which approval shall not be reasonably withheld and for at least the amount stated below. The contractor shall, whenever required, produce to the Architect/Consultant the policy or policies of insurance cover and receipts for payment of the current premium.

The minimum insurance cover for physical property, injury, and death is Rs. 20.00 lakhs per occurrence with the number of occurrences limited to five. After each occurrence contractor will pay additional premium necessary to make insurance valid for five occurrences always.

29.COMMENCEMENT AND COMPLETION:

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

30.DELAY AND EXTENSION OF TIME:

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

e. by force majeure, or

f. by reason of any exceptionally inclement weather, or

g. by reason of proceedings taken on threatened by or dispute with adjoining or neighbouring owners or public authorities arising otherwise, then through the contractor's own default, or

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

i. by reason of civil, commotion, local combination of workmen or strike or lock-out affecting any of the buildings/traders, or

j. by reason of the Architect's instructions

k. In consequence of the contractor not having in due time, necessary instructions from the Architect, for which he shall have specifically applied in writing ahead of time, giving reasonable time to prepare such instructions.

The Architect shall make a fair and reasonable assessment for extension of time, for completion of the contract works which may be approved by the Employer.

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

31.DAMAGES FOR NON-COMPLETION:

If the contractor fails to complete the works by the date stated in clause 31 (date of completion) or within any extended time certified under clause 32 (extension of time) and if the Architect shall certify in writing on or before the date of issue of the certificate for the last payment to which the contractor may become entitled hereunder that the works could have been reasonably completed by the said date or within the said extended time, then the contractor shall pay to the Employer or allow the employer to recover from dues to the contractor on any account the sum stated in "NIT" (liquidated damages and not by way of penalty), and as stated in "NIT" and such damages may be deducted from any money due or which may become due to the contractor.

The deduction of such sums shall not, however, absolve the contractor of his responsibility and obligations to complete the work in its entirety.

32.FAILURE BY CONTRACTOR TO COMPLY WITH ARCHITECT'S INSTRUCTIONS:

If the contractor after receipt of written notice from the Architect requiring compliance with such further drawings and/or Architects instruction, fails within seven days to comply with the same, the Architect and Employer may employ and pay other persons to execute any such work whatsoever as may be necessary to give effect thereto and all costs incurred in connection therewith shall be recoverable from the contractors by the employer on a Certificate by the

Architect as a debit or may be deducted by him from any money due or which may become due to the contractors.

33.ARCHITECT'S DELAY IN PROGRESS:

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

34.SUSPENSION OF WORKS:

If the contractor, except on account of any legal restraint upon the employer preventing the continuance of the works, or on account of any of the causes mentioned in the clause "Extension of time" or in the case of certificate being withheld or not paid when due, shall suspend works or in the opinion of the Architects, 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 in the respects mentioned in clause in the NIT (removal of improper work and materials), the Employer through the Architect shall have the power to give notice in writing to the contractor required that the works be provided within a reasonable manner, and with reasonable dispatch, such notice shall not be unreasonably given and must signify that it purports to be a notice under the provisions of this clause and must specify the acts or defaults on the part of the contractor upon which it is based. After such notice shall have been given, the contractor shall not be at liberty to remove from the site of works, or from any ground contiguous thereto, the site of works, or from any ground contiguous thereto, any plant or materials belonging to him which shall have been placed thereon for the purpose of work, and the Employer shall have lien upon such plants and materials to subsist from date of such notice being given until the notice shall has been complied with, provided always that such line shall not under any circumstances subsist after the expiration of 30 (thirty) days from the date of such notice given, unless the employer shall have entered upon and taken possession of the works and site, as hereinafter provided.

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

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

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

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

After the works shall have been so completed by persons other than the contractor, under the provisions herein before contained, the Architect shall give notice to the contractor to remove his plan and all surplus materials as may not have been used in the completion of the works from the site.

If such plant and materials are not removed within a period of 14 days after the notice shall have been given, the Employer may remove and sell the same, holding the proceeds less the cost of the removal and sale, to the credit of the contractor. The Employer shall not be responsible for any loss sustained by the Contractor from the sale of the plant in the event of the Contractor not removing it after notice.

35.PRIME COST AND PROVISIONAL SUMS:

l. Where "Prime Cost" (P.C.) prices or provisional sums of money are considered for any goods or works in the specifications or Schedule of quantities or deviations hereof, the same are exclusive of any trade discounts, or allowances, discount for cash, or profit which the contractor may require and or carriage and fixing.

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

n. In cases in which provisional quantities of items/materials are contained in the contract, the contractor shall provide such materials and or execute such items to such amounts or to greater or lesser amounts as the Architect shall direct in his schedule of quantities.

o. No prime cost sum or sums (or any portion thereof) shall be included in any certificate for payment to the contractor until the receipted accounts relating to them have been produced by the contractor to the Architect. Such accounts shall show all discounts and any sum or sums in respect of such discounts shall be treated as a trade discount. Provided always, that should the contractor in lieu of producing such receipted accounts, request the Architect in writing to issue a certificate to the Employer for such sum or sums, due either on account or in settlement to a sub-contractor direct, the Architect shall, upon satisfying himself that the sub-contractor is entitled to the same, so issue the certificate and such sum or sums be deducted from the amount of the contractor, at the settlement of accounts and any profit or sum to which the contractor is properly entitled, in respect of such sub-contract, and which is in conformity with the terms of

contract as though the amount of such certificates to the sub-contractor has been included in a certificate drawn in favour of the contractor.

p. If the contractor neither produces the receipt not gives authority to the Architect to issue a certificate in favour of such sub-contractor direct, the Architect may upon giving the contractor SEVEN DAYS NOTICE in writing of his intentions to do so, issue to the sub-contractor such certificate direct to the Employer and obtain a receipt from the sub-contractor, which receipt shall be deemed as a discharge for the amount of such certificates, as though given by the contractor. In such event, the contractor shall not be allowed any profit he may have added in the Schedule of Quantities upon such sub-contract.

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

36.CERTIFICATES AND PAYMENTS:

The contractor shall be paid by the Employer after due checking and after making necessary correction from time to time, by instalments under Interim Certificates to be issued by the Architect on account of the works executed by the contractor based on the joint measurements taken by the PMC, the Architects representative and the contractors representative when in the opinion of the Architect, work to the approximate value named as "Value of work for Interim Certificates", (Ref Sl No: 14 page no 6) has to be executed in accordance with the Contract, subject however, to a retention of the percentage of such value named in the Appendix hereto mentioned as "Retention Percentage for Interim Certificates", until the total amount retained shall reach the sum named in the appendix as Total Retention Money, after which time the instalments shall be upto the full value of the work subsequently so executed plus such amount as he may consider proper on account of materials delivered upon the site by the contractor for use in the work and available on the date of billing.

And when the works have been virtually completed and the Architect shall have certified in writing that they have been so completed, the contractor shall be paid by the Employer after satisfying himself in accordance with the certificate to be issued by the Architect, the sum of money named in the Appendix as 'Instalment after Virtual Completion' being a part of the said Total Retention Money.

The Contractor shall be entitled to the payment of the final balance (balance security deposit/retention money) 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 Liquidation Liability period' from the date of virtual completion or as soon after the expiration of such period as the work shall have been finally completed and all defects made good according to the true intent and meaning hereof, whichever shall happen, provided always that the issue by the Architect of any Certificate during the progress of the works or after the completion shall not relieve the contractor from his liabilities in cases of fraud, dishonesty or fraudulent concealment relating to the works or materials or any matter dealt within the certificate, and in case of all such defects and insufficiencies in the works or materials, which reasonable examination would have disclosed. No certificate of the Architect shall by itself be conclusive evidence that any works or materials to which it relates are in accordance with the contract.

The Architect shall have power to withhold any Certificate, if the works or any parts thereof are not being carried out to his and employers satisfaction. The Architect may by any certificate make any correction in any previous Certificate, which shall have been issued by him. Payment

upon the Architect's Certificates shall be made within the period named in the Appendix as 'Period of Honoring of Certificates, after such certificates have been delivered to Employer.

37.NOTICES:

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

38.TERMINATION OF CONTRACT BY THE EMPLOYER:

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

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

Or shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the contractor.

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

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

Or if the Architect shall certify in writing to the Employer that the contractor,

r. has abandoned the contract or

s. has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for 14 days, after receiving from the Architect written notice to proceed, or

t. 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

u. has failed to remove materials from the site or to pull down and replace work for 7 days after receiving from the Architect written notice that the said materials or work were condemned and rejected by the Architect under these conditions, or

v. has neglected persistently to observe and perform all or any of the acts, matters or things by this contract to the observed and performed by the Contractors for 7 days after written notice shall have been given to the contractor requiring the contractor to observe or perform the same, or

w. has to the determent of good workmanship or in defiance of the Architect's instructions to the contrary, sublet any part of the contract.

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

And further, the Employer under recommendations of the Architect, by his Agents, or servants may enter upon and take possession of the works and all plants, tools, scaffoldings, sheds, machinery, and other equipment and materials also laying upon the premises or the adjoining lands or roads, and use the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completion the works or by employing any other contractors or other persons to complete the works and the contractor shall not in any way interrupt or do not act, matter or thing to prevent or hinder such other contractor or other persons or person employed for completing and finishing or using the materials and plant for the works. When the works shall be completed or soon thereafter as convenient, the Architect shall give a notice in writing to the contractor to remove his surplus materials and plant, and should the contractor fail to do so, within a period of 14 days, after receipt thereof by him, the Employer shall sell the same by publication and shall give credit to the contractor for the amount realised. The Architect shall thereafter ascertain and certify in writing under his hand when (if anything) what shall be due to or payable by the Employer for the value of the said plant and materials so taken possession of by the Employer, and the expense or loss, which the Employer shall have incurred due to the contractor, and the amount which shall be so certified shall thereupon be paid by the Employer to the contractor or by the contractor to the Employer, as the case may be.

39.TERMINATION OF CONTRACT BY CONTRACTOR:

If payment of the amount payable by the Employer under certificate of the Architect as provided for hereinafter shall be in arrears and unpaid for 30 (thirty) days after notice in writing requiring payment of the amount, as aforesaid shall have been given by the Contractor to the Employer, or if the Employer obstructs the issue of any such certificates, or if the employer commits any Act of insolvency, or if the Employer (being an incorporated company) shall have an order made against him or pass an effective.

Resolution for winding up, either compulsorily or subject to the supervision of the Court or voluntarily, or if the Official Liquidator or the Employer shall repudiate the contract, or if the if the Official Liquidator in any such winding up shall be unable within 15 days notice to him requiring him to do so, to the reasonable satisfaction of the contractor that he is not able to carry out and fulfill the contract and to give security for the same (including Earnest money), or if the works be stopped for any payments due, and to become due thereunder and if required under the order of the Architects or the Employer or by an injunction or other order of any court of law, then in any of the said cases, the contractor shall be at liberty to determine the contract by notice in writing to the Employer/Architect, and he shall be entitled to recover from the Employer, payment for all works executed and for any losses he may sustain, upon any plant or materials supplied or purchased or prepared for the purpose of the contract.

In arriving at the amount of such payment, the net rates contained in the contract shall be followed, or where the same may not apply, valuation shall be made in accordance with clause.

40.Matters to be finally determined by the Architects and the IDRBT (Called excepted matters) – (refer NIT below), which shall be final, conclusive and binding on the following matters:

a) Instructions
b) Transactions with local authorities
c) Proof of quality of materials
d) Assigning or under letting of the contract,
e) Certificate as to the causes of delay on the part of the contractor and justifying extension of time or otherwise,
f) Rectification of defects pointed out during the defects liability period.
g) Notice to the contractor to the effect that he is not proceeding with due diligence.
h) Certificate that the contractor has abandoned the contract.
i) Notice for determination of the contract by the Employer.

41.ARBITRATION:

x. When the contractor is dissatisfied with the decision of the Architect/Employer, the contractor is required to give a notice to the Employer within 30 days of the receipt of such decision, for the appointment of the Arbitrator for the settlement of the outstanding disputes.

y. **Institute of Development and Research in Banking Technology (IDRBT), Castle Hills, Road no-1, MasabTank, Hyderabda-500057** shall be appointed to refer those disputes for adjudication to a sole arbitration.

z. It is also a term of the contract that if the contractor does not make any demand for Arbitrator in respect of any claims within 90 days of receiving the intimation from the IDRBT that the final bill is ready for payment, the claims if any received after 90 days period shall be absolutely barred from reference to the Arbitrator.

aa. All disputes or differences of any kind whatsoever, which shall at any time arise between the parties hereto touching or concerning the works or the execution or maintenance thereof this contract, or the rights touching or of this contract, effect thereof, or to the rights or liabilities of the parties arising out of or in relation thereto, whether during progress or after determination, foreclosure or breach of the contract (other than those in respect of which the decision expressed to be final and binding in cases listed out in condition 40 above), Architects shall, after written notice to either party to the contract and to the appointing Authority, who shall be appointed for this purpose by the employer refer those disputes for adjudication to a sole arbitrator, to be appointed as hereinafter provided.

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

cc. The contractor shall on receipt by him of the names as aforesaid, select any one of the persons named to be appointed as a sole arbitrator and communicate his name to be appointed as a sole arbitrator to the Appointing Authority, within thirty days of receipt of the names by him. The Appointing Authority shall thereupon without any delay appoint the said person as the sole arbitrator. If the contractor fails to communicate such selection as provided above within the period specified, the Appointing Authority shall make the selection and appoint the selected person as the sole arbitrator.

dd. If the Appointing Authority fails to send to the contractor the panel of three names as aforesaid within the period specified, the contractor shall send to the appointing authority a panel of three names of persons, who shall be unconnected with either party. The Appointing Authority shall on receipt by him of the names as aforesaid select any one of the persons named and appoint his as the sole arbitrator. If the Appointing Authority fails to select the person and appoint him as the sole arbitrator within 30 days of receipt by him of the panel and inform the contractor accordingly, the contractor shall be entitled to appoint one of the persons from the panel as the sole arbitrator and communicate his name to the Appointing Authority.

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

ff. 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.

gg. The arbitrator shall be deemed to have entered on the reference, on the date he issues notice to both the parties, fixing the date of first hearing.

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

ii. 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 a place, as may be fixed by the Arbitrator in his sole discretion.

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

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

kk. Subject to aforesaid, the provisions of the Arbitration and Conciliation Act, 1996, or any statutory modifications or re-enactments thereof, and the rules made thereunder, and for time being in force, shall apply to the arbitration proceedings under this clause.

7. SPECIAL CONDITIONS OF CONTRACT

- **INSPECTION OF DRAWINGS:**

Before filling in the tender, the contractor will have to check up all drawings and Schedule of quantities, and will have to get immediate clarifications from the Architect on any point, that he feels is vague or uncertain. No claim/damages or compensation will be entertained on this account.

- **CONTRACTOR TO VISIT SITE:**

Each tenderer must, before submitting his tender, visit the site of works, so as to ascertain the physical site conditions prices and availability and quality of materials according to specifications before submitting the quotations. No excuse regarding non-availability of any materials or changes in the price will be entertained or extra allowed on that account.

The existing adjacent buildings belonging to Govt/private which are in close proximity of the proposed Interiors, hence the contractor shall cater for all arrangements to carry out the work without causing any disturbance to the occupants by providing screens with bamboo matting or other suitable material approved by Architects/Engineer. The contractor shall ensure that no dust or construction material falls near/around the existing buildings.

EXECUTION OF WORK (PRICES TO INCLUDE):

- The whole of the work as described in the Contract (including the Schedule of Quantities, the specifications and all drawings pertaining thereto) and as advised by the Architect & employer from time to time is to be carried out and completed in all its parts to the entire satisfaction of the Architect & Employer. Any minor details of construction, which may not have been definitely referred to in this contract, but which are usual in sound building, road and all construction practice and essential to the work, are deemed to be included in this contract. Rates quoted in the Tender is inclusive of transportation and other over heads.

- The rates quoted in the tender should also include all charges for:

1. Carrying
   - Hauling
     Labour
     - Fixing
     - Watering
     - Cleaning
     - Making good and
     - Maintenance etc.
     - The contractor should arrange timely at his cost for all required.

     i) Plant, machinery, scaffolding, formwork, ladders, ropes, nails, spikes, shuttering, temporary supports, platforms, tools, all materials etc., required for executing the work, and protecting them from weather and other normal/natural causes.

     ii) Covering/protecting for the walling and other works, during inclement weather, strikes etc., as and when necessary and or as directed.

iii) All temporary canvas covers/covering, lights, tarpaulin, barricades, water shoots etc.

iv) All stairs and steps, thresholds and any other requisite protection for the works.

v) All required temporary weather-proof sheds at such places and in a manner approved by the Architect, for the storage and protection of materials, against the effects of sun and rain.

vi) All required temporary fences, lighting/sign-boards etc., guards, approaches and roads as may be necessary for execution of the contract works and for safeguarding the public.

- The Architect & Employer will be the sole judge in deciding as to the suitability or otherwise of the tools/formwork/machinery or plant that may be brought to the work site by the contractor for the proper execution of the work.

- The rates quoted by the tenderer in the Schedule of Probable items of work will be deemed to be for the finished work.

5. **SCHEDULE OF QUANTITIES:**

The Schedule of quantities forms part of the contract, but the Employer reserves the right to modify the same or any part thereof as per variation clause stated herein below. The contractor shall not be allowed any compensation or damages for the work which is so omitted or cancelled or added or substituted by the Architect & Employer.

Please refer clause 4 of General Conditions of Contract.

6. a. **QUANTITIES LIABLE TO VARY:**

This clause applies for unlimited variations (+ or -) for items of foundations and those executed below plinth level. For all other items, only in case where + variations of any item exceeds 100% of Quantities of respective items given in the schedule of quantities of the contract, such additional quantities of those items shall be treated as extra items and valued as per clause 45 of special conditions of contract, considering of that rates for these items cannot be derived from the contracted items of work.

The quantities indicated in the bill of quantities are only approximate, and hence may vary on either side (+ or -) for accomplishing the works enunciated under the scope of works, in accordance with designs, drawings and specifications and or instructions of the Architect & Employer. Variations may also occur, consequent upon addition or deletion or substitution of particular items, change of designs or specifications during the course of execution. The contractor, in either case, is bound to carryout the modified quantities upto +100% (plus one hundred percent) variation, without any enhancement in rates and at the same rates as per accepted original tendered rates.

Please refer clause 4, 5 & 6 of General conditions of contract.

b. **FILLING OF TENDERS:** Rates of each item to be filled

7. **ACCESS OF INSPECTION:**

The contractor is to provide at all times, during the progress of the works and the maintenance period, means of access with ladders, gangways etc., and the necessary attendants to move and adopt the same as directed for the inspection or measurement of the work by the Architect and Employer or any other agency employed by the client.

Refer clause 7 of General Conditions of Contract.

8. **DIMENSIONS:**

In all cases figured dimensions are to be accepted in preference to scaled sizes. Large scale details shall take precedence over small scale details/drawings. In case of any discrepancy, the contractor shall ask for a clarification, before proceeding with the work. Accordingly, if any work is executed without prior clarification, it is liable to be rejected and shall not be paid for,

9. **PROGRAMME OF WORKS:**

The contractor on starting the work shall furnish to the Employer and Architect a PERT/CPM programme, for carrying out the work stage by stage in the stipulated time, for the approval of Architects and Employer, and follow strictly the approved time schedule by incorporating changes, if any, so authorised by the Architect and Employer, to ensure the completion of construction work ins stipulated time. A graph or chart on individual item/group of items/trades of work shall be maintained, showing the progress both in terms of quantities and value, week by week. The contractor shall submit to the Employer and Architect a weekly progress report stating the number of skilled and unskilled laborers employed on the work, working hours done, quantity of cement, steel and other major items of materials (quantity and value wise) used and corresponding place, type and quantity of work done during the period.

The contractor must inform the Architects, 10 days in advance of requirement of respective drawings and details by him, from time to time. The contractor shall strictly adhere to the approved programme and arrange for the materials and labour etc., accordingly.

Despite repeated instructions, if the contractor fails to show satisfactory progress of the work, the Employer/Architect may take suitable action as deemed fit, including levying of liquidated damages not exceeding 0.50% of contract price without prejudice to any terms and conditions of the contract.

Please refer clause 29 & 30 of General Conditions of contract.

10. **OFFICES, STORES, SHEDS ETC., ON THE SITE:**

a. The contractor shall provide for all necessary storage on the site, in a specified area for all materials, in such a manner that all such materials, tools etc., shall be duly protected from damages by weather or any other cause. Stores for storage of cement shall have all weather proof floors, walls and roof and have proper locking arrangements and must be secure. All these must be maintained till the work is completed and so certified by the Architect. Necessary and adequate watch and ward for all such accommodations and stores shall be provided for by the contractor at his cost and same included in the rates/amounts quoted by him. All such stores shall be cleared away and the ground left in good and proper order on completion of this contract unless otherwise expressly mentioned herein.

b. All materials which are stored on the site such as plywood, false ceiling material etc., shall be stacked in such a manner as to facilitate rapid and easy checking of quantities of such materials and prevent deterioration in quality due to water etc.

11. **WATER AND ELECTRICITY: (Electricity boned by the contractor)**

Contractor shall make his own and adequate arrangements for water required for drinking and construction purposes and also for required electric supply at site for satisfactory execution and completion of the work, at his own cost. The contractor shall get the water used for construction purpose tested periodically as per relevant BIS codes at his cost, and shall get the same approved from Architect and clients before using such water for the work.

12. **PROCUREMENT OF MATERIALS:**

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

Contractor will get samples of all materials approved by the Architect and employer, before placing order/purchase/procurement. They shall conform to relevant B.I.S. codes and or tender specifications as applicable.

For all materials, the contractor shall quote for the best quality of the materials of best make/source or supply and they should be got approved by the architect and employer, before procurement.

In case sufficient quantities of approved quality materials from approved sources are not available in time, contractor may have to procure the same from neighbouring areas even with longer leads, as required and directed, at no extra cost.

Please refer clause 9 of General Conditions of contract.

13. **SANITARY ACCOMMODATION IN SITE:**

The contractor shall provide and maintain at his own cost and expense adequate closet and sanitary accommodation for the use of his workmen and others in accordance with the rules and regulations of the relevant local authorities.

14. **FACILITIES TO OTHER CONTRACTORS:**

The contractor shall give full facilities and co-operation to all other contractors working at site doing plumbing, INTERIOR, civil works etc., as directed by the Architect & Employer and shall arrange his programme of work, so as not to hinder the progress of other works. The decision of the Architect & Employer, on any point of disputes between the various contractors, shall be final and binding on all parties concerned.

15. **TESTING:**

The contractor shall, as and when directed by the Architect & Employer, arrange to test materials and/or portions of the work at site in any approved laboratory at his own cost, in order to provide their soundness and efficiency. The contractor shall transport all the materials from

site to the approved laboratory at his own cost. The contractor shall carryout all the mandatory tests as per list attached at the frequencies stated therein. Even after such tests, any materials brought to site or incorporated in the works are found to be defective or unsound or not as per approved samples, the contractor shall remove the same and re-erect at his own cost and without any additional time/period for the same, with reference to the date fixed for completing the work. In case these tests are not carried out at the frequencies stated, then proportionate costs of materials not so tested, including cost of testing and quantities of items of work executed with such materials, if otherwise accepted for retention in the work, will be deducted from the dues to the contractor. The deductions will be worked out by the Architect/client and shall be final and binding on him.

Tolerance on various material and items of work shall be allowed laid down in the documents below and the order of precedence shall be:

a) Relevant Indian Standards Specifications.
b) CPWD norms.
c) Manufacturer's Specifications.

In absence of above Architect's decision basing on the general practice being following shall be final.

17. **SITE MEETINGS:**

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

18. **CUSTODY AND SECURITY OF MATERIALS:**

The contractor shall be responsible for the custody and security of all materials and equipment at site and he will provide full time watchman/watchmen to look after his materials, stores, equipments etc., including cement and steel at site and ensure that at no time unauthorised persons gains any access at works site.

23. **NOTICES:**

The contractor shall give all notices and pay all necessary and relevant fees and shall comply with all Acts and Regulations, for the successful completion of the contract work.

Please refer clause 8 of General Conditions of Contract.

24. **STATUTORY REGULATIONS:**

The whole of the work including sanitation and INTERIOR is to be complied with, as per the requirements and bylaws of the relevant statutory authorities, including Contract Labour (Regulation and Abolition) Act, 1970 of Central Government.

25. **MEASUREMENT TO BE RECORDED BEFORE WORK IS COVERED UP:**

The contractor shall take joint measurements with the Employer's representative (Project Management Consultant or any Engineer identified by the IDRBT) and Architect's representative before covering up or otherwise placing beyond the reach of measurement any item of work. Should the contractor neglect to do so, the same shall be uncovered at the

contractor's expense or in default thereof, no payment or allowance shall be made for such work or the materials with which the same was executed.

Refer clause 20 of General Conditions of Contract.

26. **WORKING AT NIGHT OR ON HOLIDAYS:**

The contractor can carry out major work at night, only with prior permission of the Site Engineer of Employer/Architect and with proper supervision.

WORKS AT NIGHT:

If the contractor is required to do preliminary works at night, in order to complete the work within the Time Schedule, the contractor shall provide and maintain at his own cost necessary and sufficient barricades/lights etc., to enable the work to proceed satisfactorily without danger. Approaches to the site also shall be sufficiently lighted by the contractor.

27. **WORKING ON HOLIDAYS:**

Work shall be done on Sunday or other holidays that may be notified by the Architect & Employer.

28. **ACTION WHERE THERE IS NO SPECIFICATION:**

In case of any item/class of work, for which there is no specification mentioned (either in part or full), the same will be carried out in accordance with the relevant CPWD specifications (only for the specifications missing in the contract) and if not available even there (either in part or full) in, relevant standards of BIS shall be followed (only for the portions of specifications missing in the contract specifications and CPWD specifications). Indian standard specifications, subject to the approval of the Architect & Employer.

29. **REPORTING OF ACCIDENT TO:**

The contractor shall be responsible for the safety of all persons employed by him on the works and shall report serious accidents to any of them, whenever and wherever occurring one the works, to Employer who shall make every arrangement to render all possible assistance. This shall be without prejudice to the responsibility of the Contractor, under the Insurance clause of the General Conditions. Contractor shall take all the precautions as detailed in the safety code attached separately.

30. **CLEARING THE SITE ON COMPLETION/DETERMINATION OF WORKS:**

The contractor shall clear the site of works as per the instructions of the Architect. The site of works shall be cleared of all men, materials, sheds, huts etc., belonging to the contractor. The site shall be delivered in a clean and neat condition, as required by Architect, within a period one week after the job is completed. In case of failure by the contractor, the Employer, under advice to the Architect, have the right to get the site cleared to his satisfaction at the risk and cost of the contractor.

31. **POSSESSION OF BUILDINGS/WORK COMPLETED:**

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

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

Please refer Appendix to General Conditions of contract.

32. **TYPOGRAPHIC, CLERICAL AND OTHER ERRORS:**

The Architects/Employer's clarification regarding partially omitted particulars or typographical, clerical and other errors shall be final and binding on the contractors.

33. **INFORMATION TO BE SUPPLIED BY THE CONTRACTOR:**

The contractor shall furnish to the architect & Employer the following from time to time:

a. Detailed industrial statistics regarding the labour employed by him, etc., every month (within 5th of succeeding month),

b. The Power of Attorney, name and signature of his authorised representative, who will be in charge for the execution of work.

c. The list of technically qualified persons (to be approved by the Architect) employed by him for the execution of the work within 15 days from date of start of work,

d. The total quantity and quality of materials used for the works, every month within 5th of succeeding month.

Last para of clause 33:

Failure to submit any of these details in time, shall be treated as a breach of the contract and likely to result in,

i) Levying a fine of Rs.500 for each default for each month, and or

ii) Withholding payments, otherwise due.

iii) For the periods for which name of technically qualified persons are not given or for which such persons are not employed, recoveries shall be made at Rs.7,500/- per month for each month of default.

In all these matters the decision of the Architect shall be final and binding.

See clause 41 also.

34. **FORCE MAJEURE:**

Neither party shall be held responsible by the other for breach of any condition of this Agreement, attributable to any "Act of God", Act of State, Strike, lock-out or control or any

other reason, beyond the control of the parties and any breach of clauses arising from such Force Majeure conditions as aforesaid shall not be regarded as breach of the provisions of this Agreement.

35. ARCHITECT'S DRAWINGS AND INSTRUCTIONS:

A set of major drawings, along with the contract documents shall be provided to the contractor. If any clarification or further drawings are required by the Contractor during or before the start of construction work, the contractor shall inform the Architects and the IDRBT sufficiently in advance in writing to provide the same. Working details will be given to the Contractor from time to time, during the progress of work, as and when required. In case, any other drawing/detail is required by the contractor, he will give a minimum of fifteen days' notice to the Architect.

Refer clause 2 & 3 of General conditions of contract.

36. COMPLETION OF WORK AND LIQUIDATED DAMAGES:

The work shall be completed within the Stipulated time as per NIT. The work should start within the one week from the date of issue of work order.

Time is the essence of the Contract. The Contractor shall strictly adhere to the programe /chart agreed to. In case the contractor fails to complete the work within the stipulated time, the liquidated damages may be imposed at the rate of 1.0% per each week (or part thereof) of delay.

37. BILLS OF PAYMENTS:

The minimum value of work for interim payments will be Rs. 25.00 lakhs, as stated in Appendix. The contractor shall submit interim bills, once a month on the basis of joint measurements recorded at site by the contractor's Employer's and the Architects representatives. The bill will be certified by the Architect within 7 working days from the date of submission of the bill by the contractor, and the Employer will make payment as stated in the Appendix to General Conditions of Contract. All such interim payments shall not be considered as an admission of the due performance of the contract or any part thereof in any respect 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 at contractor's cost, all as per Employer and Architect's instruction and directions.

38. WORKMANSHIP:

Quality of materials and workmanship shall conform strictly to specifications given/stipulated in the tender/contract, and contractor will ensure that the best quality of work will be done to the satisfaction of the Architect and Employer, with strict control on the materials, workmanship and supervision.

Refer clause 9 of General Conditions of Contract.

39. SCHEDULE OF QUANTITES:

Quantities mentioned in the Schedule of Quantities, included in the contract, are approximate and are subjected to variations as per actual site conditions & requirements and as directed by the Architect & Employer. The work shall be executed and completed accordingly.

Refer clause 4, 5 and 6 of General Conditions of Contract.

40. **SITE SUPERVISION:**

The contractor shall appoint at his own cost competent and adequate number of qualified Engineers at site, for (1a) joint measurements and preparations of bills. (2b) for testing materials at site and outside laboratory (1c) for other general supervision. Their appointment shall be approved by the Architect & Employer. The site engineers shall not be removed from the site without the written consent of the Architect & Employer.

See clause 33 above also.

41. **ENGAGEMENT OF APPRENTICES:**

The Contractor shall during the currency of the contract, when called upon by the clients, engage and also ensure engagement by sub-contractors and others employed by the contractor in connection with the works such number of apprentices in the categories mentioned in the act and for such period as may be required by the clients. The contractor shall train them as required under the Apprentice Act 1961 and the Rules made thereunder and shall be responsible for all obligations of the clients under the said Act, including the liability to make payment of apprentices, as required under the said Act.

42. **RATES:**

Contractor shall quote all the rates both in figures and in words and any alterations shall have to be initialed by the contractor. Rates quoted by the contractor for the same item in different schedules shall be same, and incase different rates are quoted, the lowest will be taken as correct and the schedule corrected accordingly. In case of discrepancy between rates given in words and figures or in the amount worked out, the following procedure will be followed:

In case of item rate tender:

The tenderers shall quote their rates for individual items both in words and figures in case of discrepancy between the rates quoted in words and figures the unit rate quoted in words will prevail. If no rate is quoted for a particular item, the contractor shall not be paid for that item when it is executed.

The amount of each item shall be calculated and the requisite total is given. In case of discrepancy between the unit rate and the total amount calculated from multiplication of unit rate and the quantity the unit rate quoted will govern and the amount will be corrected.

The tenderers should not change the units as specified in the tender. If any unit is changed the tenders would be evaluated as per the original unit and the contractor would be paid accordingly.

The tenderer should not change or modify or delete the description of the item. If any discrepancy is observed, he should immediately bring to the knowledge of the Architect / IDRBT.

43. **INCOME TAX:**

Income tax shall be deducted at source by the client from the contractor's interim and final bill payments as required by law.

44. **EXTRA/SUBSTITUTED ITEM RATES:**

Such items shall be executed as per directions/instructions of the Architects of the employer.

The work on extra/substituted items shall be started only after the receipt of written order from the client/Architect. Rates for additional/extra or substituted (altered) items of work, which are not covered in the contract cannot be derived from the contract item rates either in full or partly, shall be calculated on the basis of actual costs plus 15% for overhead and profit etc., only to the extent not derivable from the contract item rates.

See clause 21 of General Conditions of Contract.

45. **SERVICES DRAWINGS/SHOP DRAWINGS/CATALOGUE:**

After getting approval from the Architect & Employer, the contractor shall submit to the concerned local authorities necessary services drawings showing layouts etc., for getting approval of the schemes. On completion, the contractor shall arrange to get Drainage Completion Certificate and other Certificate necessary for obtaining Building Completion certificate. The contractor shall furnish completion drawings of all services in triplicate, showing the work as actual executed, along with levels. Contractor shall submit for approval 4 copies of shop drawings/ catalogue/ equipment characteristics/ manufacturer's specifications, drawings etc., as and when required and directed by the Architect & Employer. Costs of all these are deemed to have been included in the respective item rates quoted by the contractor and nothing extra shall be paid on account of any of these requirement/acts.

46. **PAYMENT:**

No payment whatsoever shall be made by the Employer, if the Contractor abandons the work, due to any site difficulties etc.,

See clause 36 & 37 of General conditions of contract.

47. **PERMISSION:**

The contractor shall also obtain necessary permission approvals from the relevant authorities shall be obtained by the contractor at no extra cost.

48. **MAINTAINING REGISTERS AT SITE:**

The contractor shall maintain registers for consumption of various specials, testing of materials etc., in the proforma which shall be given by the Architect & Employer from time to time.

49. **AGREEMENT:**

The successful contractor shall be required to enter into an agreement in accordance with the Draft Agreement and Schedule of Conditions etc., within 15 days from the date the contractor is advised by the Architect & Employer that his tender has been accepted. The contractor shall pay for all stamps and legal expenses incidental thereto. However, the written acceptance of the

tender by the Employer, will constitute as a binding contract between the Employer and contractor, whose tender has been accepted, whether such formal agreement is or is not subsequently executed.

50. INSURANCE:

The contractor shall provide insurance in respect of damage to persons and property and firm insurance as per clause 27 and 28 of General conditions of contract. In addition, he will also insure against riots and civil commotion. The insurance shall also cover third party and all the persons working at site and visitors including contractor's, worker's, Architect's and clients people, other contractor's workers etc. The contractor shall indemnify the Employer against any claim or compensation or mishaps of whatsoever nature at site during the progress of work.

The contractor shall prove to the Architect/Client from time to time that he has taken out all the insurance policies as required and directed and has paid the necessary premium for keeping the policies valid as per clause 27 & 28 of the General Conditions of Contract.

In case of failure by the Contractor or sub-contractor to effect and keep in force the insurance policies, then the client, without being bound to, may pay such premiums as may be necessary and deduct the same from any money due or which may become due to the contractor or recover the same as a debt due from the contractor.

51. INDEBTEDNESS AND LIENS:

The contractor agrees to furnish the Employer from time to time, during the progress of the work as requested, verified statement showing the contractor's total outstanding indebtedness in connection with the work covered by the contract. Before final payment is made, the Employer may require the contractor to furnish the Employer with satisfactory proof that there are no outstanding debts or liens in connection with the contract. If during the progress of the work, the contractor shall allow any indebtedness to accrue to sub-contractor or other and shall fail to pay or discharge same within five (5) days after demand, then the Employer may withhold any money due to the contractor until such indebtedness is paid, or apply the same towards the discharge thereof.

52. WORK PERFORMED AT CONTRACTOR'S RISK:

The contractor shall take all precautions necessary and shall be responsible for the safety of the work and shall maintain all lights, guards, signs, barricades, temporary passages or other protection necessary for the purpose. All work shall be done at the contractor's risk and if any loss or damage shall result from fire or from any other cause, the contractor shall promptly repair or replace such loss or damage free from all expenses to the Employer. The Contractor shall be responsible for any loss or damage to materials, tools or other articles used or held for use in connection with the work. The work shall be carried on to Employer or of others and without interference with the operation of existing machinery or equipment, if any.

53. PHOTOGRAPHS:

The contractor at his own cost shall take photographs of site and individual buildings during the progress of the work as directed by the Architect/Client and submit two copies of each photograph with minimum size 20 cm x 15 cm to the client/Architect.

54 **DELETED.**

55. **SPECIAL CONDITIONS OF CONTRACT:**

In the event of any discrepancy with clauses mentioned anywhere else in the tender with the clauses mentioned within special conditions of contract, the clauses mentioned within the special conditions of contract shall supersede there mentioned elsewhere.

56. **BIS CODES**

It is compulsory for the contractor to keep all the B.I.S. codes mentioned in this tender document at his cost at the site to ensure the proper supervision/quality of work and materials.

57. **AS BUILT DRAWINGS**

The contractor shall prepare and submit a set of as-built drawings, duly certified by the Architect. The set consists of 2 soft copies and 3 sets of hard copies.

8. GENERAL SPECIFICATIONS

1. These specifications are for the work to done, items to be supplied and materials to be used in the works as shown and defined on the drawings and described herein all under the supervision and to the satisfaction of the Consultant/IDRBT.

2. The workmanship is to the best available and of a high standard, use must be made of 'specialist' tradesman in all aspects of the work and allowance must be made in the rates for doing so.

3. The materials and items to be provided by the contractor shall be the best of their respective kinds and as approved by the consultant/IDRBT in accordance with samples, which may be submitted for approval and generally in accordance with the specifications.

4. Samples of all materials including these specified by name of the manufacturer or the brands, trades name or the Consultant/IDRBT for their approval before the contractor either orders or delivers in bulk to the site. Samples together with their packings are to be provided by the contractor free of any charge and should any materials be rejected, the same will be removed from the site at the expenses of the contractor.

5. The contractor is also required to submit specimen finishes of all colors, fabrics, polish shades, etc., for approval of the Consultant/IDRBT before proceeding with such works.

6. Should it be necessary to prepare shop drawings, the contractor at his own expenses prepare and submit at least four sets of such drawings to Consultant/ IDRBT for approval.

7. The contractor shall produce all invoices, vouchers or receipts account of all purchases done by him for materials if called upon to do so either by consultants or the IDRBT.

8. The contractor should verify all measurements given in the drawing at the site before commencing the work. Any difference should be clarified with the Consultant before commencing the work.

9. Partition line out shall be done at the site before starting the work and got approved from the Consultants.

10. The contractor shall submit Bar chart (CPM Method) for the complete work within one week of letter of acceptance of tender and get the same approved from Consultant/IDRBT. In advance to co-ordinate the work with other agencies.

11. In order to complete the work in time, the contractor may have to work in more than one shift and beyond office hours. He will do so without any extra charges and without causing any disturbance/inconvenience to the neighborhood.

12. The contractor shall make necessary security arrangements at the site for the safety of his tools, materials and equipment etc., at his own cost.

13. The contractor shall quote his rate including the cost of materials as specified, corresponding wastages, labour, sales tax or any other taxes and duties, octroi, transportation to worksite etc.

    The rates are firm and no escalation on any account shall be allowed on accepted rates.

14. Timber: Hardwood and Teakwood shall be the best wood locally available and should be well & properly seasoned of mature growth, free from worm holes, large loose or dead knots or other defects and will not suffer warping, splitting or other defects through improper handling.

    Teakwood to be either CP or Ballarshah and shall be of best quality, free from soft heart, worm & bee holes and other defects.

    All wrought timber is to be sawn, planned or works to correct sizes and shapes as shown in the drawings. An allowance of 2mm shall be permitted for each wrought face.

    All wooden members shall be liberally coated and treated with ant termite paint before fixing.

15. **MDF Exterior Board:**
    Plywood shall be of urea formaldehyde phenol bonded of approved MDF Exterior Grade type, make, brand, etc. Thickness of Board shall be as per details given in the drawings/specifications.

16. **Workmanship for Joinery:**

    Timber is to be cut to required size and length and the joinery should start immediately after the line out is finalized. It should be framed up (but not bonded) and stored until required for fixing position. At this stage it should be bonded and wedged up. Any portion that warps or develops shakes or other defects shall be replaced before wedging up. The whole work is to be framed and finished in a proper line and level and as detailed in the drawings and fitted with all necessary metal ties, straps, bolts, screws.

    Twining bonded joints are to be cross tongued with teak tongues.

17. The contractor shall be responsible for providing and maintaining temporary coverage required for the protection of dressed, finished or semi-finished works if left unprotected. He is also to clean out all shavings, cut ends and other wastages from all parts of the work at his expenses.

18. Laminate sheeting shall be of specified thickness, make and either plain, sued, satin or with design finish samples showing the surface texture and pattern are to be submitted in proper sizes for approval before use.

The laminates shall be fixed with proper adhesive of approved grade and brand.

19. The contact surface of dowels, tenons, wedges etc., shall be glued with proper adhesive. Wherever joinery and carpentry works is likely to come in contract with moisture the adhesive shall be water proof.

20. **List of Indian Standards referred to:**

IS: 1200: Latest Measurements of buildings & Civil Engineering works, methods of

IS: 287 – 1973 Recommendation for maximum permissible Moisture content of timber.

IS: 1141 – 1973 Code of practice for seasoning of timber.

IS: 3845 – 1966 Code of practice for joints used in wooden furniture.

IS: 3548 – 1966 Glazing in Buildings.

IS: 1137 – 1965 Specification for ready mixed paint brushing
IS: 113 – 1950 matt or egg shell flat/wooden coating under-
IS: 133 – 1975 coating/finishing, Grey filler etc., for
IS: 110 – 1968 interiors.
IS: 129 – 1950

IS: 1948 Aluminium doors, windows & partitions.

21. **Inspection and Testing:**

The Consultant/IDRBT shall be entitled at all times at the risk of contractor to inspect and/or test by itself or through an independent agency appointed by the IDRBT to inspect, and/or test all the materials, components, and items of work at the expenses of the contractor. All such tests shall be done as per ISI guidelines and as directed by Consultants/IDRBT.

22.MODE OF MEASUREMENTS

1.	Partition Paneling	:	Sq.mt. area – one side only paneling finished length x finished height (frame work including vertical/horizontal members above the false ceiling will not be included in measurements and such members shall be treated as included in this mode of measurement in the case of partition having difference finished heights on either sides average height shall be considered eg.2400mm and 2500 then 2450mm will be average height. This will also include T.W. bends.
2.	Storage Units	:	Sq.mt area – front elevation finished length x finished height

3.	False ceiling	:	Sq.mt area finished length x finished width No. deduction of AC grills, lights, cutouts, cornices, drops etc.,
4.	Soffits	:	Sq.mt total finished length x total finished depth (width including drops of pelment, if any).
5.	Rounding off measurements	:	All measurements shall be rounded off to the nearest second decimal point eg.21 465m will be 21.47m.
6.	Measurement for Roller blinds	:	Area of the window opening in Sqm. to which it is specified.
7.	PVC flooring	:	Sq.mts area Finished length x Finished width (deducting Shall be made for columns, cutouts, etc) only finished area shall be paid.

Wherever not mentioned measurements shall be measured as per ISI S.P.No.27.

9. SAFETY CODE

Suitable scaffolds should be provided for workman for all the works that cannot safely be done from the ground or from solid construction, except in cases of short duration works, which can be done safely from ladders. When a ladder is used, an extra mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, it shall be of rigid construction made either of good quality wood or steel. The steps shall have a minimum width of 450mm and a maximum rise of 300mm. Suitable foot and hand holds of good quality wood or steel shall be provided and the ladder shall be given an inclination not steeper than 1 in 4 (1 horizontal to 4 vertical).

Scaffolding or staging more than 300mm above the ground or floor, swung or suspended from an overhead support, shall be erected with stationery supports and shall have guard rails properly attached, bolted, braced and otherwise secured and at least 900mm high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends there of with only such openings as may necessary for the access of persons and delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

Working platform, gangways and stairways should be so constructed that they should not sag unduly or unequally and if the height of the platform or the gangway or the stairway is more than 3-6m above ground level or floor level, they should be closely boarded, should have adequate width and should be suitably fastened, as described in (ii) above.

Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing, whose minimum height shall be 900mm.

Safe means of access shall be provided to all working platforms and other 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 ring ladder shall be in no case be less than 300mm. For longer ladders, this width

should be increased at least 6mm for each additional foot of length. Spacing of steps shall be uniform and shall not exceed 300mm.

Adequate precautions shall be taken to prevent danger from INTERIOR equipment. At the work site, no materials shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The contractor shall also provide all necessary fencing and lights to protect the public from accident, and shall be bound to bear the expenses of defense of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay damages and costs, which may be awarded in such suit, action or proceedings to any such persons or which may with the consent of the contractor be paid to compromise any claim by any such person.

II. **Demolition:**

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

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

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

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

III. All necessary personal safety equipment's as considered adequate by the Architects should be kept available for the use of the persons employed on the site and maintained in a condition suitable for immediate use and the contractor should take adequate steps to ensure proper use of equipment by the concerned.

a. Workers employed in mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective gloves.

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

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

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

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

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

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

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

iii) Overalls shall be supplied by the contractors to the workers and adequate facilities for washing shall be provided to the working painters during and on cessation of work.

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

X. Use of hoisting machine and shackle including their attachments, in charge and supports shall conform to the following standards or conditions.

1.a. These shall be of good mechanical construction, sound material and adequate strength and free from any patent defects and shall be kept in good working order.

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

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

3. In case of every hoisting machine and of every chain, ring hook, shackle swivel and pulley block used in hoisting or lowering 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 condition under which it is applicable shall be clearly indicated. No part of any machine or any gear referred above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

4. In case of departmental machines, the safe working load shall be notified by the clients. As regards contractor's machines the contractor shall notify the safe working load of the machines to the consultants, whenever he brings any machinery to site of work and get it verified by the consultants.

XI. Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce and minimise the risk of accidental descent of loads. Adequate precautions should be taken to reduce to the minimum risks of any part of a suspended load becoming accidentally displaced. Sleeves and boots as may be necessary should be provided, whenever workers are employed on INTERIOR installations. The workers should not wear any rings, watches and carry keys or other materials, which are good conductors of electricity.

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

XIII. 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 clients or the Architect.

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

XV. Notwithstanding the above clauses for (i) to (xiv), there is nothing in these to exempt the contractor from the operation of any other Act or Rules in force in the Republic of India.

10. LABOUR LAWS AND RULES

The Site Engineer shall ensure that the contractor maintains relevant records and fulfils all conditions and requirements in accordance with

a. The payment of Wages Act

b. Employer's Liability Act

c. Workmen's Compensation Act

d. Contract Labour (Regulations & Abolition) Act 1970 and Central Rules 1971.

e. Apprentices Act 1961.

f. Any other Act or enactment relating thereto and rules framed thereunder from time to time.

The Site Engineer shall refrain from involving himself and the supervisors under him by comments/advice/attempts at mediation in any kind of labour dispute at site. His job is only to report to his superiors any happenings of this sort in an objective manner.

EMPLOYER'S RESPONSIBILITY – CONTRACT LABOUR (REGULATIONS AND ABOLITION) ACT 1970 AND RULES 1971

With a view to ensuring that the provisions of the Act are not contravened, the Site Engineer should give particular attention to the following points and see that all the provisions of the Act are enforced:

1. Principal Employer (IDRBTs) is registered as per the Act.

2. Contractor holds a licence under the Act from the Local Labour Commissioner for the appointment of Contract labour.

3. Required notice boards, registers and records as provided in section 29 of the Act are maintained by the contractor.

4. Payment of proper wages as per the rules are effected within the prescribed time limits by the contractor.

5. Prescribed facilities and amenities are provided by the contractor.

6. Proper efforts are made by the contractor to set right contravention of law, as soon as the notice pointing out the same is received from the Labour Enforcement Officer, and reports "on action taken" are sent to the Labour Enforcement officer at the earliest with copies to the Employer.

11. SPECIAL CONDITIONS.

1. Contractor shall not be entitled to any compensation for any loss suffered by him on account of delays in commencing or executing the work, what ever the cause of the delays may be, including delays arising out of modifications to the work entrusted to him or in any subcontract connected there with or delays in awarding contracts for other trades of the project or in commencement or completion of such works in obtaining water and power connections for construction purpose or for any other reason what so ever and the Employer shall not be liable for any claim in respect thereof. The Employer does not accept liabilities for any sum besides the tender amount, subject to such variations as are provided for herein.

2. The successful tenderer is bound to carry out any items of work necessary for completion of the job if such instructions in respect of such additional items and their quantities will be issued in writing by the Architects with the prior consent in writing of the Employer.

3. The contractor must bear in mind that the work shall be carried out strictly in accordance with specifications made by the Architects.

4. The rates quoted in 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 power connection and maintain at his expense an efficient service of electric light and power and shall pay for the electricity consumed. The Employer 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 contractor.

5. Contractor shall strictly comply with the provisions of safety code in addition to all local rules and regulations.

6. The contractor shall be responsible for the observance of all rules and regulations framed by the government under the contract labour act. The Employer shall be entitled to deduct all losses, damages that he might suffer on account of non-observance of these rules by the contractor, from the amount payable to the contractor.

7. Time shall be considered the essence of this contract. The entire work must be completed Stipulated time as per NIT. If the completion of the work is delayed beyond 1 month, a penalty at the rate of 1.00% per week over the contract value will be imposed.

   If the work is delayed beyond 30 days after the date of completion, the remaining work will be carried out through other agencies at the risk and cost of the contractors under the contract with prevailing market rates.

8. The successful tenderer shall submit the phased programme of execution of different items of work within 2 days after receipt of acceptance letter.

9. Payment will be made subjected to a minimum of Rs. 25,00,000/- (Rupees Twenty Five Lakhs Only) and will be made within a period of TWO weeks after the bill is submitted to the Employer's Office with Architects Certificate.

10. Before filling in the tender the contractor will check all the drawings and schedule of quantities and will get an immediate clarification from the employer / Architects on item not clearly understood. No claims for any loss or compensation will be entertained on this account.

11. All the work shall be carried out as per detail drawings and specifications or as directed by employer / Architects.

12. The rates quoted in the tender shall be for the finished items of work They shall include all the charges labour, materials, transportation of material equipment, double scaffolding water and electric charges, tool and plants, marking out and cleaning of site, to do all things necessary to provide complete finished item for work consistent with the specifications attached to this tender document. The rates shall be inclusive of octroi duty, excise duty, packing and forwarding, loading or unloading or any other duties or fees levied by any government, public or local bodies. The rates shall be firm and shall not be subject to exchange variations, labour conditions or any other conditions whatsoever.

13. The calculations made by the tenderer should be based upon the probable quantities of the several items of work which are furnished for the tenderer's convenience in the schedule of quantities ,but it must be clearly understood that the contract is not a lumpsum contract , that neither the probable quantities nor the value of individual items nor the aggregate value of the entire tender will form part of the contract and that the employer / Architects do not in any way assure the tenderer or guarantee that the work would correspond there to.

14. Adequate engineering and technical staff to be appointed at site. INTERIOR contractor should inform of their number and qualification. An Approval of employer / Architects should be taken prior to appointing such technical staff on site.

15. **The contractor shall keep the tender submitted by him open for acceptance for a minimum period of three months from the date of it's submission** .When once the tender is accepted the rates quoted by the successful tenderer shall be firm and the variation in rates of any one or all the items on any account shall not be allowed during the entire duration of the contract.

16. During the execution of work, contractor must check the work with his drawings .The contractor shall be responsible for all the errors in this connection and shall have to rectify all the defects at his own cost, failing which the client reserves the right to get the same rectified at the risk and cost of contractor.

17. No claim for extra item or deviation from specification shall be entertained unless the same is pointed out and accepted as such before the work is taken in hand or within 15 days of work by the successful tenderer.

18. The contractor shall comply with all bye- laws and tax regulations (including GST) of local and other statutory authorities having jurisdiction over the works and shall be responsible for the payment of all the fees and other charges and for giving and receiving of all necessary notices drawings and test certificates.

19. The successful tenders shall properly safeguard against damage or injury to the public and to any property or thing and shall alone be responsible for any such damage and injury to any person or persons or thing arising in connection with it's execution of work .The successful tenderer shall protect and hold harmless the employer against any or all claims for any such injury or damage.

20. The work in every respect during the progress and till final acceptance by the employer, including raw materials delivered at the site to be incorporated or used in INTERIOR work by the successful tenderer will be at his own risk . Any loss or damage to any such material or work shall immediately be replaced by the successful tenderer at his own expense.

21. The employer shall have the right to direct the contractor to purchase and use the materials from any source for proper execution of work.

22. The employer / Architects or their authorized representatives shall have full power for inspecting the contractor's works or at any place from which the material is obtained. Acceptances of any such materials shall no way relieve the contractor of his responsibility for meeting the requirements and /or analysis not called for in the specifications shall be borne by the employer in case the material or work is found defective or of inferior quality .tests and /or analysis shall be done in the laboratory approved by the client and the contractor shall permit IDRBT and or the client's or their authorized representative to be present during any of the tests and /or analysis.

23. INSURANCE

The contractor shall indemnify the employer up to CAR Policy (Contractor's All Risk Policy) against all claim which may be made against IDRBT by any member of the public or third party in respect of anything which may arise in consequence thereof and shall at his own expense arrange to effect and maintain up to one month, after the virtual completion from an office approved by the IDRBT a policy of insurance in the joint names and deposit such policy or policies with the employer from time to time during the currency of this contract. The contractor shall also indemnify IDRBT against all claims which may be made upon the employer under the workman'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 expenses effect and maintain upto one month after virtual completion of the contract, from an office approved by IDRBT a policy or policies of insurance in the joint names of the employer and the contractor as aforesaid .The contractor shall be responsible for any other thing which may be excluded from the insurance policies above referred to and also for any other damage to any property arising out of and incidental to the negligent or defective carrying out of this contract.

He shall also indemnify IDRBT in respect of any costs, charges or expenses arising out of any claim or proceedings and also in respect of any award of compensation or damage arising therefrom. IDRBT shall be at liberty and is hereby empowered to deduct the amount of any damages, compensation caused, charges and expenses arising or occurring from or in respect of any such claims or damages from any sum or sums due or to become due to the contractor.

24. WORKMAN AT SITE:

The contractor's workpeople shall not be allowed to live on the site at any time throughout the contract nor to trespass beyond the limits of the site. The contractor will be held responsible for any acts of trespass by his workpeople.

25. DIMENSIONS:

Figures dimensions are to be taken in preference to scaled dimensions in all cases. Before commencing any work, the contractor shall verify all measurements. If any discrepancies are found they shall immediately be brought to the notice of the Architects.

26. DISCREPANCIES

All the items shown on the drawings or specifications are taken to be included in both. Any discrepancies, which occur in either the drawings or specifications, shall immediately be brought to the attention of the Architects.

27. CUTTING AND MAKING GOOD

Where it is found necessary to interfere with finished work in order to execute this contract, the contractor will be required to do all necessary work at his expenses. Only approved hangers and bolts or other metal fixing devices shall be used to secure frames panels and other units in position. Wooden plugs will not be permitted. Holes shall be formed with electric drills whenever possible. Structural members shall not be cut or drilled without prior consent of the client .

28. MAINTENANCE AND GUARANTEE

The whole of the work to be performed under this contract shall be completed to the satisfaction of the Architects / IDRBT.

The contractor without additional charge to the employer renew or replaces any works which prove faulty from workmanship or materials and fully maintain the whole installations for a period of 6 months after the commencement of defects liability period of the main contract and a sum of 5% of the contract amount shall be retained by the employer for his period.

29. PREVENTION OF SPOIL DUMPING

The contractor shall take all reasonable steps to prevent spoil, rubbish, debris surplus materials etc. arising from a work being dumped on an area other than a recognized or approved tipping area and the Contractor will be held responsible for and shall indemnify the employer against any claim or loss arising therefrom.

30. LEAVE PERFECT:

The Contractor shall remove all rubbish and superfluous material from the site of the works with all reasonable speed from time to time and at completion. On no account shall W.C' S or the employer's receptacles to be used for this purpose.

The client reserves its right to clear contractors un cleared debris at contractors own cost without any reasons & not more than one notice will be given for this.

31. SETTLEMENT OF DISPUTES AND ARBITRATION:

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

(a) If the contractor considers that he is entitled to any extra payment or compensation in respect of the works over and above the amounts admitted as payable by the Architect or in case the contractor wants to dispute the validity of any deductions or recoveries made or proposed to be made from the contract or raise any dispute, the contractor shall forthwith give notice in writing of his claim, or dispute to **Institute of Development and Research in Banking Technology (IDRBT), Castle Hills, Road no-1, MasabTank, Hyderabda-500057** and endorse a copy of the same to the Architect, within 30 days from the date of disallowance thereof or the date of deduction or recovery. The said notice shall give full particulars of the claim, grounds on which it is based and detailed calculations of the amount claimed and the contractor shall not be entitled to raise any claim nor shall the IDRBT be in any way liable in respect of any claim by the contractor unless notice of such claim have been given by the Contractor to **IDRBT.** in the manner and within the time as aforesaid. The contractor shall be deemed to have waived and extinguished all his rights in respect of any claim not notified to **IDRBT.** in writing in the manner and within the time aforesaid.

(b) IDRBT shall give his decision in writing on the claims notified by the contractor. The contractor may within 30 days of the receipt of the decision of **IDRBT**. submit his claims to the conciliating authority namely the Circle Development Officer, IDRBT for conciliation along with all details and copies of correspondence exchanged between him and **IDRBT.**

(c) If the conciliation proceedings are terminated without settlement of the disputes, the contractor shall, within a period of 30 days of termination thereof shall give a notice to the IDRBT for appointment of an arbitrator to adjudicate the notified claims failing which the claims of the contractor shall be deemed to have been considered absolutely barred and waived.

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

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

It is also a term of this contract that no person other than a person appointed by such IDRBT as aforesaid should act arbitrator.

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

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

It is also a term of the contract that the arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties calling them to submit their settlement of claims and counter statement of claims. The venue of the arbitration shall be such place as may be fixed by the arbitrator in his sole discretion. The fees, if any, of the arbitrator shall, if

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

32. TERMINATION OF CONTRACT BY EMPLOYER:

If the contractor (being an individual or a firm) commit any " Act of Insolvency ", or shall be adjudged as insolvent, or shall make an assignment or composition of the greater part in number of amount of his creditors, or shall enter into a Deed of Assignment with his creditors, or (being an incorporated Company) shall have an order made against him or pass an effective Resolution for winding up either compulsorily, or Subject to the supervision of the court or voluntarily, or if the official Assignee of the contractor shall repudiate the Contract, or if the Official Assignee or the Liquidator in any such winding up shall be unable, within seven days after notice to them requiring him to do so, to show to the reasonable satisfaction of the Architect that he is able to carry out and fulfill the Contract and if required by the Architect to give a security there for, or if the contractor shall suffer any payment under this contract to be attached by or on behalf of any of creditors of the Contractor, if the Contractor shall assign or sublet the contract without the consent in writing of the Architect first obtained, or if the contractor shall charge or encumber this Contract for any payments due or which may become due to the Contractor thereunder, or if the Architect shall certify in writing to the Employer that in his opinion the Contractor:

(a) Has abandoned the Contract, or
(b) Has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the work for fourteen days after receiving from the Architect written notice to proceed, or
(c) Has failed to proceed with the work with such due diligence and failed to make such due progress as would enable the works to completed within time agreed upon or
(d) Has failed to remove materials from site or to pull down and replace works within seven days after receiving from Architect written notice that the said materials or work where condemned and rejected by the Architect under these conditions or
(e) Has neglected or failed persistently to observe and perform all or any of the acts, matters or things required by this Contract to be observed and performed by the Contractor for seven days after written notice shall have been given to the Contractor requiring the contractor to observe or perform the same, or
(f) Has to the detriment of good workmanship or in defiance of the Architects instructions to the Contrary, submit any part of the contract or has used in the permanent works important materials which are substandard and not as per specification fraudulently making the Architect / Employer to believe that it is the specified material.

Then and in any of the said caused the Employer with the written consent of the Architect 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 or the obligations and liabilities of the Contractor, the whole of which shall continue to be in force as fully as if the contract has not been so determined and as if the works subsequently executed and being executed by or on behalf of the contractor. And further, the Employer with the consent of the Architect by his agents or servants may enter upon and take possession of the works and all plant, tools, scaffoldings, shed, machines, steam and other power utensils and materials lying upon premises or the adjoining lands or roads, and use the same as his own property or may employ the same by means of his own servants and workman in carrying on and completing of the works or by employing any other Contractor or any other 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 and finishing or using the materials and plant for the works, when the work shall be completed, or as soon thereafter as convenient, the Architect shall give a notice in writing to the Contractor, to remove his surplus material and plant and should the Contractor fail to do so within a period of fourteen days after receipt thereof by him, the Employer may sell the same by public auction and shall give credit to the Contractor for the amount so realized. The Architects shall thereafter shall assertion 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 Employer, and the expense or loss which the Employer shall have been put to in getting the works to be so completed, and the amount, if any owing to the Contractor and the amount which shall be so certified shall, thereupon, be paid by the Employer to the Contractor or by the Contractor to the Employer as the case may be, and the certificate of the Architect shall be final and conclusive between the parties.

33. The mode of measurements shall be as per IS: 1200.

35. CONTRACTOR SHOULD WORK TIME MENTIONED ON ALL WORKING DAYS HOLIDAYS TO KEEP UP TIME SCHEDULE. CONTRACTOR TO CO-ORDINATE WITH OTHER CONTRACTORS FOR SMOOTH EXECUTION OF WORK.

36. Partitions shall be measured from finished floor level to bottom level of false ceiling.

38. The Contractor shall not be eligible for any material advance.

12. TECHNICAL SPECIFICATIONS – INTERIOR WORKS.

TIMBER:
All timbers used are to be of top quality, free from knots, shakes, wormholes, and with a moisture content of not more than 8% to 10% depending on the climatic conditions prevailing at the site.

JOINTS:
All Joints will be standard mortise and tenon, dovetails, dowel, cross-halved, mitred, tongued and grooved and invited. Nailed or glued butt joints will not be permitted. Except in exceptional cases nailed butt joints will not be accepted.

FASTENINGS:
Screws, nails, bolts, will generally be of M.S. G. I wire, except in following examples: "Outdoor Furniture" fastenings will be of brass or other non-Corrosive metal. In hardware, they will match the finish of the hardware item.
Brass Nails in a finished surface shall be neatly punched and the hole filled with wood filler matching the finish. Screws in a finished surface will be round head, raised head or sunk (beneath the surface and the hole plugged with matching colour and grain of the wood surface) unless specially detailed.

MDF EXTERIOR GRADE:
Used mainly for the bodywork of this furniture, shall be Luaan or similar close-grained MDF Exterior grade board suitable for veneering painting or bounding plastic laminate. It will be a resin bonded (PFB) weatherproof brand, and for "outdoor" furniture, standard specifications of Approved Brand. Exposed edges will be finished with a piece of soiled wood, tongued and grooved and glued or as detailed.

HARDWARE:
Hinges, lock, latches, door tracks etc., shall be as specified and as far as it possible, by the manufacturer specified. In any variation of this the quality of the substitute shall be equal to or better than the original specified, and sampled should be submitted to the Designer for prior approval.

METAL:
Where metal logs frames etc., are used these shall be welded, brazed, bolted or riveted as required and on finished surfaces. Welding, brazing riveting shall be neatly smoothed so that no evidence of this is apparent on the final finish of the metal, which will be as specified on drawing. On all legs, wood or metal, nylon glides or castor as indicated are to be installed.

FINISH:
This will be as indicated on the drawing and colour scheme chart and materials (timber, plastic laminates, lacquer, paints, etc.,) must be specified. No variations will be accepted unless with the prior approval of the Designer. " Backs " of cabinets etc., where wall hung, shall be treated with an approved brand of wood preservative. Full size drawings or sample prototypes are to be submitted for approval as requested.

Note: This specification is of a general type only, and must be used in conjunction with the drawing of the particular item being made. Anything shown on the drawing, but not in the specification must be complied with, and vise versa.
MATERIALS:
Finished timber shall be of the type specified colour, pattern, substance to be as specified and manufactured or supplied by the company specified. No variation of this will be permitted unless with prior approval of the Designer.

13.TECHNICAL SPECFICATIONS FOR ELECTRICAL WORKS
CHAPTER 1
INTERNAL ELECTRIFICATION

1 Scope

This specification is intended to cover the requirements of supply, installation, testing and commissioning of electrical wiring installation and other accessories required for its satisfactory operation. This covers the essential requirements or precautions regarding wiring installations for ensuring satisfactory and reliable service.

2 Standards:

The Electrical wiring installations and other accessories shall comply with latest IS : 732 - 1989 and National Electrical code - 1985.

3. Construction

Wall mounted switch boards shall be installed such that the bottom is at a minimum height of 1.35 m above finished floor level wherever applicable, as indicated in the drawing.

Equipment which is on the front of a switch board shall be so arranged that inadvertent personnel contact with live parts is unlikely during the manipulation of switches, changing of fuses or similar operation.
In every case in which switches and fuses are fitted on the same pole, these fuses, shall be so arranged that the fuses are not live when their respective switches are in 'OFF' position.

No fuses other than fuses in instrument circuit shall be fixed on the back or behind a switch board panel or frame.
4. Capacity of circuit:
Lighting Circuits shall not have more than a total of ten points of fans, 5A socket outlets and light points and its total load shall not exceed 800 watts. Lights, fans, and 5A socket outlets can be wired on a single common circuit. If fan circuit is drawn separately, circuit shall not be used more than eight points and load shall not exceed more than 800 watts. In the circuit, the neutral and earth wires can be looped up to 10points. From distribution boards Neutral & Earth wires shall be run for every circuit.

The power circuits shall not have more than two outlets per circuit if load to be fed by each outlet is less than 1KW, and if load is more than 2KW, each outlet shall be connected to a separate circuit.

Switches: All switches shall be placed in the live conductor of the circuit and no single pole switch or fuse shall be inserted in the earth or earthed neutral conductor of the circuits. Single pole switches (other than for multiple control) carrying not more than 15amperes may be of the piano flush type and the switch shall be 'ON' When the knob is down.

Lamp holders: Lamp holders for use on brackets and the like shall have not less than 1.3 cm nipple and all those for use with flexible pendant shall be provided with cord grips. All lamp holders shall be provided with shade carriers. Where centre contact Edison screw lamp holders are used, the outer or screw contact shall be connected to the 'middle wire' or the neutral or to the earthed conductor of the circuit.

Lamps: All incandescent lamps, unless otherwise specified shall be hung at a height of not less than 2.5 m above the finished floor level.

Ceiling rose: a) A ceiling rose or any other similar attachment shall not be used on circuit, the voltage of which normally exceeds 250 volts.

A ceiling rose shall not embody fuse terminals as an integral part of it.

Every socket outlet shall be controlled by a switch. The switch controlling the socket shall be on the 'live' side of side line.5 Amps and 15 Amps socket-outlet shall normally be fixed at any convenient place 60 cm above the floor level or near such level as indicated in drawing. 15 Amps socket outlets in kitchen shall be fixed at convenient place 23cm above the working platform. In a room containing a fixed bath or shower, there shall be no socket outlet and there shall be no provision for connecting a portable appliance.

5 Recessed MS conduit wiring system

a) Making of chase : The chase in the wall shall neatly be made and shall be of suitable dimension to permit the conduit to be fixed in the manner desired by the Engineer-in-charge. In the case of buildings under construction, chases shall be provided in the wall, ceiling, etc. at the time of their construction and shall be filled up neatly after erection of conduit and brought to the original finish of the wall.

b) Fixing of conduit in chase : The conduit shall be fixed by means of staples or by means of saddles not more than 600 mm apart. Fixing of standard bends or elbows shall be avoided as far as practicable and all curves maintained by bending the conduit pipe itself with a long radius which will permit easy drawing-in of conductors. All the threaded joints of rigid steel conduits shall be treated with approved preservative compound to ensure protection against rust.

c) Inspection boxes : To permit periodical inspection and to facilitate replacement of wires, suitable inspection boxes shall be provided at convenient locations. They shall be mounted in flush with the wall. The minimum size of inspection boxes shall be 75 x 75 mm. Suitable ventilating holes shall be provided in the inspection box covers.

d) Types of accessories to be used : All outlets, such as switches and sockets, may be either of flush mounting type or of surface mounting type.

The switches and other outlets shall be mounted on such boxes. The metal box shall be efficiently earthed with the earth continuity wire run along the conduit.

When crossing through expansion joints in buildings, the conduit sections across the joint may be through flexible copper bellows of the same size as PVC conduit. The Number of wires that can be drawn through a conduit shall be strictly as per IS 732 and as mentioned in Drawings.

6. MS Conduits :

MS conduit shall be black enameled and of thickness not less than 16SWG and of size minimum 19 mm dia. The Conduit shall conform to IS 9537/ Part II

Bunching of cables : Separate conduits shall be used for bunching of conductors of AC supply and DC supply for lighting and small power outlet circuits.

All outlets of conduit systems shall be properly drained and ventilated, but in such a manner so as to prevent the entry of insects etc. as far as possible.

Bends in conduit: Wherever necessary, bends or diversions may be achieved by bending the conduits or by employing normal bends, inspection bends, inspection boxes, elbows or similar fittings.

In case of plain conduit, heat may be used to soften the conduit for bending and forming joints. Positioning of conduit in close proximity to hot surfaces should be avoided.

7. TESTING OF WIRING:

The following tests shall be carried out on all types of wiring on completion of the work and before energizing the installation:

i) Insulation resistance test,

ii) Electrical continuity test,

iii) Earth continuity test,

iv) Earth electrode resistance test,

v) Switch polarity test.

i) Insulation Resistance test:
The insulation resistance shall be measured by using 500 v megger between the following points.

Phase and neutral conductor with all fuses in position and all switches in closed condition and main switch in OFF position with lamps and other devices removed.

Between earth and whole system of conductors with all fuses in place, all switches closed and all lamps in position.

Between all conductors connected to one phase of the supply of the above tests shall not be less than 50 divided by the number of points on the circuit. Where a whole installation is being tested, a lower value than that given by the above formula is acceptable subject to a minimum of one megaohm.

The insulation resistance in megaohm as obtained by each of the above tests shall not be less than 50 divided by the number of points on the circuit. Where a whole installation is being tested, a lower value than that given by the above formula is acceptable subject to a minimum of one megaohm.

(ii) Electrical continuity test :

Each and every circuit shall be tested for electrical continuity by using a multimeter.

(iii) Earth continuity test :

The earth continuity conductor including metal conduit shall be tested for electrical continuity and the resistance of the same along with the earthing lead measured from the connection with the earth electrode to any point in the earth continuity conductor in the complete installation shall not exceed one ohm.

iv) Earth electrode resistance test :

The earth electrode resistance shall be tested as specified in section

(v).Switch polarity test :

Test shall be made to verify that all switches in every circuit have been fitted in the same conductor throughout and such conductor shall be marked for connection to the phase conductor.

8 Distribution Boards :

All the distribution boards shall be with MCBs as described in the respective schedule.

The distribution boards shall be controlled by a switch fuse, miniature circuit beaker or an isolator as described in the respective schedule. Each outgoing circuit shall be provided either with MCB or a fuse on the phase. The neutral shall be connected to a common link and be capable of being disconnected individually for testing purposes.

The distribution boards shall be located as indicated in the respective electrical working drawings and as directed by Engineer - in - charge. The distribution boards shall be fixed on wall in the niche provided and marked with the details of circuits, source of supply, size of incoming wires Etc.,

All marking shall be clear and legible.

The total load of the consuming devices shall be evenly distributed between the number of ways of distribution board.

The consuming devices circuit shall be connected to distribution board in proper sequence, so as to avoid unnecessary crossing of wires.

Cables shall be connected to a terminal only by crimped lugs.

Cables shall be rigidly fixed in such a manner that a clearance of at least 2.5cm is maintained between conductors of opposite polarity or phase and between the conductors and any material other than insulating material.

The incoming and outgoing cables shall be neatly bunched.

9. MOUNTING HEIGHTS :

The Mounting heights of various fixtures shall be as specified in the Drawings.

CHAPTER 2

POWER CONTROL CENTRES

1.0 **Scope:**
This specification is to cover the requirement of design, supply, installation, testing and commissioning of LT power control centres / main switch boards with all components, Instruments, fittings and accessories for efficient operation without any trouble.

2.0 **Standards:**
The PCC specified herein, unless otherwise stated shall conform to the relevant and latest revisions of Indian standards and Indian Electricity Rules.

1.0 **Design and construction:**
1.1 Design requirements: The power control centres shall be suitable for operation on 440volt, 3 phase,4wire 50HZ system to withstand a short circuit level of 50 KA RMS symmetrical.

The PCC shall be designed for operation in high ambient temperature upto 45 degrees centigrade and high humidity upto 95% and tropical atmospheric conditions. Means shall be provided to facilitate ease of inspection, Maintenance and Servicing.

1.2 Constructional requirements:

The power control centre shall be of

i) Metal clad, cubicle, indoor, free standing type suitable for Mounting on Built up Trenches with U Channels of adequate size.

ii) Made up of the requisite vertical sections, which when coupled together shall form continuous dead front switch board.

iii) Dust and damp protected, the degree of protection shall be better than IP - 54 as specified in IS-2147.

iv) Readily extendable on both sides by the addition of vertical sections after removal of the end covers.

v) Single front construction with the circuit breaker feeder and switch fuse feeders suitable for operation from the front of the panel.

The PCC shall have the feeder ratings as per the schematic diagrams enclosed with the schedule and constructed only of materials capable of withstanding the mechanical, electrical and thermal stresses as well as the effects of humidity, which are likely to be encountered in normal service.

1.3 Vertical Sections: Each vertical section shall comprise a front framed structure rolled folded sheet steel channel section of minimum 2 mm thickness rigidly bolted together. This structure shall house the components contributing the major weight of the equipment such as circuit breaker, switch fuse units, main horizontal busbars, vertical risers and other front mounted accessories. The structure shall be mounted on a rigid base frame of folded sheet steel of minimum of 2.5 mm thickness and 100mm height. The design shall ensure Structural stability during Transit and also during Operation after Commissioning Suitable cable chamber housing the cable end connections and power / control cable terminations shall be provided. The design shall ensure generous availability of space for ease of installation and maintenance of cabling and adequate safety for working in one

vertical section without coming into accidental contact with live parts in the adjacent section.

A cover plate at the top of the vertical section shall be provided with necessary ventilating arrangements. Any aperture for ventilation shall be covered with a perforated sheet having less than 1 mm diameter perforations to prevent entry of vermin.
1.4 Sheet Steel Cubicle:

1.4.1 The sheet steel cubicle shall be designed in fully segregated multitier formation. Each cubicle shall have hinged front access door with easy operating fasteners. All the doors and covers shall be heavily gasketed to make the compartment dust tight. Each cubicle shall have a covering at the bottom to make a dust and vermin proof construction. Door hinges shall be of concealed type.

The cubicle shall be of minimum 2 mm thick sheet steel. Sheet steel shrouds and partitions shall be of minimum 1.6 mm thickness. All sheet steel work forming the exterior of switch boards shall be smoothly finished, leveled and free from flaws. The corners shall be rounded. The minimum Thickness of Gland plates shall be 3mm.

1.4.2 The apparatus and circuits in the power control centers shall be so arranged as to facilitate their operation and maintenance at the same time to ensure the necessary degree of safety.
Apparatus forming part of the control centers shall have the following minimum clearance.

i) between phases - 25 mm,

ii) between phase and neutral - 25 mm,

iii) between phases and earth - 25 mm,

iv) Between neutral and earth - 19 mm,

When, for any reason, the above clearances are not available suitable insulation shall be provided. Clearance shall be maintained during normal service conditions. Creepage distances shall comply with those specified in relevant standards.

1.4.3 All insulating materials used in the construction of the equipment shall be non hygroscopic duly treated to withstand the effect of high humidity, high temperature and tropical ambient service conditions.

1.4.4 Functional units such as circuit breakers and fuse switches shall be arranged in multitier formation, except that not more than One air circuit braker housed in a single vertical section.

1.4.5 Metallic/insulated barriers shall be provided within vertical sections and between adjacent sections to ensure prevention of accidental contact with:

i) Main busbars and vertical risers during operation, inspection or maintenance of functional units and front connected accessories.
ii) Cable terminations of one functional unit, when working on those of adjacent unit/units.

3.4.6. All doors / covers providing access to live power equipment / circuits shall be provided with tool operated fastners to prevent unauthorized access.

3.4.7 Provisions shall be made for permanently earthing the frames and other metal parts of the switchgear by two independent connections.

1.5 Metal treatment and finish:

All steel works used in the construction of the switch boards shall have undergone a suitable rigorous metal treatment process so as to remove oxide scales and rust formation and to facilitate a durable coating of the paint on the metal surfaces and also to prevent the spreading of rust, in the event of the paint film being mechanically damaged.

Two coats of Anti Corrosive primer followed by a finishing coat of Epoxy spray power coating of the shade 631 of IS: 5 (i.e. Siemens grey) shall be given. The total thickness of paint shall not be less than 25 microns.

1.6 Bus Bars:

1.6.1 The busbars shall be housed in non-segregated sheet steel compartments in the cubicle at convenient locations with provision for access to the buses from the front of the panel. The busbar shall be suitably braced with DMC/SMC supports to provide a through fault withstand capacity of 50 KA RMS symmetrical for one second and a peak short circuit withstand capacity 150 KA minimum. The neutral as well as the earth bus shall be capable of withstanding the above fault level.

3.6.3 Large clearance and creeping distance shall be provided on the busbar system to minimize the possibility of a fault.

3.6.4 High tension bolts, nuts and spring washers shall be provided at all busbar joints.

3.6.5 The continuous rating of the busbar shall be 125% of the rated current. Maximum temperature of the bus and the connections shall not exceed 85 degrees centigrade. The busbars shall be of liberal design for the required current rating i.e. 0.8Amp/sq.mm.

The main phase busbars shall have continuous current rating throughout the length of each power control centre and the neutral busbars shall have continuous rating of at least 50% of phase busbars.

3.6.6 Connections from the main busbars to functional circuits shall be arranged and supported so as to withstand without any damage or deformation, the thermal and dynamic stresses due to short circuit currents.

All busbars and tapings shall be provided with color coded sleeves for phase identification.

All joints/tapping points of the buses shall be suitably shrouded to prevent accidental contact.

4.0 **Circuit Breakers:**

4.1 General:

4.1.1 Circuit breakers shall be of triple pole / four pole, air break, horizontal draw out /Fixed type, as given in the schedule of work and comply with the requirements of relevant IS with latest amendments and shall have the following:

i) A short circuit breaking capacity of not less than 50 KA RMS at 415 volts, 50 Hz AC.

ii) A short circuit making capacity of 105 KA.

iii) A short time withstand capacity of 150 KA for one second.

iv) Electrical overload performance at 6 times the rated current, 100% of the rated voltage as

recovery voltage at 0.5 power factor.

v) Dielectric test of 2.5 KV applied for one minute on main circuits.

4.1.2 The circuit breakers shall be fitted with detachable arc chutes on each pole designed to permit rapid dispersion, cooling and extinction of the arc. Interphase barriers shall be provided to prevent flash over between phases.

4.1.3 Arcing contacts shall be of hard wearing material copper tungsten or silver tungsten and shall be easily replaceable. Main contacts shall be of silver plated copper of high pressure type and generous cross section.

4.2 Operating Mechanism:

The operating mechanism shall be of robust design, with minimum number of linkages to ensure maximum reliability. Manually operated circuit breakers shall be provided with spring operated closing mechanism which are independent of speed of manual operation. Electrically shall be independent of the motor which shall be used slowly for charging the closing spring.

The operating mechanism shall be such that the breaker is at all times free to open immediately when the trip coil is energized.

Mechanical operation indicators shall be provided to show open and close positions of the breaker. Electrically operated breakers shall be additionally provided with mechanical indications to show charged and discharged conditions of the charging spring.

Means shall be provided for slow closing and opening of the breaker for maintenance purposes, and for manual changing and closing of electrically operated breakers during emergencies,

4.3 Protection:

Provisions shall be available for fitting a minimum of five trip devices - three over current, as shunt trip and an under voltage release or two over current and earth fault release, a shunt trip and one under voltage release. The breakers shall be of the shunt or series trip type as specified in the schedule.

4.4 Housing of Circuit Breaker:

Circuit breakers shall be individually housed in sheet metal castle provided with hinged doors. The breaker along with its operating mechanism shall be mounted on a robust carriage moving on guide rollers with in the castle. Isolating contacts for both power and control circuits shall be of robust design and fully self- aligning. The assembly shall be designed to allow smooth and easy movement of the breakers within its castle.

The breaker shall have three distinct positions within the castle as follows:
i) ` Service' position: With main and auxiliary contacts connected.

ii) `Test' position: with power contacts fully disconnected and control circuit contacts connected.

iii) `Isolated' position: with both power and control circuit contacts fully disconnected.

It shall be possible to achieve any of the above positions with the castle doors closed. Mechanical position indicators shall be provided for the three positions of the breakers.

4.5 Interlocking:

4.5.1. The moving portion of the circuit breaker shall be interlocked so that:

i) It shall not be possible either to isolate it from the connected position, or to plug it in from the Isolated position with the breaker closed.

ii) The circuit breaker can be closed only when it is in one of the three positions or when it is fully out of the castle.

iii) It shall not be possible to open the hinged door of the castle unless the breaker is drawn to the isolated position.

iv) Inadvertent with drawl of the circuit breaker too far beyond the supporters is prevented by the suitable stops.

4.5.2 Provisions shall be available for the padlocking of the circuit breaker access flame in any of the three positions.

4.5.3 Automatically operated safety shutters shall be provided to screen the fixed isolating contacts when the breaker is drawn out from the castle.

4.5.4 The moving portion of the circuit breaker shall be provided with a heavy duty, self-aligning earth contact, which shall make before and break after the main isolating contacts during insertion into with drawl from the service position of the breaker. Even in the isolated position positive earthing contact should exist.

4.5.5 Auxiliary switches directly operated by the breaker operating mechanism and having 4 `NO' and 4 `NC' contacts, shall be provided on each breaker. The auxiliary switch contacts shall have a minimum rated thermal current of 10 amps.

5.0 **Switch Fuse Units:**

5.1 General:

The switch fuse units shall be of the load break, heavy duty, cubicle type conforming to the requirements IS and of AC 23 duty.

The switch fuse units shall be capable of withstanding the thermal and electromagnetic stresses caused by short circuits for the time of operation of the associated fuse links.

The switch fuse units shall be double break and have quick make break mechanism, designed to ensure positive operation.

All switch fuse contacts shall be silver plated at the current transfer surfaces.

The unit shall be provided with a front operating handle. The ON and OFF positions of the switch handle shall be clearly marked.

5.2 Interlocks and Safety:

Interlocks shall be provided so as to prevent opening of the unit door when the switch is in the ON position and also to prevent closing of the switch with the door not properly secured. It should however be possible for a competent person to operate the switch shall be suitable for locking with switch in the OFF position by means of a padlock.

The interior arrangement of the switch fuse unit shall be such that all 'Live' parts are shrouded.

5.3 HRC Fuses:

The switch fuse units shall be fitted with High rupturing capacity cartridge fuse links with ISI marking for a rupturing capacity of not less than 80 KA at 415 volts. The fuse links shall be mounted in a draw out carriage, thus ensuring positive isolation of contacts during fuse replacements.

6.0 **Current Transformers**.

Current transformers shall comply with the requirements of relevant latest amendment IS. They shall have ratios, outputs and accuracy as specified in the schedule.

7.0 **Indicating / Integrating Meters:**

All indicating instruments shall be of flush mounted industrial pattern conforming to the relevant latest amended IS. The instrument shall have non reflecting bazels, clearly, divided and indelibly marked scales, and shall be provided with zero adjusting devices in the front. Integrating instruments shall be of flush mounted switch board pattern complying with the requirements of relevant latest IS.

8.0 **Relays: Circuit** breakers shall be provided with integrally mounted relays as specified in the schedule.

The relay shall have a set of three phase characteristics, which shall be adjustable over a wide range, to provide discrimination between a multiplicity of devices. The relay shall be able to provide over current and earth fault protection. Also UV and Shunt trip Relays are to be provided.

9.0 **Control switches/Selector switches: Control** switches/Selector switches shall be of the heavy duty rotary type, with plates clearly marked to show the operating position. They shall be of semi-flush mounted type with only the front plate and the operating handle projected.

Circuit breakers control switches shall be of the spring return to neutral type.

10.0 **Indicating lamps and push buttons:**

Indicating lamps shall be of the LED type of low watt consumption, provided with series resistors where necessary and with translucent lamp covers. Bulbs and lenses shall be easily replaceable from the front.

Push buttons shall be of the momentary contact, push to actuate type fitted with self-reset contacts and provided with plates marked with its junctions.

11.0 **Cable terminations:**

Cable entries and terminals shall be provided in the switch board to suit the number, type and size of aluminum conductor power cables and copper conductor control cables as indicated in the schematic diagram.

Provision shall be made for top or bottom entry of cables as required. Generous size of cabling

chambers shall be provided, with the position of cable glands and terminals such that cables can be easily and safely terminated.

Barriers or shrouds shall be provided to permit safe working at the terminals of one circuit without accidentally touching that of another live circuit.

Cable riser shall be adequately supported to withstand the effects of rated short circuit currents without damage and without causing secondary faults.

Cable sockets shall be of copper and of the crimping type/soldering as required.

12.0 **Control wiring: All** control wiring shall be carried out with 1100/650 V grade single core Copper cable conforming to relevant IS having stranded copper conductors of minimum 2.5 sq.mm. section for CT Wiring and 1. 5sq.mm for Control/indicating Instruments.

Wiring shall be neatly bunched, adequately supported and properly routed to allow easy access and maintenance.

Wires shall be identified by numbered ferrules at each end. The ferrules shall be of the ring type of non-deteriorating material. They shall be firmly located on each wire so as to prevent free movement.

All control circuit fuses shall be mounted in front of the panel and shall be easily accessible.

13.0 **Terminal blocks and labels:**

Terminal block shall be of 500 volts grade of the stud type. Insulating barriers shall be provided between adjacent terminals.

Terminal block shall have minimum current rating of 10 amps and shall be shrouded.

Provisions shall be made for label inscriptions.

Labels shall be made of anodized aluminum, with white engraving on black background. They shall be properly secured with fasteners. Danger plate of size and descriptions as recommended in the relevant IS shall be provided on the PCC.

14.0 **Tests:**

i) The power control centre shall be completely assembled, wired, adjusted and tested for operation under simulated conditions to ensure correctness of wiring and interlocking and proper functioning of all components.

ii) Each power control centre and components shall be subjected to standard routine tests as per applicable clauses of relevant standards.

iii) All current carrying parts and wiring of power control centre shall be subjected to power frequency voltage withstand test.

15.0 D**rawings: After** the award of the contract the contractors shall submit three copies of the following drawings for approval of the Department.

i) Outline dimensional drawing of the PCC showing the general arrangement indicating the

following:

a) Busbar clearances;
b) power and control cable entry points;
c) Configuration of busbars;
d) Details of support insulations and spacings;
e) Outgoing power cable termination arrangements.

ii) Single line diagram of power control centre showing Protection, Metering etc.

iii) Cubicle wiring diagram.
iv) List of Firements with Ratings & makes / Models

16.0 Installation Testing and commissioning:

The power control centre shall be installed over the cable trench/cable pit using suitable size of MS channel including grouting of the channel with necessary bolts and nuts. Proper earthing of PCC shall be done using two independent copper/GI strip of sizes as indicated in the schedule. The channel shall be painted with one coat of red oxide primer and two coats of anticorrosive enamel paint of proper shade as directed by the Engineer-i-charge.

The pre-commissioning tests as required shall be done and the PCC shall be commissioned.

CHAPTER 3
LAYING OF CABLES

1.0 **Scope:**

This specification is intended to cover the requirements of installation and energizing of PVC/XLPE/PILCDSTA power cables including jointing of cables.

2.0 **Standards:**

The power cable and its fixing accessories shall comply with the latest relevant Indian Standards and National Electrical Code.

3.0 **Laying of Cables:**

3.1 **General:**

3.1.1 Before the commencement of cable laying, it shall be ensured by the Engineer-in-Charge that only ISI marked cables are used. It shall be the responsibility of the contractor to check the soundness and correctness of the size of the cable while taking delivery of the cable from stores. Any defect noticed shall be brought to the notice of the issuing authorities immediately. If any defects is noticed after the cable is laid or during the process of laying, it shall be brought to the notice of the Engineer-in-Charge and upon his satisfaction, that the cable is not damaged due to bad handling, it will be the entire responsibility of the contractor to retrieve the cable already laid and return the defective cable to store and take fresh length of the cable from the store and relay the same.

3.1.2 The material such as bricks, sand of best quality as approved by the Engineer-in-Charge only shall be used for cable laying works.

3.1.3 The contractor shall provide all the necessary labour, tools, plants and other requisites at his own cost for carrying out pumping of water and removing of water from trenches, if any, where required.

3.1.4 Installation shall be carried out in a neat, workman like manner by skilled, experienced and competent workman in accordance with standard practices.

3.1.5 While laying the cable care shall be taken to avoid formation of kinks and also damage to the cable. In the case of cable bends, it shall not have bent radius lesser than 20 times the overall diameter of the cable.

3.1.6 A cable loop of about five meters length and as directed by the Engineer-in-Charge / IDRBT shall be provided at the following locations.

a) Near the termination points
b) Near to the straight through joint

3.1.7 The method of cable laying and routing of cables, shall in every case be as directed by the Engineer-in-Charge / consultant / IDRBT.

3.1.8 Whenever cable passes through Hume pipes/GI pipes embedded across the wall in a building, both the ends of the pipe shall be suitably sealed.

3.1.9 Identification tags indicating the size of the cable and feeder designation shall be securely attached at both ends of the cable. Such tags shall also be attached to the cable at intervals of 50 Mtrs. The materials of the tag shall be of either 12 SWG GI sheet. In case of plastic, the details have to be engraved and incase of GI sheet, the details should be punched. Cable route markers shall be

provided at the intervals of 200 M with a minimum of one number route marker. The details of the route makers shall be as per the drawing. At the locations of straight through joints, necessary joint- markers shall be provided.

3.1.10 When cable runs vertically, it shall be clamped on mild steel flats or angle iron fixed on walls and are spaced at such intervals as to prevent buckling of the cables. All steel work shall be painted with a coat of red oxide and thereafter finished with suitable anticorrosive paints.

3.2 **Cable laid in ground:**

3.2.1. All MV cables (up to 1.1 KV) shall be laid at a minimum depth of 0.75 M & HT cables (1.1 KV to 11 KV) shall be laid at a depth of 1.0 M when laid in ground. When cable pass through roads, nallahs etc. they must be protected by either hume pipe or GI pipe of suitable dimensions.

3.2.2. Excavations of trenches shall be carried out as indicated in the drawing. The width of the trench at the bottom shall be 0.4 M for one cable. In case the total number of cables laid in trenches is more than one, then the width shall be such that the spacing between the cables is maintained as shown in the drawing. Before the cable is laid in the trench the bottom of the trench shall be cleared from stones and other sharp materials and filled with sand layers of 75 mm, as shown in the drawing.

3.2.3. While removing the cable from the drum, it shall be ensured that the cable drum is supported on suitable jacks and the drum is rotated to unwind the cable from the drum. The cable should never be pulled while unwinding from the drum. It shall be ensured that the cables are run over the wooden rollers placed in the trench at intervals not exceeding 2 M.

3.2.4. After placing the cables in the trench shall be filled in layers ensuring that each layer is well rammed by spraying water and consolidated. The extra earth shall be removed from the place of trench and deposited at a place as directed by the Engineer-in-Charge/consultant / IDRBT.

3.2.5. The HT cables shall be provided with RCC slabs (marked HT cable) on top as protection.

3.3 **Cables laid in built up trench:**

3.3.1. Before the commencement of cable laying the cable trench shall be drained properly. Cable shall be laid as explained in item 3.2. Cable shall be properly clamped to the cable supports, which are provided in the cable trench. The method of clamping shall suit the size of the cable and the cable supports, which are provided in the cable trench. The method of clamping shall suit the size of the cable and the cable supports, as directed by the Engineer-in-Charge / IDRBT.

Care shall be taken while removing and replacing the trench cover slab. It is the responsibility of the contractor to make good any damaged trench covers.

3.4. **Cable terminations and straight through joints:**

3.4.1. All cable jointing materials such as straight through joint boxes, cable compound, cable lugs, insulation tapes etc. shall be of best quality and as approved by the Engineer-in-Charge / IDRBT.

3.4.2. Cable glands for strip / armoured cables shall include a suitable armour clamp for receiving and securely attaching the armouring of the cable in a manner such that no movement of the armour occurs when the assembly is subjected to tension forces.

The cable gland shall not impose on the armouring, a bending radius not less than the diameter of the cable. The clamping ring shall be solid and of adequate strength.

Provision shall be made for attachment of an external earthing bond between the metallic covering of the cable and the metallic structure of the apparatus to which the cable box is attached.

3.5 **Sealing boxes:**

3.5.1 A sealing box, irrespective of the class of insulation of the cable for which it is intended, shall be so designed that it may be filled with compound after connecting the cable specially in flame proof/hazardous areas.

3.5.2 All parts and connection for attaching the armouring, wiping or clamping the metallic sheath in a sealing box, shall be easily accessible. This may be achieved by splitting the box or by providing a suitable cover or other such means.

3.5.3 The joints in the box shall prevent leakage of the compound.

3.5.4 Provision shall be made to ensure that the cores of the cable are efficiently sealed to prevent moisture penetrating along the strands or the cable conductors.

3.5.5 The sealing box shall be provided with compound filling orifices with suitable covers or plugs of size that will permit easy pouring of the compound.

In all cases where screwed plugs are used, one or more air vents shall be provided to ensure complete expulsion of air and total filling of the box with compound.3.5.6 The box shall be of sufficient length to allow for manipulation of the insulated cover without damage to them or to the insulation.

3.5.7 A sealing box intended to be attached directly to the apparatus shall be designed such that the box together with the connected cable may be detached from the apparatus without disturbing the sealing compound.

3.5.8 Cable sealing and dividing boxes intended for use in the flame proof areas shall comply additionally with the relevant requirements of IS:2148-1968.

4.0 **Testing**

Once cable is laid, following tests shall be conducted in the presence of Engineer-in-Charge, before energizing the cable:

i) Insulation resistance test (Sectional and Overall).
ii) Sheathing continuity test.
iii) Continuity and conductor resistance test.
iv) Earth test.
v) High voltage test.

Tests conducted shall be as per Indian Standards and National Electrical Code.

CHAPTER 4

EARTHING

1.0 SCOPE:

This specification is intended to cover the requirements of supply, installation, testing and commissioning of

a) Pipe earthing
b) Plate earthing
c) Strip earthing

2.0 STANDARDS:

Earthing installations shall conform to the Indian Electricity Rules - 1956, as amended from time to time and IS 3043-1989 "code of practice for earthing", with latest amendments.

3.0 **Earth electrode arrangement:**

3.1 Pipe electrode:

3.1.1 Electrode shall be made of CI pipe having a clean surface and not covered with paint, enamel or poorly conducting material. Galvanized pipe shall not be smaller than 100 mm ID. Earthing with pipe electrode shall be done as per the details indicated in IS: 3043/87.

3.1.2 Electrodes shall be embedded below permanent moisture level.

3.1.3 The length of pipe electrodes shall not be less than 2.5 m. if rock is encountered, pipes shall be driven to a depth of not less than 2.5 m with suitable inclination. Pipe shall be in one piece and deeply driven.

3.1.4 To reduce the depth of burial of an electrode without increasing the resistance, a number of rods or pipes may have to be connected together in parallel. The distance between two electrodes in such a case shall not be less than twice the length of the electrode. The earthing lead shall be connected by means of a through bolt, nuts and washers and cable socket.

3.2 **Plate electrode:**

For plate electrodes, minimum dimensions of the electrode shall be as under.

3.2.1 GI plate electrode: 600 x 600 x 6 mm thick.
3.2.2 Copper plate electrode: 600 x 600 x 3.15 mm thick
3.2.3 The electrode shall be buried in ground, with its faces vertical and top not less than 2.5 M from the surface of the ground.

3.2.4 Earthing using plate electrode shall be done as per details, indicated in drawing.

3.2.5 Plate electrodes shall have a galvanized iron water pipe, buried vertically and adjacent to the electrode. One end of pipe shall be at least 5 cm above the surface of the ground and need not be more than 10 cm. The internal diameter of the pipe shall be at least 19 mm. The length of pipe under the earth's surface shall be such that it shall be able to reach the center of the plate. The earthing lead shall be securely bolted the plate with two bolts, nuts, check nuts and washers.

3.3. **Strip or conductor electrodes:**

3.3.1. Strip electrode shall not be smaller than 25 x 1.6 mm, if of copper and 25 x 3 mm, if of

galvanized iron and steel. If round conductors are used as earth electrodes, their cross sectional area shall not be smaller than 3 sq.mm, if of copper and 6 sq.mm. if galvanized iron and steel.

3.3.2. Conductor shall be buried in trenches not less than 0.5 m deep.

4.0 **General:**

i) All materials used for connecting the earth lead with electrode shall be of GI in case of GI pipe and GI plate electrodes, and of tinned brass in case of copper plate electrode. The earthing lead shall be securely connected at the other end to the main board.

ii) The earthing lead from electrode onwards shall be suitably protected against mechanical injury by routing the earth wire / strip through a suitable size of GI pipe.

iii) All medium voltage equipments shall be earthed by two separate and distinct connections with the earth. In the case of high and extra high voltages, the neutral points shall be earthed by not less than two separate and distinct connections with the earth, each having its own electrode at the generating station or substation.

iv) All materials, fittings etc. used in earthing shall conform to Indian standard specifications wherever they exist. In the case of materials for which Indian standard specifications do not exist, such materials shall be approved by the Engineer-in-Charge.

v) The earth electrode shall be kept free from paint, enamel and grease.

vi) It shall be ensured that similar materials for respective earth electrodes and earth conductors are used.

vii) Earth electrode shall not be installed in proximity to a metal fence.

viii) Copper/GI strip shall be connected to the respective earth electrodes, either by brazing or welding respectively. The Copper/GI strip shall be jointed only either by brazing or by riveting at the end of over lapping portions. The overlap shall
not be less than 50 mm.

ix) Earthing clamps used for supporting earth strips shall be made of such materials so as to avoid bimetallic action between strip and clamps.

5.0 **Testing:**

The earth resistance of each electrode shall be measured by using a reliable and calibrated earth megger and the value shall be as per IS/IE rules.

B. LIST OF I.S. CODES FOR INTERNAL ELECTRIFICATION INSTALLATIONS.

1.	EXTERNAL ELECTRIFICATION wiring installation (system voltage not exceeding 650V)	IS 732 – 1989
2.	Graphical symbols used in Electro-technology art-XI-Electrical Installation buildings	IS 2032-1969
3.	Fire safety of buildings (General) Electrical Installation	IS 1646-1961
4.	3 pin plugs and sockets	IS 1293
5.	Earthing	IS 3043-1966
6.	Rigid steel conduits for electrical wiring	IS 9537-PII-1989
7.	Fittings for electrical wiring	IS 2667-1964
8.	Flexible steel conduits electrical wiring	IS 3430-1966
9.	Accessories for rigid steel conduit insulated cables	IS 3837-1966
10.	General and safety requirements for electric lighting fittings	IS 1913-1969
11.	Protecting of buildings and allied structures against lightning	IS 2309-1967
12.	Busbar ratings	IS 8084-1976
13.	On load change over switches	IS 4064-1978

14. TECHNICAL SPECIFICATIONS FOR VRF AC WORKS

CHAPTER-1

ELECTRICAL WORKS

1.0 SCOPE

The scope of work covers the requirements for the electrical works associated with air conditioning applications, namely, switch boards (MCCs), power cabling, control wiring, earthing, and remote control-cum-indicating panels. Electric motors are not covered here, as these are covered as part of the respective equipment specifications.

GENERAL

Unless otherwise specified in the tender specifications, all equipments and materials for electrical works shall be suitable for continuous operations on 415 V / 240 V ± 10% (3 phase / single phase), 50 Hz. AC system. Where the use of high voltage equipments is specified in particular works, all the respective equipments shall be suitable for continuous operation on such specified high voltage.

All electrical works shall be carried out complying with the Indian Electricity Rules, 1956 as amended to date.

All parts of electrical works shall be carried out as per appropriate CPWD General Specifications for Electrical work, namely, Part I (Internal) 2005 and National Building Code 2005 all as amended to date.

All materials and components used shall conform to the relevant IS specifications amended to date.

1.2 SWITCH BOARDS / MOTOR CONTROL CENTRE

The main switch board in the Each AHU room shall be floor mounted, free standing cubical type and shall be factory built fabricated by one of the reputed switch board manufacturer. It shall be suitable for termination of the incoming cable(s)/ bus trunking from top/ bottom as per site conditions. The switchboards in air handling unit (AHU) rooms shall be wall mounted, or floor mounted as feasible at site and as approved by the Engineer- in – Charge, but they shall be cubical designed, unless otherwise specified and from open able from front.

The capacity of switch gear, starters etc. shall be suitable for the requirements of loads fed/controlled. Starting currents shall be duly considered in case of motor loads.

MPCB shall be used up to and including 63 A for motor applications and MCCB shall be used for other loads. ACB shall be used for 630 A and above ratings.

All MCCBs / MPCBs shall be of AC 23 duty as per IS: 4064-1978 as amended up to date.

Switch boards controlling motors shall house starters for motors, unless otherwise specified. The starter shall be located adjacent to the controlling switch gear.

vi) One-volt meter with selector switch, a set of indicating lamps and fuses for voltmeter and lamps shall be provided at each switchboard. One ammeter with CTS, and selector switch shall be provided with each motor starter. Instruments shall be flush mounted with the panel and have a glass index not higher than 1.5. The instruments and accessories shall be provided whether or not specifically indicated in the tender specifications.

vii) The fabrication of switchboard shall be taken up only after the drawings for the fabrication of the same are approved by the Engineer-in-Charge.

viii) Switchboards shall be fabricated as per specifications indicated in sub-para above.

ix) The layout of bus bars and cable alleys shall be designed for convenient connections and inter-connections with the various switchgear. Connections from individual compartments to cable alleys shall be such as not to shut down healthy circuits in the event of maintenance work becoming necessary on a defective circuit.

x) Care shall be taken to provide adequate clearances between phase bus bars as well as between phase bus bars, neutral and earth.
Where terminations are done on the bus bars by drilling holes therein, extra cross section shall be provided for the bus bars. Alternatively, terminators. Cables connected to the upper tiers shall be duly clamped within the switchboard.
Provision shall be made for proper termination of cables at the switchboards such that there is no strain either on the cables, or on the terminators. Cables connected to the upper tiers shall be duly clamped with the help of PVC cable ties within the switchboard.
Identification labels shall be provided against each switchgear and starter compartment, using plastic engraved labels.
Metallic danger conforming to relevant IS shall be fixed on each electrical switchboard / MCC.

1.3 POWER CABLING

i) Unless otherwise specified, the power cables shall be XLPE insulated, PVC outer sheathed aluminium / copper conductor, armoured cables rated for 1100 V grade as per IS: 1554 (Part 1) - 1988. The power cables shall be of 2 core for single phase, 4 core for sizes up to and including 25 sq.mm, 3-1/2 core for sizes higher than 25 sq.mm for 3 phase. Where high voltage equipments are to be fed, the cables shall be rated for continuous operation at the voltages to suit the same.
ii) Power cables shall be of sizes as indicated in the tender specifications. In all other cases, the sizes shall be as approved by the Engineer-in-Charge, after taking into consideration the load, the length of cabling and the type of load.
iii) Cables shall be laid in suitable metallic trays suspended from ceiling, or mounted on walls, or laid directly in ground or clamped on structures, as may be required. Cable ducts shall not be provided in plant rooms. Cable trays shall be sheet steel with adequate structural strength and rigidity type, designed with adequate dimensions for proper heat dissipation and also access to the cables with necessary supports and suspenders shall be provided by the Air-conditioning contractor as required. Cable laying work shall be carried out in accordance with 15.3(iii) above. The scope of work for the Air-conditioning contractor shall include making trenches in ground and refilling as required, but excludes any masonry trenches for the cable work.

CONTROL WIRING

i) Control wiring in the plant rooms and AHU rooms shall be done using ISI marked PVC insulated and PVC sheathed, 1.5 sq mm copper conductor,250V grade, cables drawn in ISI marked steel or PVC conduits. Alternatively, armoured multi-core copper conductor cables may also be used for the purpose. The control cables interconnecting the plant room and the AHU rooms shall be of multi-core armoured type only, and suitable for laying direct in ground.
ii) The number and size of the control cables shall be such as to suit the control system design adopted by the Air-conditioning contractor.

iii) ISI marked steel conduits pipes, wherever used, shall be of gauge not less than 1.6 mm thick for conduits upto 32 mm dia and not less than 2.0mm thick of higher sizes. All conduit accessories shall be threaded type with substantial wall thickness.
Control cables shall be of adequate cross section to restrict the voltage drop.
In the case of control wires drawn through steel conduits, the wire drawing capacity of conduits as specified under the CPWD general specifications for Electrical Works (Part l) 2005 shall not be exceeded.
Runs of control wires with in the switchboard shall be neatly bunched and suitably supported/clamped. Means shall be provided for easy identification of the control wires.
Control wiring shall correspond to the circuitry/sequence of operations and interlocks approved by Engineer-in –Charge.
EARTHING

i) Provision of earth electrodes and the type of earthing shall be as specified in the tender specifications.
ii) The earth work shall be carried out in conformity with CPWD Specifications for Electrical works (Part-I), Internal 2005 / NBC 2005.
iii) Metallic body of all medium voltage equipments and switch boards shall be connected by separate and distinct earth conductors to the earth stations of the installations; looping of such body earth conductors is acceptable from one equipment, or switch board to another.
iv) G.I. plate earthing shall be provided for PTAC plants and reciprocating central AC plants upto 100 TR capacity. Above 100 TR reciprocating units, copper plate earthing shall be provided.
v) The size of earth conductors for body earthing of equipments shall be as under:-

Motor upto and including 10 HP rating 2Nos.3mm dia copper wire / 2 nos. 4mm dia GI wire
12.5 HP to 40 HP 2Nos.4mm dia copper wire / 2 nos. 6mm dia GI wire
50HP to 75 HP 2Nos.6mm dia copper wire / 2 nos. 25x3mm GI strip
Above 75 HP 2Nos.25mm x 3mm copper strip / 2 nos. 25x6mm GI strip

Switch boards with incoming rating upto

100 A 2Nos.3mm dia copper wire / 2 nos. 4mm dia GI wire
125 A to 200 A rating 2Nos.6mm dia copper wire / 2 nos. 25x3mm GI strip
Above 200 A rating 2Nos.25mm x 3mm copper strip / 2 nos. 25x6mm GI strip
Armoring of cables shall be connected to the body of the equipments/switch board at both the ends. Compression type glands shall be used for all such terminations in the case of PVC cables.

MOTOR STARTER

i) The motor starter shall conform to IS: 1822 “Motor starters of voltage not exceeding 1000 volts” and shall be air insulated and suitable for 415 volts, ± 10%, 50 Hz, 3 phase AC supply. Enclosures shall have protection of IP 52 for Indoor applications and IP 55 for outdoor applications.

ii) Starter for the motor shall be direct on line (D.O.L) for motors up to and including 7.5 H.P. rating and automatic star-delta close transition type for motors of higher ratings unless otherwise specified in the tender specifications. Starters shall be rated for intermittent duty. Starting current should not exceed two times the full load current.
The starter shall be mounted on the main electrical control panel/ unit mounted / self-mounted as specified.

Each starter shall be provided with the following protections: -
Thermal overload on all the three phases with adjustable settings,
Under voltage protection, and
Independent single phasing preventer. (current sensing type)

Adequate number of extra NO / NC contacts for interlocks, indicating lamps etc. shall be provided on the starter / contractor.

1.7 PAINTING
All panels shall be supplied with the manufacturer’s standard powder coating.
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CHAPTER- 2.0

INSPECTION, TESTING AND COMISSIONING

2.0 SCOPE

This chapter covers the initial inspection and testing of condenser, AHUs at manufacture's works, initial inspection of other equipments/ materials on receipt at site, final inspection testing & commissioning of all equipment at site & description of testing requirements & procedure.

2.1 INITIAL INSPECTION AT MANUFACTURE'S WORKS

Compressor

i) Salient features such as model, No. of cylinders, capacity control, provision of crank case heaters, type of lubrication etc. shall be verified against the requirements visually without opening the compressors.

ii) Manufacturer's internal test certificates shall be scrutinized to check compliance with the requirements as specified in the order.

iii) Rate of leak test shall be checked by developing 7 Kg/sq.cm (gauge) pressure on HP side and 1 Kg/ sq.cm on LP side using dry Nitrogen air or carbon dioxide. The leakage through the valves, shaft seal, cylinder heat gasket etc should not be more than 0.3 Kg/sq.cm per cylinder in 4 minutes time. Alternatively, this may be demonstrated through vacuum.

iv) Pneumatic pressure test shall be carried out at 22 Kg/ sq.cm and by submerging the compressor in water for 1 hour & there shall be no leakage.

v) Free running test shall be carried out at the rated speed specified in contract. This test shall be carried out for 30 minutes in open space. During this running test following operations are to be noted:

Manual loading / unloading of capacity control
Lubrication oil pressure
Safety valve operation

Vacuum test for the compressor for 0.5mmHg.

Condensers

i) Salient features like number of tubes, inside diameter of tubes (from which the gauge of the tube can be verified), no. of passes, material of fins, length of condenser, provision of fittings like safety valve, water, gas connection shall be verified during stage inspection. The tube thickness shall be checked.

ii) Manufacturer's internal test certificates shall be furnished and it shall be verified against contract requirements.

Pneumatic pressure test at twice the normal condensing pressure for gas side of condenser shall be carried out.

Air Handling Units:

i) Salient features such as model, size, physical dimensions, and other details of various sections, fan motor details, fan dia, static pressure etc. shall be verified against the contract requirements.

ii) Manufacturer's internal test certificates for the motor and air handling unit shall be furnished and scrutinized as per contract requirements.

iii) Test certificate for static and dynamic balancing of the fan/ blower should be furnished. Fan balancing may be witnessed by Engineer-in-Charge or his authorized representative.

iv) Salient features like, type, material, no. and gauge of fins and tubes and no. of rows of cooling coil shall be furnished and verified with reference to contract requirements during stage inspection.

v) Hydraulic pressure to the extent of 10 Kgf/sq.cm or pneumatic pressure of 21 Kgf/ sq.cm shall be applied to cooling coil and this pressure should be maintained for 1 hour and no drop should be observed indicating any leaks.

2.4 INITIAL INSPECTION AT SITE

Ducting

i) The sheet used for ducting shall be checked for physical test at site. The physical test should include the sheet thickness and bend test as per relevant IS specifications.

ii) Zinc coating of GSS sheet as mentioned in the tender documents may be got tested from a laboratory to verify that same meets the contract requirements.

Switch Gear, Control Gear, and Measuring Instruments

These should be of specified make. For air circuit breaker manufacturer's test certificate shall be furnished by contractor and the same shall be verified as per contract requirements.

Electric Motors

Electric motors should be of specified make, manufacturer's test certificate for electric motor shall be furnished.

Insulation and acoustic lining

i) Physical verification for thickness and make should be made as per contract before application of insulation.

ii) Manufacturer's test certificate for density should be furnished.
Note: Accuracy of testing instruments shall be as mentioned in the final inspection procedure.

FINAL INSPECTION

i) After completion of the entire installation as per specification in all respects, the AC contractor shall demonstrate trouble free running of the AC equipments and installation for a period of minimum 120 hours of running as detailed under following points:
After the installation work has been completed by the contractor, he will conduct tests and make adjustments as may be necessary to satisfy himself that the plant including low side equipments is capable of continuous running. There after he will offer to the department a running-in period of 7 days subject to a minimum aggregate of 120 hrs at his cost. The duty cycle of the plant during this running in period shall be same as that specified in the tender documents. In case of multiple compressor installations, all the compressors should be run by rotation. The plant will be operated and a log of all parameters will be maintained during this period. The contractor will be free to carry out necessary adjustments etc during this period without stopping the plant. Record of inside conditions will be made during this period to check the same are as per NIT requirements. The plant will be said to have successfully completed the running-in-period, if no break down or abnormal/ unsatisfactory operation of any machinery occurs during this period. After this the plant will be made available for beneficial use. After the plant has operated without any major break down/ trouble and inside conditions are maintained as per NIT requirements for the above specified running in period, it shall be taken over by the department subject to guarantee clause mentioned elsewhere in the tender. This date of taking over of plant after trouble free operation during the running in period shall be the date of acceptance.

TESING REQUIREMENTS AND PROCEDURES
Balancing of all air systems and all tests as called for in the specification shall be carried out by the HVAC contractor in accordance with the specifications and relevant local codes if any.
Performance
tests of individual equipment and control shall be carried out as per manufacturer's recommendation.

All tests and balancing shall be carried out in the presence of Engineer-in-Charge or his Authorized representative.

The whole system balancing shall be tested with microprocessor based hi-tech instruments with an accuracy ± 0.5%.
The instrument shall be capable of storing data and then down loading into a P.C. The HVAC contractor shall provide a minimum but not limited to the following instruments:

- Microprocessor based calculation meter to measure DB and WB temperature, RH and Dew Point
- Velo meter to measure air volume and air velocity
- Pitot tube
- Electronic rotary vane Anemometer
- Accubalance flow measuring hood

The contractor shall be responsible to provide necessary sockets and connections for fixing of the testing instruments, probes etc.

Air Systems
Systems are to be balanced by first adjusting the total flow at the fan, then by adjusting main dampers and branch dampers. Only final minor adjustments are to be made with register and diffuser dampers. Balancing of the air system shall be accomplished without causing objectionable air noise. Baffles and orifice plates required for proper air balance shall be furnished and installed by the contractor.
Basically the following tests and adjustments are required.

i) Test all fan systems to provide proper cfm/ cmh.
ii) Adjust fresh air, return air and exhaust dampers to provide proper air quantities in all modes of control.
iii) Test and record fresh air, return air and mixed air temperature at all air handling units. Test and record data at all coil after air and hydronic systems are balanced. Measure wet and dry bulb temperature on cooling coils.
iv) Make point tube transverse at all main supply and return ducts to set proper air quantities. Adjust all zone and branch dampers to proper cfm /cmh.
Test and adjust each register, grills, diffusers or other terminals equipments to within 5% of design air quantity. Each opening shall be defined on the test report by size, manufacturer's model, room location, design cfm and actual cfm. Outlets shall be adjusted to minimize objectionable drafts.

Test and record static pressure drop across all filters and major coils.

High velocity duct systems shall be tested for leakages. If excessive or audible leakage is detected, the defect shall be repaid by the contractor. Sufficient static pressure readings shall be taken from the air handling units to the terminal units to establish system static pressure.

Balancing Tolerance
System shall be balanced with in the following tolerance:

1. Duct leakage rates (at operating pressures)
   - Low pressure ducts (0 to 0.5 Kpa) — 5% of full flow
   - Medium pressure ducts (0.5 to 3 Kpa) — 1% of full flow
   - High pressure ducts (greater than 3 Kpa) — 1% of full flow
2. Air flow rates
   - Under 70 L/S — 10% of flow
   - Over /at 70 L/S — 5% of flow

3. Water flow rates

Chilled Water	2% of flow
Other	5% of flow

4. Heat flow rates

Heat exchangers	5% of design capacity

Procedure:

Review all pertinent plants, specifications, shop drawings and other documentation to become fully familiar with the systems and their specified and intended performance.
Furnish equipment and instruct sheet metal trade on proper use for conducting duct leakage tests. Conduct first test as a way of instructing the above trades in the presence of the Department's representative.

Test performance and continuously record on a 24-hour basis, temperature and humidity levels where control equipment is provided for that purpose in certain critical areas. Before commissioning of the equipment, the entire electrical installation shall be tested in accordance with relevant BIS codes and test report shall be furnished by a qualified and authorized person.

Reports

Provide 3 copies of the complete balancing and testing reports to the department. Report shall be neatly typed and bound suitable for a permanent record. Report forms shall contain complete test data and equipment data as specified and safety measures provided as follows:

i) Safety measures
All equipments shall incorporate suitable safety provisions to ensure safety of the operating personnel at all times. The initial and final inspection reports shall bring out explicitly the safety provisions incorporated in each equipment.

Final documentation

The contractor shall leave the system operation in complete balance with water and air quantities as shown on drawings. Set stops on all balancing valves and lock all damper quadrants in proper position. Secure all automatic damper and valve linkages in proper positions to provide correct operating ranges. Proper damper positions shall be marked on ducts with permanent indication. Notify the department of any areas marginal or unacceptable system performance.
The above tests and procedures are mentioned herein, for general guidance and information only, but not by way of lamination to the provisions of conditions of contract and design/ performance criteria. Upon commissioning and final handover of the installation, the HVAC contractor shall submit (within 4 weeks) to the Engineer-in-Charge/ department 6 (six) portfolios of the following indexed and bound together in hard cover ring binder (300 x 450 mm) in addition to the completion drawings as follows:

Completion Drawings
Three sets of following laminated drawings shall be submitted by the contractor while handing over the installation to the Department. Out of this one of the sets shall be laminated on a hard base for display in the AC plant room. In addition, one set will be given on compact disc.
a) Plant installation drawings giving complete details of all the equipments, including their foundations,

c) Piping layout drawings including insulation giving sizes and lengths of all the pipes and the sizes and locations of all types of valves, and including isometric drawings for entire piping including pipe connections to the various equipments and insulation details wherever required.

d) Duct layout drawings with their sizes and locations, and sizes and locations of all dampers, grills and diffusers.
e) Line diagram and layout all electrical control panels giving switchgear ratings and their disposition, cable feeder sizes and their layout,
f) Control wiring drawings with all control components and sequence of operations to explain the operation of control circuits.
g) Comprehensive operation and maintenance manual

h) Test certificates, consolidated control diagram and technical literature on all controls.

i) Equipment warranties from manufacturers
j) Commissioning and testing reports
k) Rating charts for all equipment
l) Log books as per equipment manufacturers standard format
m) List of recommended spares and consumables
n) Any special tools required for the operation or the maintenance of the plant shall be supplied free with the plant.

At the close of the work and before issue of final certificate of completion by the Engineer –in-Charge, the contractor shall furnish a written guarantee indemnifying the department against defective materials and workmanship for the Defects liability period. The contractor shall hold himself fully responsible for re installation or replaced free of cost to the department.
Any defective material or equipment supplied by the contractor.
Any material or equipment supplied by the department which is proved to be damaged or destroyed as a result of defective workmanship by the contractor.

Cassette type indoor units.
These units shall be installed between the bottom of finished slab & top of false ceiling.

The maximum allowable height for the cassette type units shall not exceed 350 mm.

The unit shall be pre charged with first charge of R 32 / R 134A / R 407 / R 410 refrigerant. Additional charge shall be added as per refrigerant piping at site.

The unit must have in built drain pump, suitable for vertical lift of 750 mm.

The unit casing shall be Galvanized Steel Plate / or as per manufacturer’s specifications.

Unit must be insulated with sound absorbing thermal insulation material, Polyurethane foam. The noise level of unit at the highest operating level shall not exceed 42 dB(A), at a vertical distance of 1.5 m from the grille of the unit.

Unit shall have provision of connecting fresh air without any special chamber & without increasing the total height of the unit (288 mm maximum).

The unit shall be supplied with suitable decorative panel.

The unit shall be supplied with Resin Net filter with Mold Resistance. The filter shall be easy to remove, clean & re install.

The unit will be connected in series to a suitable outdoor unit & it must be possible to
Operate the unit independently, through corded/ cordless remote specified in the “Bill of quantities”.
The unit will be further connected to Intelligent Building Management
System (To be supplied by other vendors) & it shall be possible to operate the unit

through this IBMS system.

The unit shall be supplied with following from the factory with following:

Operation Manual
Installation Manual
Paper pattern for installation
Drain hose/ Clamp metal/ Washer fixing plate/ Sealing pads/ Clamps/ Screws/
Washer for hanging bracket/ Insulation for fitting

B. Wall Mounted Units.
Wall mounted units must be compact & stylish design that does not detract from the
Décor of the room.

The unit shall be precharged with first charge of R 32 / R 134A / R 407 / R 410 refrigerant.

Additional charge shall be added as per refrigerant piping at site.

Each indoor unit must have electronic expansion valve operated by microprocessor thermostat based temperature control to deliver cooling/ heating as per the heat load of the room.

The unit must have provision of adding drain pump kit if required & specified. The drain pump must be suitable to lift drain up to 1000 mm from the bottom of the unit.

Unit must be insulated with sound absorbing thermal insulation material, polystyrene/Polyethylene foam. The noise level of unit at the highest operating level shall not exceed 46 dB(A), at a vertical distance of 1.5 m from the grille of the unit.

The unit shall be supplied with Resin Net filter with Mold Resistance. The filter shall be easy to remove, clean & re install.

The unit grille must be washable with soap solution.

It shall be possible to set minimum 5 steps of discharge angle by remote controller.

It shall be possible to fit drain pipe from either side of the unit (Left or right)

The unit will be connected in series to a suitable outdoor unit & it must be possible to
Operate the unit independently, through corded/ cordless remote specified in the bill of quantities. The unit will be further connected to Intelligent Building Management System (To be supplied by other vendors) & it shall be possible to operate the unit through this IBMS system.

The unit shall be supplied with following from the factory with following:
Operation Manual
Installation Manual
Installation panel
Paper pattern for installation
Insulation tape/ Clamps/ Screws

A – 1: COPPER TUBING.

The parent material used for air – conditioning system refrigerant tubing should be Copper tubes, tubes and fittings conforming to following specifications:

1. Material composition should be conforming to C-1220 (JIS-H-3300) or C-12200 (ASTM). It should have a minimum Copper content of 99.9 % and Phosphorus content between0.015 % and 0.040 %. It should have low residue (below 0.038 gm / sq mtr). The material should also be as per the RoHS norms specified by EU; that is, Mercury,
Chromium and Lead contents below 1000 ppm, and Cadmium content below 100 ppm.

2. Physical properties of the material should conform to JIS-H-3300 or ASTM-B-68 & B-75, should be tested for Tensile / elongation / hardness / grain size tests as per ASTM B –280.

3. Dimensional tolerance should be as per JIS-H-3300 or ASTM-B-251. The tubes should be tested using non-destructive Eddy current test before the final anneal, as per JIS- H-3300 or ASTM-E-243.

4. Heat treatment should be carried out in non-oxidizing atmosphere to ensure oxygen free and Cuprous oxide-free surface.

5. Proper certificates describing composition and results of all tests carried out must be supplied with each consignment. These certificates, along with check results for dimensional and thickness accuracy are recommended to be carried out for every delivered lot, should be maintained till handing over of the project.

6. Tubes should have 360-degree concentric wall thickness along their entire length.

7. Wall thickness for soft tubes (bright annealed mirror finish) should be 0.8 mm for ¼", 3/8" & ½" tubes, 1.0 mm for 5/8" tubes, 1.2 mm for ¾" tubes. Wall thickness for hard tubes should be 1 mm for 7/8", 1" and 1.1/8" tubes, 1.1 mm for 1.1/4", 1.2 mm for 1.3/8"and 1.3 mm for 1.5/8" tubes.

8. Wall thickness for elbows and fittings should be minimum 0.2 mm more than corresponding tube / tube size.

9. For 1/4" to sizes up to ¾", pulley type benders should be used for soft tubes and brazed joints should be avoided as far as possible. Similarly, for half hard tubes of size 3/4" or more, one side expanded tubes must be used and use of couplings should be avoided as far as possible.

A -2: TUBING DESIGN:

1. Contractor should study the tender / GFC drawings carefully, and should carry out detailed survey of site, relating the drawings with site, and understand the system design and site limitations.

2. Contractor should also collect final architectural and reflected ceiling plans from client and study the drawings for any mismatches with the HVAC drawings received.

3. Contractor should discuss any such mis- matches and any doubts regarding system design with the consultant and get all doubts clarified.

4. Before commencement of tubing work, proper shop drawings must be generated by the contractor, and same should be got approved from the consultant. The drawings

must clearly indicate schematic flow diagrams for various circuits, tube sizes, description and quantities for refrigerant joints, indoor and outdoor unit models and room / block /floor names, tube routes, levels for horizontal tubes, details regarding insulation type and thickness and surface treatment for insulation, typical and critical sections and any other details to explain the entire tubing layout to the installer.

5. Tube sizing and routing must be carried out taking into consideration various site constraints and system manufacturer's recommendations.

6. Care should be taken to design tubing as per the manufacturer's recommendation for maximum tubing total length, maximum tubing length after first tapping, vertical height difference between outdoor and indoor units etc. and necessary corrections should be carried out in outdoor unit capacity if required.

A – 3 : REFRIGERANT TUBING INSTALLATION WORK:

1. The installer must first study the shop drawings in detail with respect to the site condition and point out any fouling / alternatives to the agency prepare shop drawing sand necessary revisions must be carried out in the drawings, to be approved by consultant.

2. The layout must be marked on the true ceiling and any civil openings required should be marked and got done from concerned agency.

3. Supports as described in BOQ / specifications should be installed, leaving adjustable free length for supports.

4. Before installation, the tubes and tubes must not be removed from their original packing. Proper storage of tubing is a must to maintain the temper of the tubes / tubes. Any abrasion on ends / surface, or any in grace of dirt / dust must be avoided. Proper Polyethylene sheets should be used for covering the tubes and tubes, while wooden pellets and soft expanded Polyethylene / rubber sheets should be used as floor supports.

5. Necessary loops / slopes must be followed as recommended by system manufacturer.

6. Tubes must be cut to required sizes using cutting tools recommended by system manufacturer.

7. Using proper quality of brazing set, Oxygen / Acetylene and Copper brazing rods having minimum 2% Silver content.

8. During brazing, Nitrogen must be filled in the Copper tubing at a mild positive pressure and must be kept bleeding out continuously, to prevent any oxidation of parent material.

9. After tubing work, each circuit should be pressure tested as per the system manufacturer's recommendation and as per the procedure described in the following paragraphs. A certificate mentioning the test pressure, time of first and final pressure readings, make, model, serial number, range and least count of the gauge used, along with a copy of valid calibration certificate must be maintained, duly signed by the inspecting technician, and client /PMC representative.

10. After pressure testing, insulation must be completed as per the material, make and thickness mentioned in the approved shop drawing. The joints of insulation must be sealed by minimum 50 mm wide Aluminum adhesive tape. Care should be taken to avoid any air gaps between tube / tube and insulation sleeves, and between two insulation sleeve joints.

11. Proper tagging must be carried out to trace the tubing to respective indoor and outdoor circuits.

12. The tubes exposed to sunlight must be covered / cladded / treated to prevent damage from UV radiation and bird pecks / tampering, as mentioned in the BOQ. The cladding should be made out of 26 G Aluminum sheet or G.S.S. sheet. While cladding, care should be taken to avoid penetrating the insulation by screws. Short screws of metallic straps should be used for securing cladding sheets. Instead of cladding, glass cloth, with two coats of protective resin should be used.

13. While charging refrigerant, manufacturer's recommendations must be strictly followed, and charging must be carried out using proper charging hose, gauge manifold with calibrated gauges and electronic weigh scale. Further leak check using a gas leak detector should be carried out. Charging must be carried out after proper evacuation of the tubing. The quantity of refrigerant to be charged should be calculated by totalizing the liquid tube volume as per the manufacturer's recommendation.

A – 4: RECOMMENDATIONS FOR PRESSURE TESTING:

Refrigerant tubes carry refrigerant at pressures different from atmospheric pressure.

When pressure inside tubes is more than atmospheric pressure, refrigerant may escape to the atmosphere, causing commercial loss due to loss of refrigerant, inefficient system performance or even system breakdown and contamination of surroundings. When pressure inside the tubes is less than atmospheric pressure, such as in case of suction tubes of some low temperature refrigeration machines, or during pump-down cycle of normal air-conditioning systems, leakages in tubes leads to ingress of air and moisture, causing severe system damage. Therefore, it is a must that the refrigerant tubing is thoroughly tested for leakages. Pressure testing for any tubing must be carried out at a pressure higher than the maximum operating pressure within the system. It is recommended that the pressure recommended by manufacturer be followed very strictly. Testing at lower pressures may lead to non- detection of some small leakages, while testing at higher pressures may lead to damage to some factory manufactured components within the system. Generally, for R-410 systems a pressure of around 650psig is used. Nitrogen is the most common gas used for carrying out pressure testing. It has numerous advantages, some of which are listed below:

1. Nitrogen is easily available as a commercial gas packed in easy to handle cylinders.

2. Nitrogen, being the most abundant component of the atmosphere, is safe for leaking out without contaminating the atmosphere.

3. Nitrogen is less costly as compared with other gases.

4. Nitrogen is safe for handling and testing.

5. Nitrogen does not readily react with system components Pressure gauge/s used for testing must be calibrated and a calibration certificate with traceability to a Government(National) Physical Laboratory must be documented. The gauge should be capable of measuring pressure at least 10% above the reading to be recorded.

A – 5: PROCEDURE FOR CARRYING OUT PRESSURE TEST

1) Ensure that the tubing to be tested is properly secured/supported and the openings have been sealed off as per manufacturer's recommendation.

2) Install pressure gauge/s at strategic location/s where it shall not be tampered with, at the same time, should be easily visible.

3) Install a valve and connecting tubing so that the open end of the tube reaches the cylinder outlet without moving the cylinder.

4) Connect the tube to the cylinder and after ensuring proper connection, crack open the cylinder valve, keeping an eye on the pressure gauge. Let the pressure rise to around10 psig.

5) Check for proper sealing of all flanged / flare nut joints or valves/ valve glands looking for noise of escaping Nitrogen and seal same.

6) Open the cylinder valve again and raise the pressure to 200 psig.

7) Check the tube line for major leakages at brazed joints, elbows, valve glands, equipment end connections and tube seams with the help of soap water. Make up the leaks by tightening nuts. If the leaks are in brazed joints, flush out Nitrogen and carry out necessary re-brazing.

8) Open the cylinder valve again and increase the pressure to 150 psig less than the final test pressure. Repeat leak check as above.

9) Open the cylinder valve again and slowly raise the pressure to the manufacturer recommended pressure. Carry out a thorough leak check.

10) Record the pressure and time. Let the pressure stand for 24 hours without tampering. Check the pressure again after 24 hours. If pressure has dropped, the tubing should be checked very thoroughly for minor leakages. It is important to follow this 24 hours period as it gives enough time to detect minute leakages, and it removes the doubt created by thermal expansion of Nitrogen (as after exact 24 hours, ambient conditions are generally same).

11) In case of tubing extending to lengths more than 30 m and / or having more than 20 site fabricated joints, the pressure should be recorded after 24 hours as well as after 48 hours, so that all leakages are detected and made up.

12) After detecting and making up any leak, the pressure testing must be carried out once again from beginning.

A – 6 : DOCUMENTATION RECOMMENDED FOR ENSURING PROPER QUALITY ASSURANCE:

1. Manufacturer’s certificate with every Delivery Challan declaring composition of parent material

2. Signed and approved Shop drawings approved by Architect, prior to start of work

3. Pressure test report signed by Architect/ Client / Equipment manufacturer / PMC / Consultant.

4. False Ceiling closure check list duly signed by Architect / Client / Equipment manufacturer/ PMC /Consultant.

GENERAL:

ACR GRADE COPPER TUBES AND FITTINGS: SIZES AND SPECIFICATIONS

Tube material Specification:

(CFC- free refrigerant compatible tubes produced using Total loss lubricants)

1. De-oxidized High Phosphorized copper (DHP grade) raw material, with Chemical Composition of Copper = 99.9 %; Phosphorus = 0.015 to 0.040 %

2. RoHS Compliant

3. 360-degree concentric Wall thickness along the entire length of the tubes

4. Half hard drawn copper tubes should confirm to ASTM B75/ASTM280 (C12200) / JIS H:3300(C1220) / BS2871 part 3 (C106). Use Half Hard Temper Type for tube sizes above19.1 mm.

5. Soft copper tubes, bright annealed (mirror finish) should confirm to ASTM B68 / JIS H:3300

6. Super clean quality with low residual content below the permissible levels of 0.038 g/m2 for compatibility with use of CFC-free refrigerant.

7. 100 % Eddy Current Tested Tubes are to be used

8. Proper packaging, Storage and Traceability of the tubes.
Copper tube and Fittings Sizes and Insulation Specifications for CFC-free Refrigerant.

S. No.	OUTER DIAMETER IN INCH & (MM)	WALL THICKNESS IN GUAGE & (MM)	LENGTH IN FEET & (MTRS.)	TEMPER	WEIGHT PER METER (kg.)	SOCKET AND ELBOW THICKNESS IN SWG & (MM)	RUBBER INSULATION THICKNESS
1.	1/4" (6.4 mm)	21 (0.8 mm)	50' (15.24)	Soft	0.1265	18 (1.2mm)	15mm
2.	3/8" (9.5 mm)	21 (0.8 mm)	50' (15.24)	Soft	0.199	18 (1.2mm)	15mm
3.	1/2" (12.7 mm)	21 (0.8 mm)	50' (15.24)	Soft	0.2714	18 (1.2mm)	15mm
4.	5/8" (15.9 mm)	19 (0.99 mm)	50' (15.24)	Soft	0.4241	18 (1.2mm)	15mm
5.	3/4" (19.1 mm)	19 (0.99 mm)	50' (15.24)	Soft	0.5147	18 (1.2mm)	20mm
6.	1/4" (6.4 mm)	21 (0.8 mm)	12' (3.658)	Half Hard	0.1265	18 (1.2mm)	15mm
7.	3/8" (9.5 mm)	21 (0.8 mm)	12' (3.658)	Half Hard	0.199	18 (1.2mm)	15mm
8.	1/2" (12.7 mm)	21 (0.8 mm)	12' (3.658)	Half Hard	0.2714	18 (1.2mm)	15mm
9.	5/8" (15.9 mm)	19 (0.99 mm)	12' (3.658)	Half Hard	0.4241	18 (1.2mm)	15mm
10.	3/4" (19.1 mm)	21 (0.8 mm)	12' (3.658)	Half Hard	0.4164	18 (1.2mm)	20mm
11.	7/8" (22.2 mm)	21 (0.8 mm)	12' (3.658)	Half Hard	0.489	18 (1.2mm)	20mm
12.	1.0" (25.4 mm)	20 (0.88 mm)	12' (3.658)	Half Hard	0.6054	18 (1.2mm)	20mm
13.	1 1/8" (28.6 mm)	19 (0.99 mm)	12' (3.658)	Half Hard	0.7865	18 (1.2mm)	20mm
14.	1 1/4" (31.8 mm)	18.5 (1.1 mm)	12' (3.658)	Half Hard	0.843	16 (1.6mm)	20mm
15.	1 3/8" (34.9 mm)	18 (1.21 mm)	12' (3.658)	Half Hard	1.155	16 (1.6mm)	20mm

16.	1 1/2" (38.1 mm)	17.5 (1.3 mm)	12' (3.658)	Half Hard	1.340	16 (1.6mm)	20mm
17.	1 5/8" (41.3 mm)	17 (1.43 mm)	12' (3.658)	Half Hard	1.594	16 (1.6mm)	20mm

Use Soft tube only for Indoor Unit Connection

10. INSULATION TO REFRIGERANT PIPING:

FR nitrile rubber / cross linked closed cell polyethylene tube insulation of 13mm upto 1”dia pipes and 19mm thick for 1” and above shall be used for copper piping both for suction line and liquid line. All joints shall be sealed with self-adhesive tape or with heat.

11. COMMUNICATION CABLE AND CONTROL CABLING:

Communication cable and control cabling: Communication cable and control cabling should be of non-polar shielded 2 core cable shall be laid in 20 mm dia PVC conduits of required size. PVC conduit should be clamped neatly maintaining a distance from power cables, Cable terminations and dressing shall be done properly and neatly.

12. DRAIN PIPING:

PVC drain piping shall be used for the drain piping. Proper care shall be taken to lay the drain piping with sufficient slope and should be clamped or supported at 1.5 m interval. All drain pipe joints shall be done with adhesive. Drain piping should be tested for leaks before commissioning. After testing for leaks, drain pipe shall be insulated with 9 mm thick nitrile rubber tube insulation. Insulation shall be finished with self-adhesive black cotton tape.

3.0 FILL THE TECHNICAL DETAILS FOR ALL OUTDOOR AND INDOOR UNITS

TECHNICAL DETAILS FOR OUTDOOR UNIT			
S.No	**Parameter**	**Unit**	**Details**
1	Make and Origin		
2	Model	Model	
3	Capacity	HP	
4	Operating Ambient Temperature Range	degC	
5	Power Supply		
6	Refrigerant		
7	Refrigerant Precharge Quantity		
8	Number of compressors		
9	Compressor Type		
10	Cooling Capacity	Kw	
11	Cooling Capacity	BTU/HR	
12	Power Input	Kw	
13	Tonnage	TR	
14	EER		
15	ISEER		
16	IKW / TR	Kw	
17	Dimension (In MM)	H x W x D	
18	Net weight	Kg	
19	Shipping Weight (apprx)	Kg	
20	Refrigerant pipe connections		
21	Liquid		
22	Gas		
23	Air cooled condenser		
24	Type		
25	Fan Type		
26	Number of fans		
27	Air Quantity	CFM	
28	Motor Type		

TECHNICAL DETAILS FOR INDOOR UNIT			
S.No	**Parameter**	**Unit**	**Details**
1	Tonnage		
2	Make and Origin		
3	Model	Model	
4	Airflow Rate	CFM	
5	Number of speeds		
6	External static	Pa	
7	Capacity at nominal conditions (TR)		
8	Temperature control		
9	Refrigerant control		
10	Operating sound	dB	
11	Power Input	Kw	
12	Number of fan motor in evaporating and rating		
13	Casing material and finish		
14	Dimension in mm	H x W x D	
15	Net weight	Kg	
16	Filter material and rating		
17	Evaporator copper tube size & thickness (OD) and refrigeration		
18	Surface area on air side and refrigeration		

FORMAT OF GUARANTEE TO BE EXECUTED BY THE FIRM/CONTRACTOR IN RESPECT OF THE WORK OF POST-CONSTRUCTION ANTI TERMITE TREATMENT

This agreement made this _____day of _____Two thousand _____

between _____ a body corporate constituted under the

_____(Name of the Act) Act 19 having its Head Office at

_____(herein after called 'The Employer') of the one part and

_____(Name of Firm/ Contractor) (Hereinafter called the

Guarantor) of the other part.

WHEREAS THIS AGREEMENT is supplementary to a contract (hereinafter called the contract dated _____and made between the Employer of the one part and the Guarantor of the other part) where by the Firm/Contractor interalia understood to render the building/structure completely free from any infestation of termites. And whereas the Guarantors agreed to give guarantee to the effect that the said building/structure shall remain free from any infestation of termites for a minimum period of ten years from the date of completion of pre-construction anti termite treatment carried out as per the relevant I.S. code.

Now the Guarantor hereby agrees to make good all defects and render the building/ structure free from any infestation of termites, during this period of guarantee and to the satisfaction of the Employer. The guarantor also agrees to take up such rectification work at his own cost, and within one week from the date of issue of notice from the Employer, calling upon him to rectify the defects. The decision of the Employer as to the cost payable by the Guarantor will be final and binding, in case the guarantor fails to commence the work as per above notice and the work is got done through some other contractor. That if the Guarantor fails to execute the pre-construction anti-termite treatment of commits breach thereunder, then the Guarantor will indemnify the principal and his successors against all loss, damage, costs, expenses or otherwise, which may be incurred by him by any reason of any default on the part of the guarantor in performance and observance of this agreement. As to the amount of loss and or damage and/or costs incurred by the Employer, the decision of the Employer will be final and binding.

In witness where of these presents have been executed by the obligation _____

and by _____and for on behalf of the employed on the day, month and year first above written.

Signed and delivered by _____(IDRBT) by the hands of Sri _____in the presence of _____.

Signed, and delivered by the hand of _____(Contractor) in the presence of _____.

Signed, and delivered by _____(IDRBT) by the hands of Sri _____in the presence of _____.

Signed and delivered by the hand of _____(Contractor) in the presence of _____.

16. LIST OF APPROVED MANUFACTURERS / NATURAL SOURCES OF MATERIALS TO BE USED IN THE INTERIOR WORKS SUBJECT TO THE APPROVAL OF SAMPLES BY IDRBT / ARCHITECT.

(ALL THE MATERIALS USED HAVE TO CONFIRM TO GREEN INTERIOR NORMS OF IGBC)

S. No.	MATERIAL NAME.	BRAND / MANUFACTURER.
1.	GLASS.	SAINT GOBAIN /MODIFLOAT / ASAHI FLOAT.
2.	SS PATCH FITTINGS, FLOOR SPRINGS, PIVOT BOTTOM LOCKS	DOORSET / DORMA/ HETTICH/OZONE.
3.	BWP PLY – 710 Grade	GREENPLY / CENTURY PLY / ARCHID.
4.	FLUSH DOOR – CONFIRMING TO IS : 2202 (Part – 1) – 1991.	GREENPLY / CENTUARY / UNIPLY
5.	LAMINATE – CONFIRMING TO IS : 2046-1995.	GREENLAM / MERINO/ CENTURY / BRAVIA.
6.	VENEER	GREEN / CENTURY / ARCHID
7.	SCREWS.	GKW NETTLEFOLD OR AS APPROVED.
8.	DOOR CLOSER.	HETTICH/DOORSET / STERLING / DORMA / OZONE.
9.	GI SUPPORT STUDS FOR PARTITIONS	GYPSTEEL ULTRA / US BORAL.
10.	ACRYLIC SOLID SURFACE	DUPONT / MERINO / LOTTE / LG
11.	HARDWARE.	EFFICIENT GADGETS (EG) / EARL BEHARI (EBCO) / DOORSET/OZONE
12.	LOCKS.	DOORSET / DORMA/ HETTICH/OZONE.
13.	ADHESIVES.	MOVICOL / FEVICOL SH / ARALDITE/ JEEVANJOR
14.	PAINT.	ASIAN / NIPPON / BERGER / NEROLAC/JSW.
15.	GI SUPPORT SYSTEM FOR PLAIN FALSE CEILING.	GYPSTEEL ULTRA / US BORAL.
16.	GYPSUM / PLASTER BOARDS.	GYPBOARD / LAGYP.
17.	GI SUPPORT SYSTEM FOR GRID CEILING. TRULOCKSILHOUETTE	ARMSTRONG / GYPSTEEL ULTRA / US BORAL.
18.	MINERAL WOOL CEILING TILES.	ARMSTRONG / GYP ROCK / US BORAL. / DAIKEN
19.	BAFFLE CEILING	ARMSTRONG / GYP ROCK / US BORAL
20.	TEXTURE PAINT	ASIAN, NEROLAC, BIRLA, BERGER, DULUX.
21.	PVC MARBLES SHEETS	KEDIA
22.	ROLLER BLINDS	HUNTER DOUGLAS / MAC / VISTA
23.	ENGINEERED WOODEN FLOORING	GREEN / CENTURY / ACTION TESA
24.	VITRIFIED FLOOR TILES IN HALL AREAS, TOILETS AND WALL TILES IN TOILETS,	JOHNSON / KAJARIA / RAK
25.	GROUTS & EPOXY	LATECRETE EPOXY, BOSTIK EPOXY, DR FIXIT.
26.	UPVC WINDOWS AND VENTILATORS	FENESTA
27.	TOILET DOORS	NCL / KASSA
28.	WATER PROOFING	FOSROC,LATICRATE,PIDILITE DR FIXIT,
29.	SANITARY FIXTURES	ROCA, JAQUAR, KEROVIT.
30.	CP FITTINGS	ROCA, JAQUAR, KEROVIT.

S. No.	MATERIAL NAME.	BRAND / MANUFACTURER.
31.	CPVC PIPES	ASTRAL, FLOWGUARD, ASHIRVAD.
32.	PVC PIPES	SUDHAKAR, CLIPSAL,PRINCE.
33.	CEMENT	ULTRATECH, ACC, RAMCO, INDIA,AMBUJA

NOTE: The Contractor shall use only above mentioned material. All other materials shall confirm to the specifications laid down. The Contractor shall take this into account while tendering rates / prices. All materials and sections used should adhere to the manufacturer's guidelines and the contractor has to submit certificate from the manufacturer on usage of their specified product / sections.

LIST OF APPROVED MANUFACTURERS / NATURAL SOURCES OF MATERIALS TO BE USED IN THE ELECTRICAL WORKS SUBJECT TO THE APPROVAL OF SAMPLES BY THE CONSULTANT.

Sl.No	ITEMS	BRAND NAME
1.	MCB/ MCB DB	L&T/SIEMENS/ SCHNEIDER/ ABB / LEGRAND /HAVELLS
2.	CABLE LUGS	DOWELL/3D/JAINSON
3.	FRLS WIRES	RR KABEL/ FINOLEX/ POLYCAB/ L&T/ HAVELLS/ KEI
4.	MODULAR SWITCHES	ANCHOR/ LEGRAND/ HONEYWELL/ HAVELLS/ SCHNIDER
5.	PVC CONDUITS	VIP/PRECISION/ATUL/SUDHAKAR/MODI
6.	CASING / CAPPING	CLASSIC/ MODI/SUDHAKAR
7.	LIGHT FIXTURES	PHILIPS / CROMPTON/ WIPRO/ HAVELLS
8.	EXHAUST FANS	CROMPTON/ GEC/ARMONALD/HAVELLS
9.	CEILING FANS	CROMPTON/HAVELLS/ BAJAJ/ USHA
10.	CONTACTORS	L&T/SIEMENS/ SCHNEIDER/ ABB
11.	CABLE TRAY	STELCO/STEELWAYS/SLOTCO/PILCO

NOTE: The contractor shall use only above mentioned materials. All other materials shall confirm to the specifications laid down. The tenderer shall take this into account while tendering rates / prices. The Consultant / IDRBT has got every right to select any of the above Makes for the Project. However, the samples of every material including all fixing accessories shall be got approved by IDRBT / Consultant before Execution.

LIST OF APPROVED MANUFACTURERS / NATURAL SOURCES OF MATERIALS TO BE USED IN VRF AC WORKS SUBJECT TO THE APPROVAL OF SAMPLES BY THE CONSULTANT.

S.No.	Material Name.	Brand / Manufacturer / Recommended Make.
1.	VRV/F Out Door Unit	MITSUBISHI HEAVY, MITSUBISHI ELECTRIC, O-GENERAL, HITACHI ,PANASONIC
2.	VRV/F- Indoor Units Cassette Type	MITSUBISHI HEAVY, MITSUBISHI ELECTRIC, O-GENERAL, HITACHI , PANASONIC
3.	VRV/F-Indoor Units Hi Wall Type	MITSUBISHI HEAVY, MITSUBISHI ELECTRIC, O-GENERAL, HITACHI , PANASONIC
4.	Refrigerant Joints / Multi kits	MITSUBISHI HEAVY, MITSUBISHI ELECTRIC, O-GENERAL, HITACHI , PANASONIC
5.	Refrigerant Piping	MANDEV / RAJKO
6.	PVC Drain Piping	MANDEV / RAJKO/SUDHAKAR PVC
7.	Nitrille Rubber Insulation	AEROLAM / ARMACELL / TROCELLENE
8.	Control cum Transmission wiring	DELTON/ FINOLEX/POLYCAB
9.	Cable Tray	MEK/ INDIAN/ PATNEY
10.	Software Integration	MITSUBISHI HEAVY, MITSUBISHI ELECTRIC, O-GENERAL, HITACHI , PANASONIC

NOTE: 1. The contractor shall use only above mentioned materials. All other materials shall confirm to the specifications laid down. The tenderer shall take this into account while tendering rates / prices. The Consultant / IDRBT has got every right to select any of the above Makes for the Project. However, the samples of every material including all fixing accessories shall be got approved by IDRBT / Consultant before Execution

2. The contractor / Vendor shall submit Detailed shop drawings on the drawings provided by Architect Consultant. After taking approval from the architect consultant on the detailed shop drawings submitted, the work shall be started.

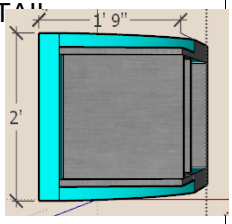
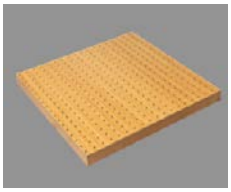
ABSTRACT TERMS AND CONDITIONS:

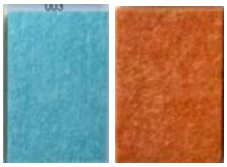
1.	Defects Liability Period.	12 calendar months.
2.	Period for final measurement and valuation.	45 days.
3.	Date of commencement.	Within 7 days from the date of handing over the site.
4.	Date of completion.	As Per NIT.
5.	**Minimum value of Interim Certificate**.	Rs 25.00 Lakh.
6.	**Agreed liquidated damages**.	**1.0% of the total contract amount per week.**
7.	Initial Security Deposit / EMD.	Rs 1,90,000/- to be paid along with the Tender.
8.	Retention Money.	10% of interim certificate amount of running account bill.
9.	Total retention money in final bill including EMD / ISD Amount.	5% of the contract value.
10.	Installment after virtual completion.	Initial Security Deposit / EMD – after the contractor removes all the left over materials, machinery etc.,
11.	**Period of honoring certificate.**	**15 days for RA bill and 45 days for Final Bill.**
12.	Income Tax Deduction and S. T. under works contract act.	As per Central Government rules.
13.	Insurance, Custom duties and taxes.	To be provided and paid by contractor.
14.	Price Escalation.	Will not be considered.
15.	Rate of BOQ's items.	To include item complete in all respects.
16.	**GST TAX:**	The rate quoted by contractor must be exclusive of GST. GST will be paid as per prevailing government norms**.** **Please indicate the present applicable GST.**
17	**Defects liability period**	12 months from the date of handing over the site

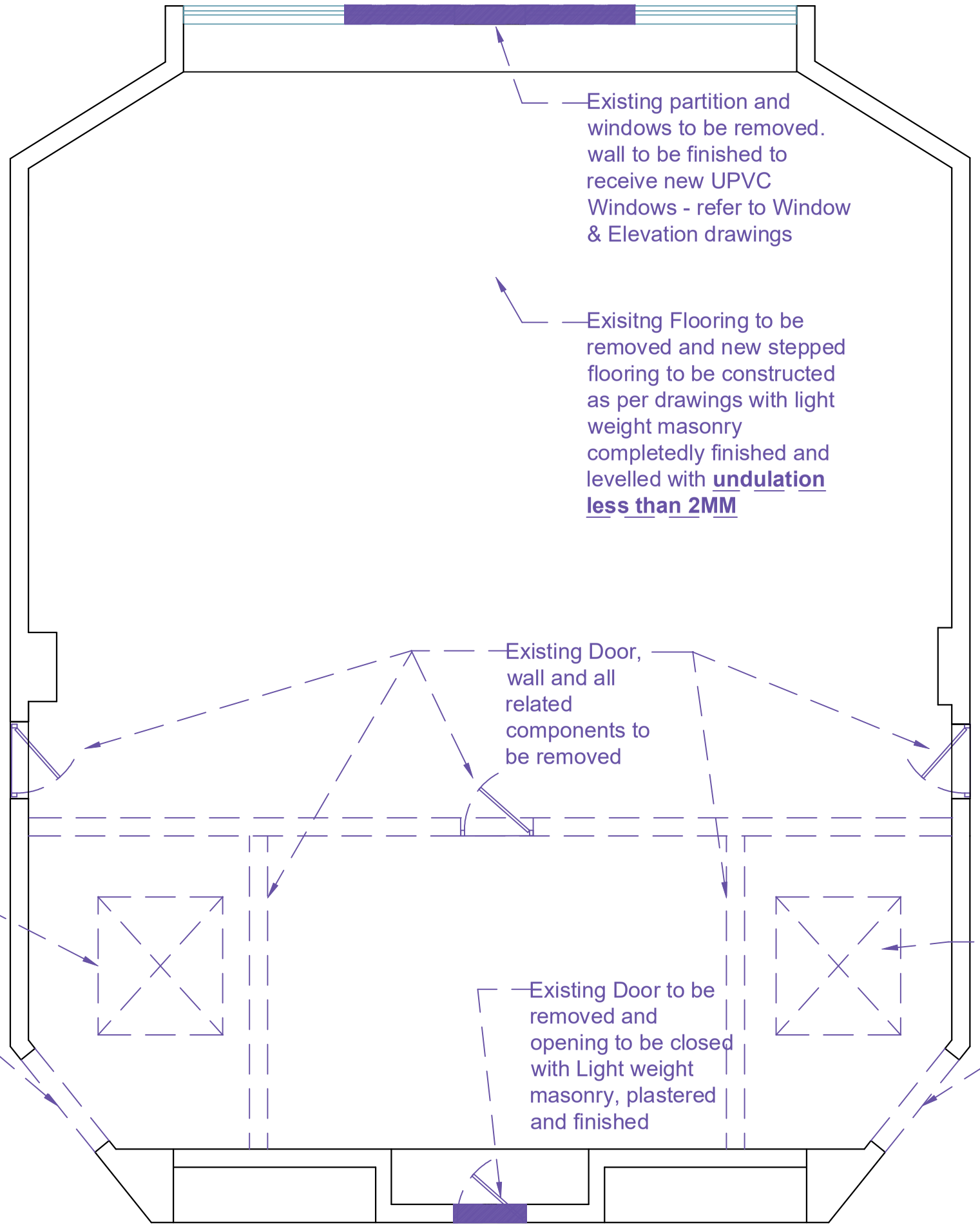
Rear View

Front View

Lecture Hall – 212 and 307 – FINISH SPECIFICATIONS TABLE

Item	**FURNITURE**	
FX-1	TABLES – AS PER DESIGN DETAIL (T-1 TO T-15) Tables will have dual colour – wood base and gray top. Chairs on the two ends (at the double seater tables) will be orange colour and the chairs on the middle rows will be in Teal Colour fabric	
FX-2	CHAIIRS – (FX-3) MODEL – WIPRO – SMART FABRIC = APRICOT(Orange) and Teal (SAMPLE TO BE API	
FX-3	CONSOLE (FX-1) – AS PER DESIGN DETAIL 2'-0" x 21" x 3'-4"	
	FINISHES	
FL-1	FLOORING – All area except Dias (Podium) 5mm thick SPC FLOORING WELSPUN or equivalent Size – 7" x 48" ; 5Gi Locking Anti-skid with an underlayment of 1mmIXPE rubber pad Colour – Heritage Walnut	
FL-2	FLOORING – Dias (Podium) 5mm thick SPC FLOORING WELSPUN or equivalent Size – 7" x 48" ; 5Gi Locking Anti-skid with an underlayment of 1mmIXPE rubber pad Colour – ECHO Walnut	
WP-1	Wall Application ACOUSTIC SLAT WALL PANEL – NISHABD by Mechtrix or equivalent 1200mmX2400mm; 17mm Thickenss HDF boards applied with Toungue and Groove System and including all required accessories – clips and clamps Colour- Oak CN	
WP-2	Wall Application ACOUSTIC PERFORATED WALL PANEL – NISHABD by Mechtrix or equivalent – HDF boards 600mmX1200mm; 17mm Thickenss , HOLE SIZE- H 16/3 applied with Toungue and Groove System and including all required accessories – clips and clamps Colour- Oak CN	

WP-3	Wall Application ACOUSTIC PET PANEL – NISHABD by Mechtrix or equivalent Size as per site condition, Thickness 20mm Colour- Orange / Apricot and Teal – refer to 3D designs	
WP-4	5MM thick Toughened, extra clear, White Lacquered glass pasted on 18mm Ply backing with superior grade Silicon	
CF-1	Ceiling Application ACOUSTIC PERFORATED CEILING TILE – NISHABD by Mechtrix or equivalent – HDHMR boards 600mmX600mm; 17mm Thickenss , HOLE SIZE- H 25/3 LAY-IN Ceiling, including all accessories, channels, clamps and Colour- Oak CN	
CF-2	Ceiling Application Suspended gypsum false ceiling with G.I. suspension system and 12mm thk. Gypsum board of SaintGobain Gyprock / India Gypsum make duly finished with POP punning and 3 coats of plastic emulsion paint	
	LIGHTS	
LT-1	24W LED recessed – White at Ceiling LED 2'x2' Recees mounted Light fixture (Philips Cat No: RC 170B LED 29S 6500 PSE WH)	
LT-2	Panel lights at Ceiling - 15W panel light – White LED Down lighter Recessed mounted LED (Philps CAT No. BBS 170 1XDLED-5000 PSU WH) COB LIGHT ???	
LT-3	Track light at Podium ST151T LED30S/940 WB WH; 4,000 K	
LT-4	Two Directional Wall Light	



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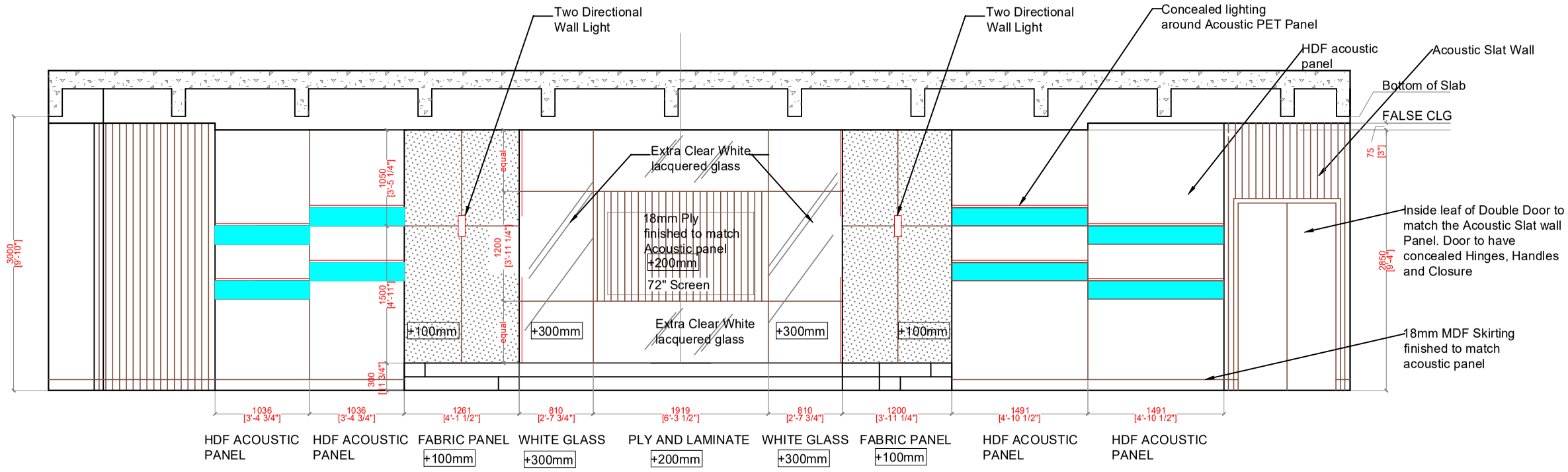
Rev.	DATE	BY	Description	CHK'D.	CERT	APP'D

Client	IDRBT
Project	**ADMIN BUILDING LECTURE HALL 212 & 307**
Title	DEMOLITION FLOOR PLAN
Dwg.No:	A-100
REV	00
Drawn	Naresh
Checked	Naresh
Approved	Lakshmi
DWG ISSUED FOR	☑ INFORMATION ☑ TENDER ☐ COMMENTS ☐ APPROVAL ☐ EXECUTION
Scale	N.T.S
Date	14.08.25

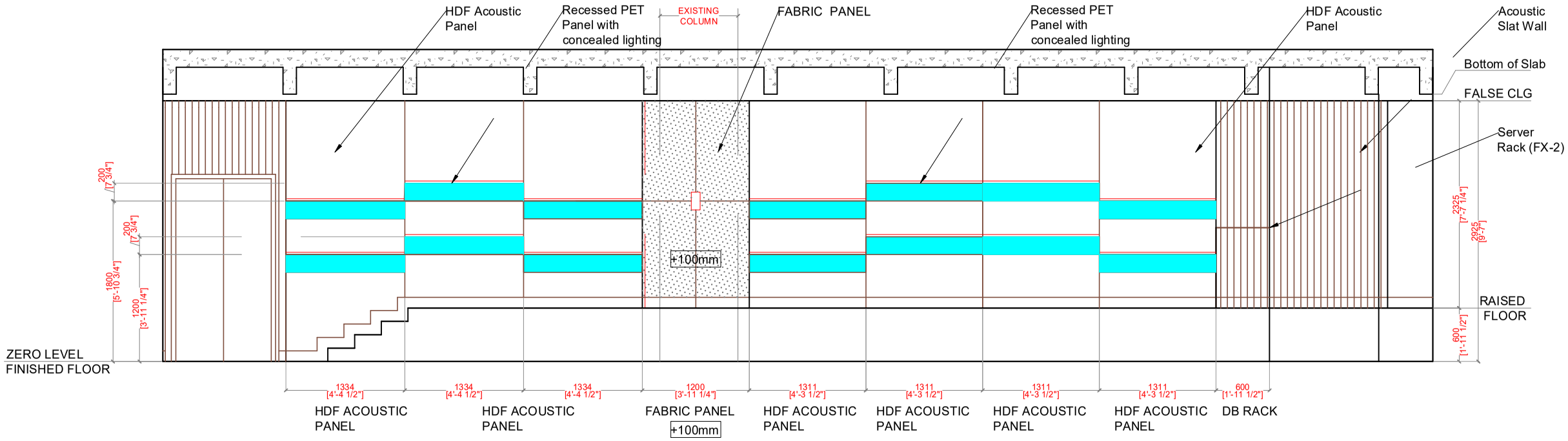
Design By:

Aspire Architects & D'Zigners
PLOT # 12 ; DLR ENCLAVE, SAINIKPURI; SEC-BAD - 500094
PH:9945704022

FILE NAME: Aspire-1/Current projects/



ELEVATION 'A'



ELEVATION 'D'

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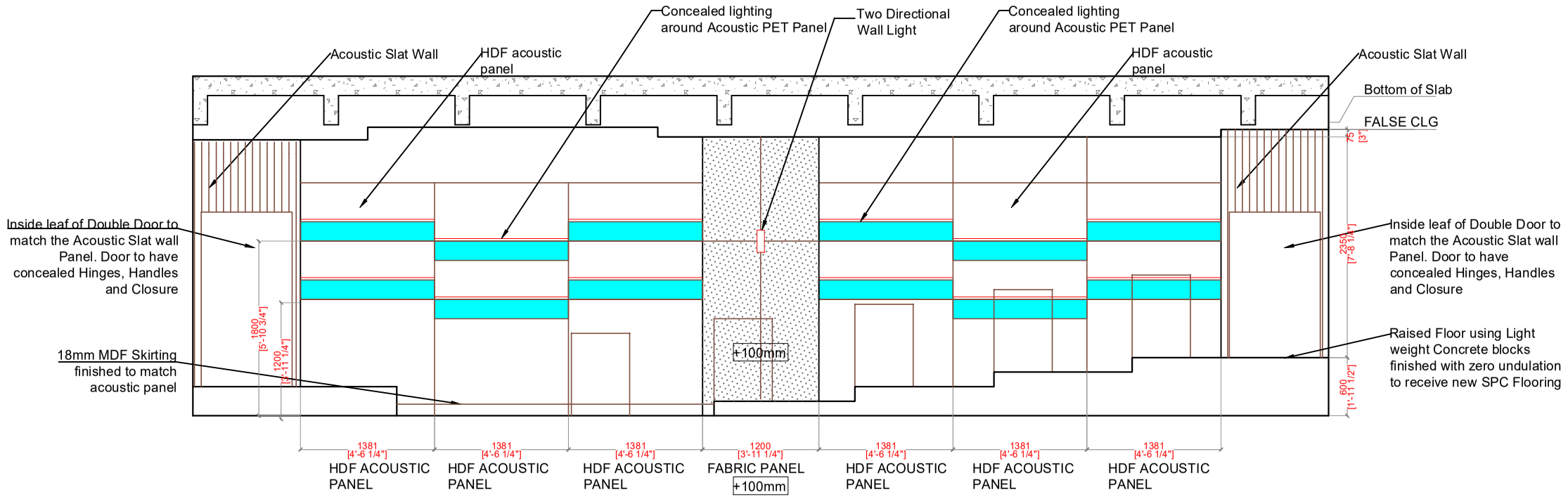
Rev.	DATE	BY	Description	CHK'D.	CERT	APP'D

Client	IDRBT
Project	**ADMIN BUILDING LECTURE HALL 212 & 307**
Title	INTERIOR ELEVATIONS
Dwg.No:	A-200 — REV 00
Drawn	Naresh
Checked	Naresh
Approved	Lakshmi
DWG ISSUED FOR	☐ INFORMATION ☑ TENDER ☐ COMMENTS ☐ APPROVAL ☐ EXECUTION
Scale	N.T.S
Date	14.08.25

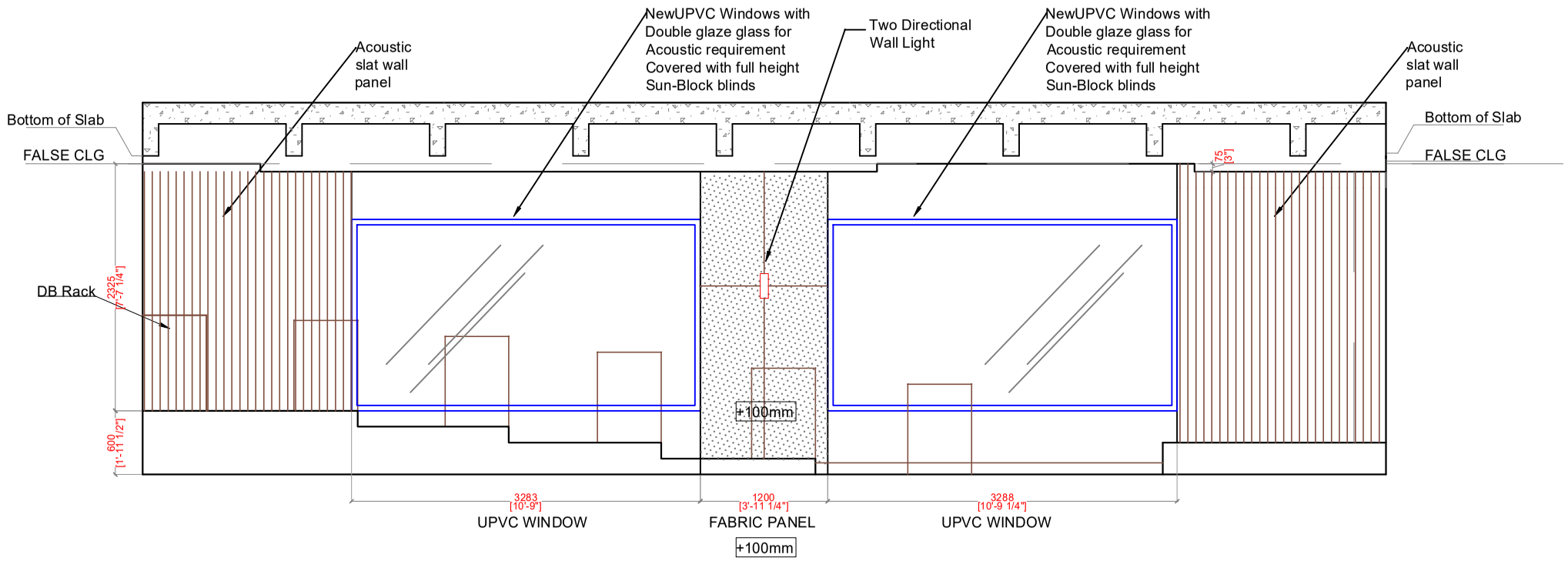
Design By:

Aspire Architects & D'Zigners
PLOT # 12 ; DLR ENCLAVE, SAINIKPURI; SEC-BAD - 500094
PH:9945704022

FILE NAME: Aspire-1/Current projects/



ELEVATION 'B'



ELEVATION 'C'

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Rev.	DATE	BY	Description	CHK'D.	CERT	APP'D

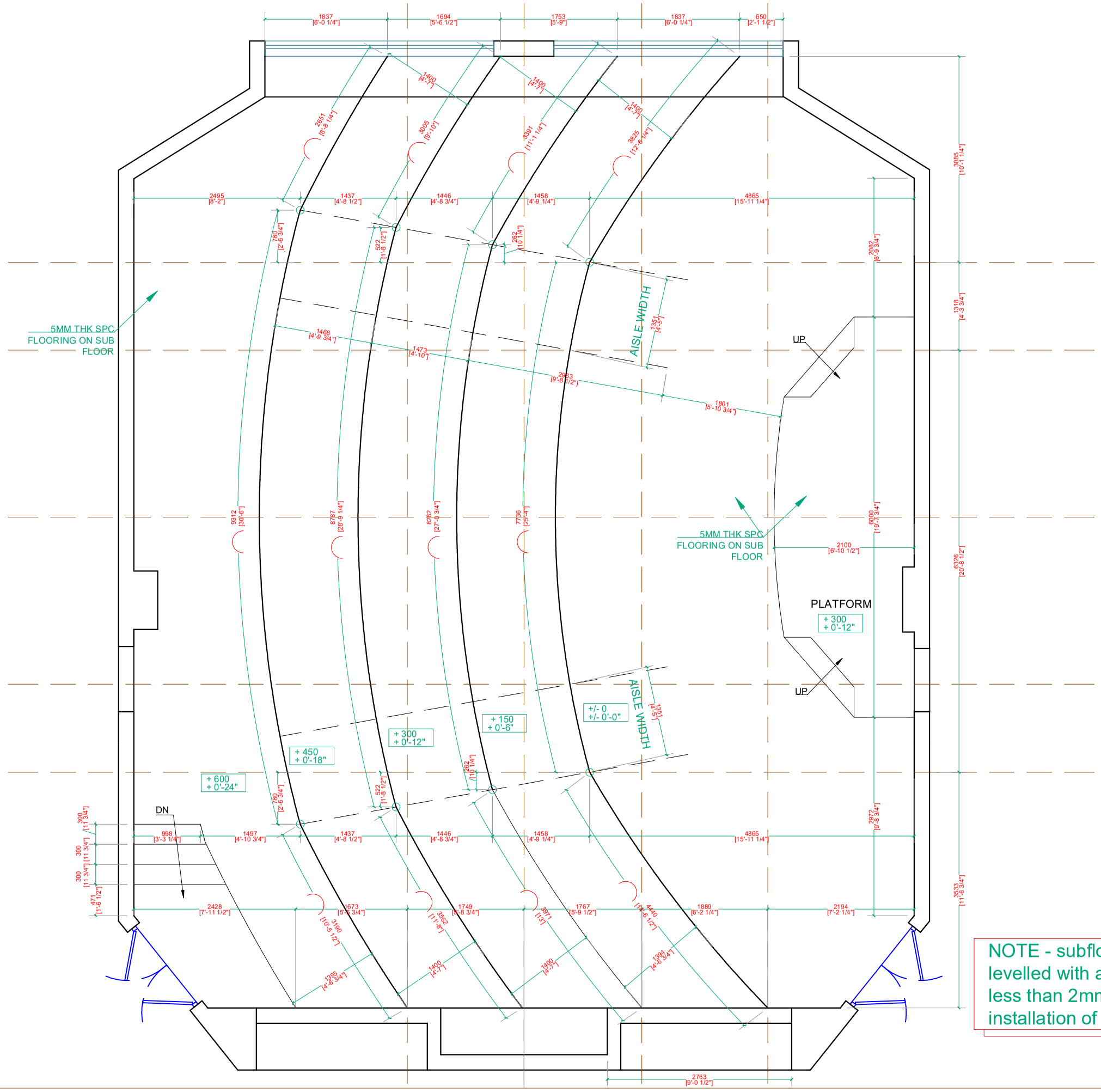
Client	IDRBT
Project	ADMIN BUILDING LECTURE HALL 212 & 307
Title	INTERIOR ELEVATIONS
Dwg.No:	A-201 REV 00

Drawn	Naresh	DWG ISSUED FOR	☐ INFORMATION ☑ TENDER ☐ COMMENTS ☐ APPROVAL ☐ EXECUTION	
Checked	Naresh	Scale	N.T.S	
Approved	Lakshmi	Date	14.08.25	

Design By:

Aspire Architects & D'Zigners
PLOT # 12 ; DLR ENCLAVE, SAINIKPURI; SEC-BAD - 500094
PH:9945704022

FILE NAME: Aspire-1/Current projects/



NOTE - subfloor should be levelled with an undulation of less than 2mm grade before installation of new SPC flooring

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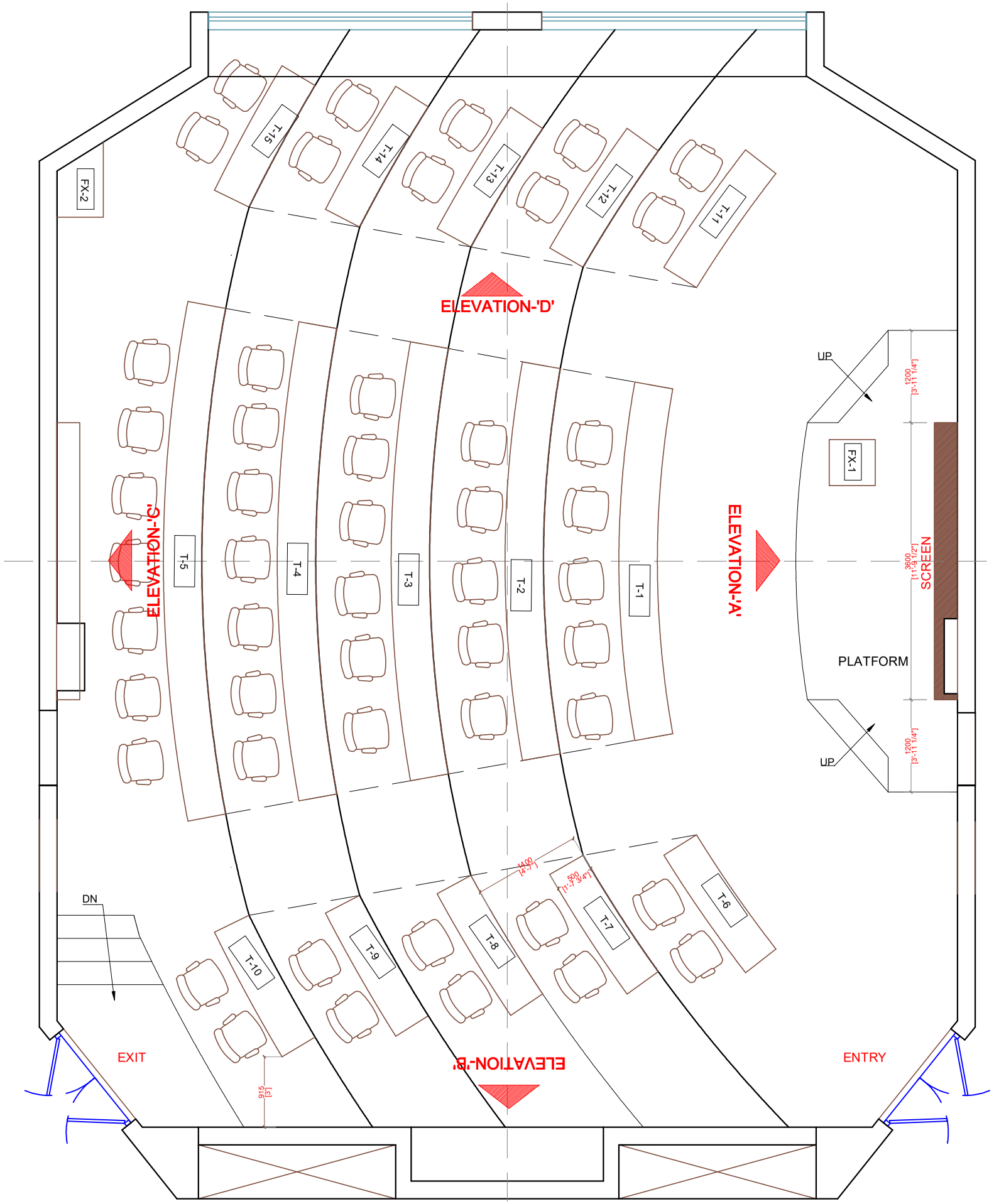
Rev.	DATE	BY	Description	CHKD.	CERT	APP'D

Client	IDRBT
Project	**ADMIN BUILDING LECTURE HALL 212 & 307**
Title	FLOORING PLAN
Dwg.No:	A-101
REV	00
Drawn	Naresh
Checked	Naresh
Approved	Lakshmi
DWG ISSUED FOR	☑ INFORMATION ☑ TENDER ☐ COMMENTS ☐ APPROVAL ☐ EXECUTION
Scale	N.T.S
Date	14.08.25

Design By:

Aspire Architects & D'Zigners
PLOT # 12 ; DLR ENCLAVE, SAINIKPURI; SEC-BAD - 500094
PH:9945704022

FILE NAME: Aspire-1/Current projects/



212 LECTURE HALL
seating capacity-50

Total Step height = 600mm /
2'-0" @ 150mm / 6" each
Each row min 1400 wide
Each Table min 500 deep
Space available per person -
500m x900mm

REFER TO DETAIL DRAWINGS FOR TABLE AND FIXTURE DETAILS

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FIXTURE SCHEDULE	
T-1 THRU T-15	TABLES
FX-1	CONSOLE
FX-2	SERVER RACK
FX-3	CHAIRS

REFER TO DETAIL DRAWINGS AND SPECIFICATIONS

Rev.	DATE	BY	Description	CHK'D.	CERT	APP'D

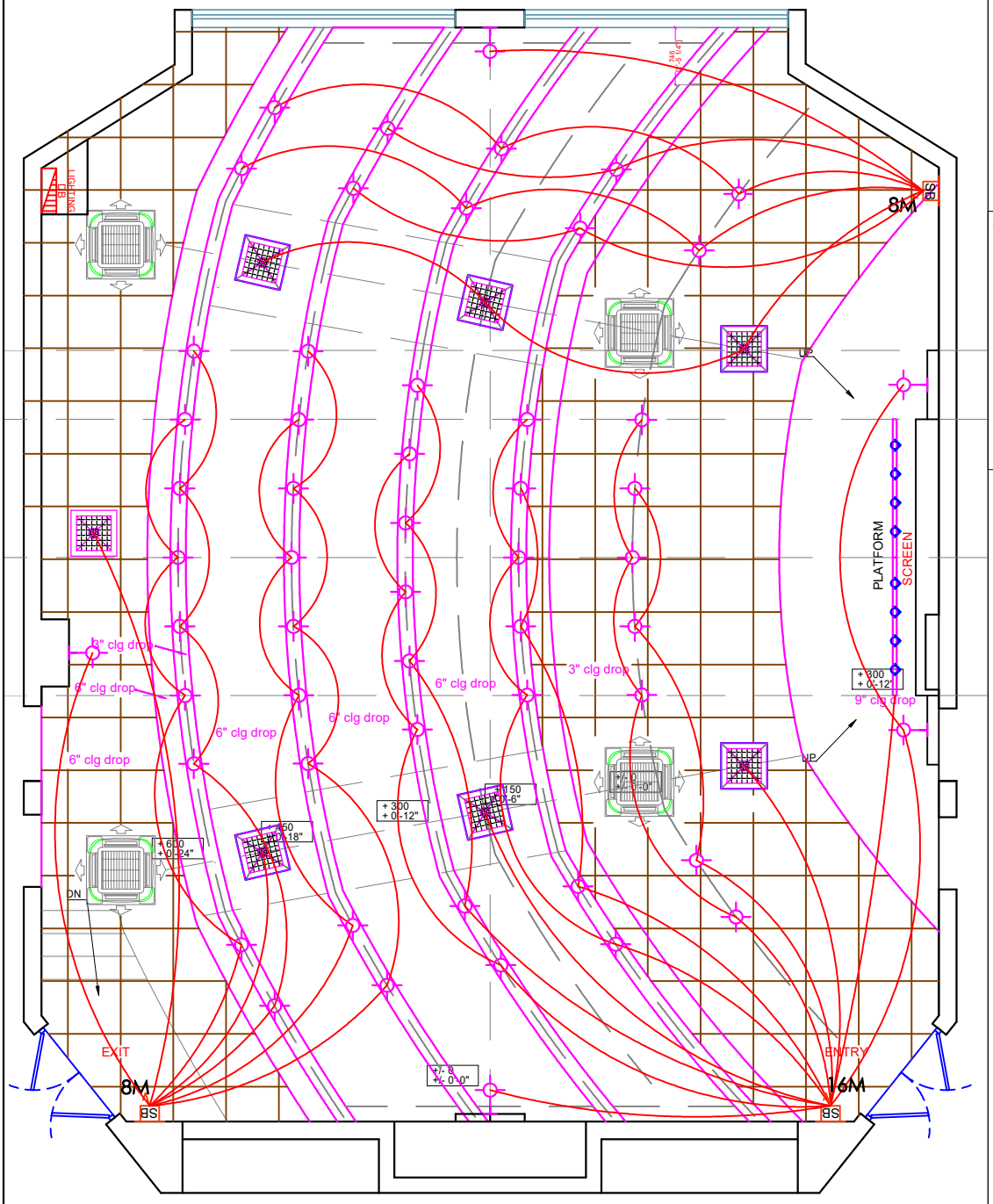
Client	IDRBT
Project	ADMIN BUILDING LECTURE HALL 212 & 307
Title	FURNITURE PLAN
Dwg.No:	A-102 REV 00

Drawn	Naresh	DWG ISSUED FOR		INFORMATION
Checked	Naresh	Scale	N.T.S	TENDER (✓)
Approved	Lakshmi	Date	14.08.25	COMMENTS / APPROVAL / EXECUTION

Design By:

Aspire Architects & D'Zigners
PLOT # 12 ; DLR ENCLAVE, SAINIKPURI; SEC-BAD - 500094
PH:9945704022

FILE NAME: Aspire-1/Current projects/



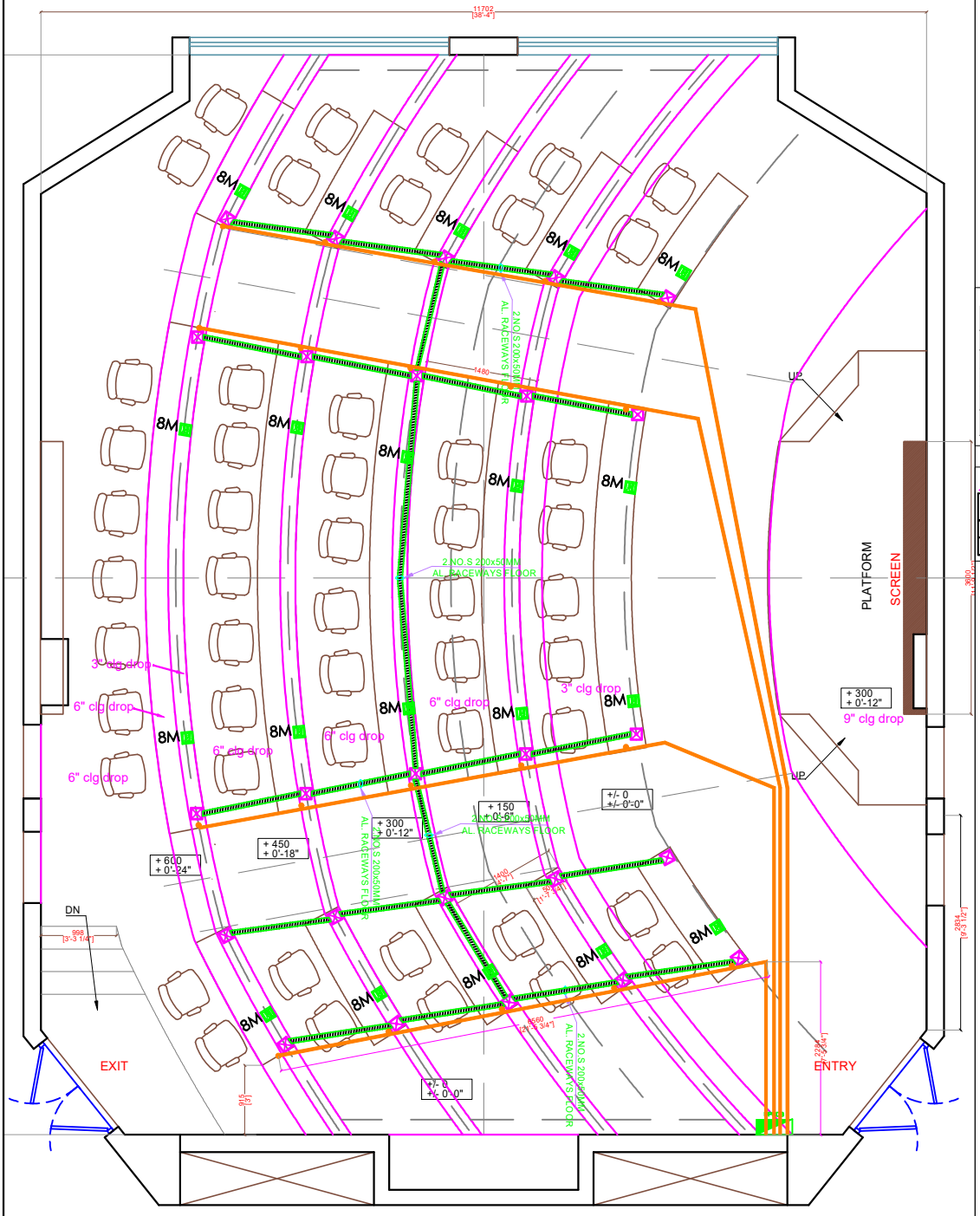
LEGEND:

SYMBOL	DESCRIPTION	QTY
	2x2 LED LIGHT POINT	07 NO.S
LDB	LIGHTING DISTRIBUTION BOARD 8-way	01
	ONE WAY SWITCH BOARD	03 NO.S
	WALL LIGHT	05 NO.S
	CEILING LIGHT	50 NO.S
	TRACK LIGHT	3.6 mtr
	CASSETTE	04 NO.S

CLIENT:	TITLE : LIGHTING LAYOUT	ORIENTATION:	SCALE	N.T.S	MEP CONSULTANT
			DATE	13-08-2025	CSRI Consortium ENGINEERS (MEP)
PROJECT:	SUB TITLE :		DEALT BY	K.MAHESH	'CSRI Square' Plot No.1006, Fourth Floor, Gokul Plots, Hyderabad-85
			CHECKED	CH.S	Ph. 98497-60441
			DWG NO- CSRI/AS/IDRBT/AU/ELE/E-01		e-mail: csrihyd@gmail.com

ARCHITECT

Aspire Architects & D'Zigners
PLOT # 12 ; DLR ENCLAVE, SAINIKPURI; SEC-BAD - 500094
PH:9945704022



LEGEND:

SYMBOL	DESCRIPTION	QTY
	200mmX200wideX45mm JUNCTION BOX	-
	200mmX200wideX45mm JUNCTION BOX	-
	100mmX100wideX45mm JUNCTION BOX	-
	100x50mm RACEWAY ALUMINIUM FOR LAN ON FLOOR	-
	100mmX50mm ALUMINIUM RACE WAY FOR POWER ON FLOOR	-

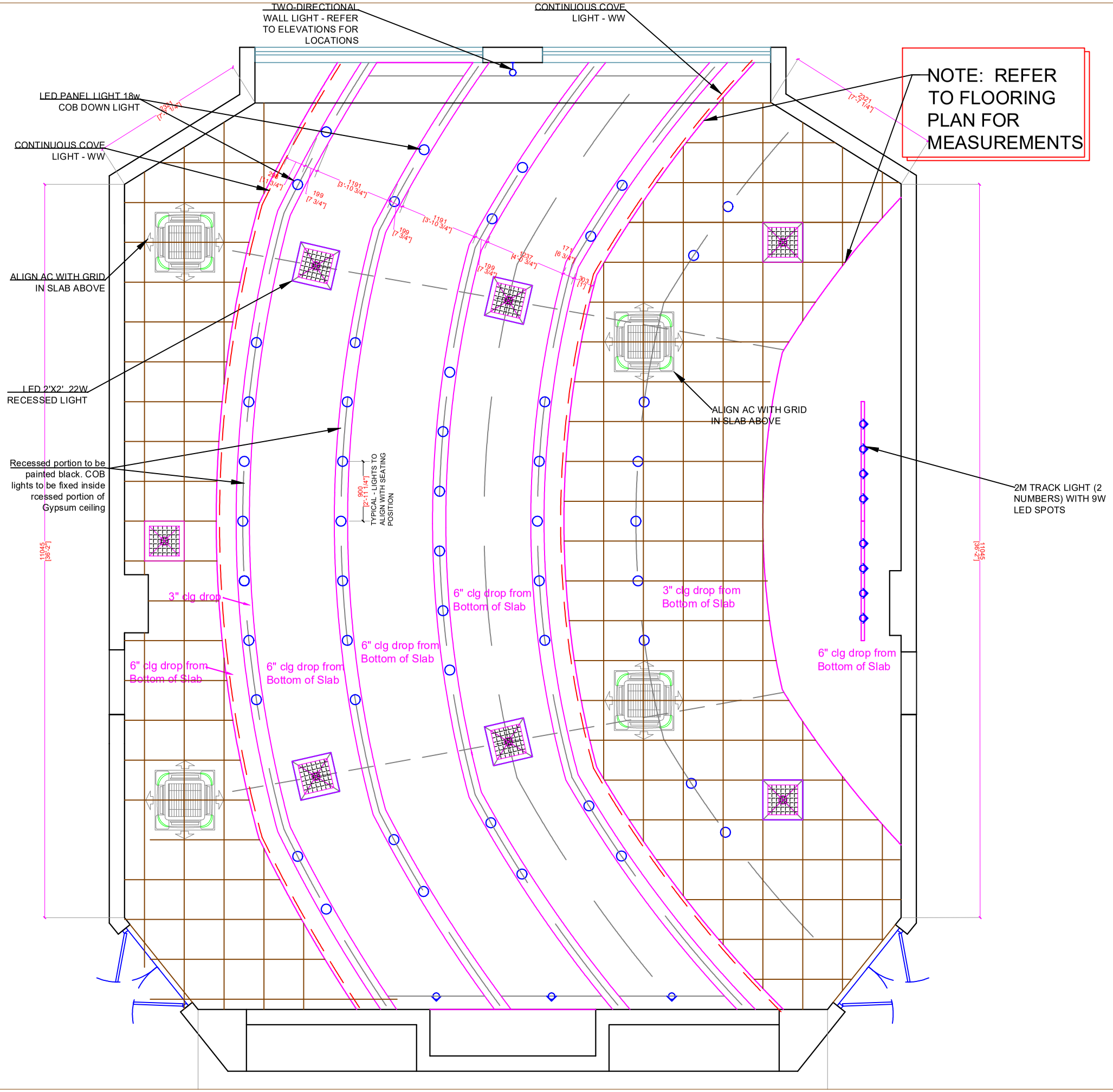
LEGEND:

SYMBOL	DESCRIPTION	QTY
	COMPUTER SOCKETS BANK OF 3NO.S 6A UPS SOCKETS	20 NO.S
UPSB	8-way UPS DISTRIBUTION BOARD	01 NO.S

CLIENT:	TITLE : POWER LAYOUT	ORIENTATION:	SCALE	N.T.S	MEP CONSULTANT
			DATE	13-08-2025	CSRI Consortium ENGINEERS (MEP)
PROJECT:	SUB TITLE :		DEALT BY	K.MAHESH	'CSRI Square' Plot No.1006, Fourth Floor, Gokul Plots, Hyderabad-85
			CHECKED	CH.S	Ph. 98497-60441
			DWG NO- CSRI/AS/IDRBT/AU/PW/E-01		e-mail: csrihyd@gmail.com

ARCHITECT

Aspire Architects & D'Zigners
PLOT # 12 ; DLR ENCLAVE, SAINIKPURI; SEC-BAD - 500094
PH:9945704022



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LIGHTING SCHEDULE	
	LED 2'X2' 22W RECESSED LIGHT
	LED PANEL LIGHT 18W COB DOWN LIGHT
	TWO-DIRECTIONAL WALL LIGHT
	2M TRACK LIGHT (2 NUMBERS) WITH 9W LED SPOTS
	CONTINUOUS COVE LIGHT - WW

Rev.	DATE	BY	Description	CHK'D.	CERT	APP'D

Client	IDRBT
Project	**ADMIN BUILDING LECTURE HALL 212 & 307**
Title	REFLECTED CEILING PLAN
Dwg.No:	A-103
REV	00
Drawn	Naresh
Checked	Naresh
Approved	Lakshmi
DWG ISSUED FOR	INFORMATION / TENDER / COMMENTS / APPROVAL / EXECUTION
Scale	N.T.S
Date	14.08.25

Design By:
Aspire Architects & D'Zigners
PLOT # 12 ; DLR ENCLAVE, SAINIKPURI; SEC-BAD - 500094
PH:9945704022

FILE NAME: Aspire-1/Current projects/