Ref. No. P&E/JATNI/PAS/2024-25/140

Dated:15/02/2025

TENDER NOTICE

FOR

SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF PUBLIC ADDRESS SYSTEM (INDOOR USE) AND OTHER ALLIED EQUIPMENTS

AT

STATE BANK OF INDIA, JATNI BRANCH, BHUBANESWAR, ODISHA

GENERAL AND SPECIAL CONDITIONS OF CONTRACT

DATE OF ISSUE: 21/02/2025

LAST DATE OF RECEIPT: 05/05/2025, up to 1700hrs

VALID UP TO: 90 DAYS

Issued By:

Assistant General Manager (P&E),
State Bank of India, Premises & Estate Department,
2nd Floor, Local Head Office (LHO)
Bhubneswar-751 001

GENERAL INFORMATION OF TENDER

1.	Name of Work	Supply Installation Testing & Commissioning (SITC) of Public Address system and Other Allied Equipments for State Bank of India, Jatni Branch Bhubaneswar, Odisha
2.	Scope of Work	Design, Supply, Testing and Commissioning of the complete PA System and Other Allied Equipments and establishment of guaranteed performance parameters.
3.	Time allowed for completion	01 - Calendar month from the date of letter of intent (LOI)/placing work order.
4.	Price Basis	Firm Prices inclusive of all duties and taxes/GST extra as applicable. No escalation other than statutory variations for the items listed in Schedule of Quantities.
5.	Earnest Money Deposit	**Rs.5,000/-** in the form of DD/BC in favor of State Bank of India, payable to Bhubaneswar, to be prepared and uploaded online and the original physical copy to send at the Assistant General Manager (P&E), State Bank of India, Premises & Estate Department, 2nd Floor, Local Head Office (LHO) Bhubneswar-751 001.
6.	Security Deposit	5% of the final contract value in the form of BG issued by any Nationalized/Scheduled Bank **other than SBI or in the form of DD/BG (Interest free)** in favor of State Bank of India, payable to Bhubaneswar, while issuing of the work order.
7.	Cost of Tender Documents	NIL,
8.	Submission of tender bids online	On or before,05/03/2025, up to 1700hrs online mode.
9.	Online Submission of final Price Bid on the web Site	On or before,05/03/2025, up to 1700hrs online mode, if any change in date will be informed by email / contact number through online tendering agency.
10.	Authority for Opening Tender	AGM (P&E)/Authorized Officials of State Bank of India, Premises & Estate Dept., Local Head Office, Bhubaneswar, Odisha.
11.	Defects Liability Period	12 Months (Twelve Months)
12.	Validity of offer	3 Months from The Date of opening of price bid
13.	Liquidated Damages:	0.5 % per Week Subject to Maximum of 5% of Contract Value.
14.	*Rate quoted by the bidders shall remain firm throughout the contract period (including authorized extension).* Rate quoted shall be inclusive of all, duties, levies, royalties & other incidental /other industrial charges etc. However, tax GST as applicable shall be paid extra by the Bank as per actual.	
15.	Digital Signature	You are advised to obtain digital signature at the earliest (if you do not already have) as it is mandatory.
16.	Agency for Arranging Online Bidding	M/s. Antares Systems Limited The Agency will do the needful for Completion of all the Business Formalities at your given email address and contact numbers if the contact numbers/email provided by you is wrong the firm will not be responsible.
17.	Name of Bank's Engineer for any Clarification.	Fire Officer M-916742600526/76000035062 / fo.lhobhu@sbi.co.in

18.	Deduction for poor workman ship / defective materials	An equitable deduction to correct the poor workmanship or replacement of materials / equipments at risk of Vendor.
19.	All payments will be made at	Premises & Estate Department, LHO Bhubaneswar
20.	Jurisdiction	Bhubaneswar
21.	Terms of Payment	Stage Payments a) On Supply & delivery at site: -50% of the contract price may be paid on receipt of Goods and upon submission of the documents & check by Fire Officer. b) On Testing & Commissioning: the remaining 45% of the contract price shall be paid to the Vendor after successful testing & commissioning at site and within thirty (30) days after the date of the acceptance of Completion Certificate of Contract check by Fire Officer/Bank Authorized Official. c) Remaining 5% after completion of successful warranty period i.e., 12 months. Note: - a) Payment will be made as per actual material used at site. b) Work awarded Vendor shall have to do necessary Drawings, designs as per actual site conditions & get the actual BOQ approved before supplying the material. c) Necessary Test Certificates would have to be produced with Material.
22.	Inspection	As per site requirement.
23.	Test Certificates	Manufacturer's test certificates for amplifier, electrical panels etc. Wherever applicable on demand of Employer / Bank.
24.	Insurance	Worker Insurance Policy for Vendor's men, material in transit and third-party insurance to be arranged by Vendor.
25.	Power and Water supply	The Employer shall arrange the power at one or two single point free of cost, further distribution, and safe drawl to be arranged by Vendor. Electrical Safety device such as ELCB, MCB, RRCB etc to be provided before making connection.

Note:

a) Process Compliance Statement to be submitted.

b) Bid received later than the given time/date will be summarily rejected. Canvassing in any form will lead to disqualification.

c) The Bank reserves the right to reject any or all the offers without assigning any reasons thereof.

INSTRUCTIONS TO THE BIDDERS AND GENERAL TERMS & CONDITIONS

Assistant General Manager (Premises & Estate) on behalf of State Bank of India invites invite e-bids from Bank's empanelled Vendors with sound technical and financial capabilities for Supply, Installation, Testing & Commissioning of Public Address system in new building of SBI JATANI Branch, Bhubaneswar Odisha.

1.0 Mode of Submission of Tender:

The tender shall be submitted in online system in accordance with the procedure detailed herein below.

a) **Technical Bid: to be uploaded online and** shall contain covering letter, technical and commercial terms & conditions, and Tender document all pages duly stamped and signed along with necessary attachments including a copy of EMD.

b) **Price Bid: to be uploaded** Price bid **online mode and** shall be opened on as date and time as stipulated in the tender.

c) In case the date of opening of tenders is declared as a holiday, the tenders will be opened on the next working day at the same time.

d) **State Bank of India has the right to accept/reject any or all tenders without assigning any reasons**.

e) For any other queries the vendors may contact **Fire Officer at the office of Premises & Estate Department, Bhubaneswar at** fo.lhobhu@sbi.co.in

h) **Site and its Location:** The proposed work i.e., Supply, Installation, Testing & Commissioning of P A System is to be carried out at in **new SBI JATANI Branch building Bhubaneswar, Odisha.**

2.0 SCOPE OF WORK

The tender under reference covers supply, installation, testing, commissioning of PA system as per the notice inviting tender, condition of contract, technical specification, tender drawing & schedule of work and as per the direction & satisfaction of the Bank's Engineer.

3.0 COMPLETION PERIOD

Time is the essence of the contract. The time schedule for total work according to the contract shall be ***One Calendar Months*** from the date of placement of work order or handing over of site whichever is later.

4.0 EARNEST MONEY DEPOSIT

EMD of Rs. 5,000/- in the form of DD/BC to be submitted in the AGM (P&E), Premises & Estate Department, 2nd Floor LHO, Bhubaneswar (Odisha). Earnest Money deposit (EMD) is exempted for agencies registered under NSIC or coming under the definition of Micro and Small Industries and holding valid registration certificates covering the tendered items/services. Declaration of Udyog Aadhar Memorandum (UAM) by the MSE parties on Central Public Procurement Portal (CPPP) shall be mandatory. However, attested/Notarized copy of valid NSIC certificate or "Micro and Small" industry certificate should be submitted in this regard.

5.0 Bidders should have PAN, GSTIN registration, PF registration, ESI registration. Copy of the same shall be submitted along with techno commercial offer.

6.0 TENDER DOCUMENTS

Tender Documents comprises two parts viz. **Part-I (Un-priced)** and **Part-II (Priced).** The Un-Priced Part consists of EMD, Notice Inviting Tender, Condition of Contract, Technical Specification and Drawings. The Priced Part consists of Priced Schedule. Bidders are

requested to read all the terms and conditions mentioned in the tender document and seek clarification if any, from Fire Officer on e-mail: fo.lhobhu@sbi.co.in.

7.0 TENDER SUBMISSION

a) The intending bidders shall be deemed to have visited the site and familiarize themselves thoroughly with the prevailing site conditions before submission of the tender. Non-familiarity with the site conditions will not be considered reason either for extra claim or for not carrying out the work in strict conformity with the drawing, specification, and time schedule.
b) The bidder is required to register on the e-procurement and submit their bids online during business hours.
c) For registration and online bid submission bidders may contact the service provider M/s. Antares Systems Limited.
d) The bidders shall authenticate the bid with his **Digital Certificate** for submitting the bid electronically on e-procurement platform and the bids not authenticated by digital certificate of the bidders will not be accepted on the e-procurement platform.
e) All the bidders who do not have digital certificates need to obtain Digital Certificate (with both Signing and Encryption Components).
f) If any of the documents furnished by the bidders are found to be false / fabricated / bogus, the bidders are liable for rejection/d-listing.
g) The bidder should keep track of any Addendum/Corrigendum/Amendment issued by the Tender Inviting Authority on time-to-time. No separate newspaper advertisement shall be published for such Addendum/Corrigendum/Amendment etc. The Company calling for tenders shall not be responsible for any claims/problems arising out of this.
h) The bidders should complete all the processes and steps required for bid submission. The successful bid submission can be ascertained once acknowledgement is given by the system through bid submission number after completing all the process and steps.
i) M/s. Antares Systems Limited will not be responsible for incomplete bid submission by users. Bidders may also note that the incomplete bids will not be saved by the system and are not available for the Tender Inviting Authority for processing.
j) Neither the Company (SBI) nor the service provider (M/s. Antares Systems Limited) is responsible for any failure or non-submission of bids due to failure of internet or other connectivity problems or reasons thereof.

8.0 SUPPLY OF MATERIAL

All materials required for the work shall be supplied by the Bidders.

9.0 TAXES & DUTIES

All taxes and duties other than GST shall be included in the basic rate. GST shall be quoted separately as per Schedule of Work.

10.0 PAN, GSTIN registration, ESI, PF registration:

Bidders are required to submit PAN, GST registration, Provident Fund registration and ESIC along with Un-priced part of their offer, failing which their offer may be liable to be rejected.

11.0 INSTALLATION, COMMISSIONING & TRAINING

The installation, testing and commissioning of automatic sprinkler system shall be carried out by competent engineers/technicians of the Bidders at the work site. After commissioning, the successful bidder's engineer / technician shall impart necessary training to SBI's personnel in operating and maintaining the installed fire protection system. No separate charge shall be payable by the SBI for the purpose.

12.0 NON-CONFORMANCE

Tenders not conforming to the above-mentioned requirements are liable to be rejected.

13.0 VALIDITY OF OFFER

Tendered shall keep their offer valid for a period of 90 days from the date of opening of Unpriced bid.

14.0 QUANITITY VARIATION

The quantity as mentioned in the Schedule of Work / Price Bid is indicative. The selected bidder/Vendor shall however ascertain the exact quantity required at site and supply and install accordingly. As the work progresses, it is possible that there will be quantity variations to any extent & omission of items. ***Under all such circumstances, the rates should remain firm.***

15.0 FIRM PRICE

The price should be firm and irrevocable and not subject to any change till the completion of Scope of Work.

16.0 RATES AND OTHER ENTRIES

a) The bidders should quote for all items in the Schedule of Rates. If there is any discrepancy between unit rate and total amount, the unit rate will prevail.
b) The rates should be quoted in the same units as mentioned in the tender schedule of quantities.
c) All entries in the tender documents should be in ink/type. Corrections if any should be attested by full signature of the bidders.
d) Every page of the tender document including annexure/enclosures shall be stamped and signed by the bidders or his authorized representative thereby indicating that each and every page has been read and the points noted.

17.0 RIGHT TO ACCEPT OR REJECT TENDER

17.1 SBI reserves the right to accept or reject any or every tender without assigning any reason whatsoever / or to negotiate with the bidders (s) in the manner it considers suitable. In the event of receipt of lowest price from more than one (1) bidder, fresh price bids shall be invited from the lowest bidders only to determine final lowest bidder for placement of order.

17.2 Bids of any bidders may be rejected if a conflict of interest between the bidder and SBI is detected at any stage.

17.3 All the bids will be evaluated based on criteria as mentioned in this NIT. Tenders of those bidders who are not meeting the criteria will not be considered for commercial evaluation.

17.4 Tender if submitted through e-mail or fax shall be summarily rejected.

17.5 Hard copy of Price Bid should not be submitted in the envelope containing Un-priced documents failing which the bid will be summarily rejected.

17.6 Clarifications/exceptions/deviations to the tender terms & conditions and specifications:

a) SBI expects Bidders to confirm compliance to tender terms & conditions and specifications, failing which the Bidders are liable to be rejected. Hence all Bidders in their own interest are advised to submit their bids in all respects confirming to all terms & conditions of the bid document.
b) Bids shall be evaluated based on the information/documents available in the bid. Hence Bidders are advised to ensure that they submit appropriate and relevant supporting documentation along with their proposal in the first instance itself. Those participants are not complying the requirements of documents stipulated in the tender will be rejected without any further opportunity.

UNDERTAKING LETTER

(To be submitted along with the Bid)

Assistant General Manager (P&E),
State Bank of India, Premises & Estate Department,
2nd Floor, Local Head Office (LHO)
Bhubaneswar (Odisha-751 001)

Dear Sir,

SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF PUBLIC SYSTEM AT STATE BANK OF INDIA, JATNI BRANCH, ODISHA

I/We refer to the tender notice issued by you for works in connection with the above.

I undertake to submit the tender document along with all terms & Conditions, Specifications and subsequent annexure and corrigendum's (if any) duly signed and stamped by authorized representative / signatory on becoming L1. However, we accept all the terms and conditions along with the specifications, Drawings, Layouts etc defined in the tender documents.

I/We hereby offer to perform, provide, execute, complete, and maintain the works in conformity with the drawings, designs, conditions of contracts & specifications schedule of quantities relating to the works.

I/We have satisfied myself/ourselves as to the site conditions, examined the drawings and all aspects of the tender conditions, subject to above, I/We do hereby agree, should this tender be accepted in whole abide by and fulfill all the terms and provisions of the said conditions annexed here to,

Complete the works within stipulated (01 Calendar Months) time as per the work program enclosed with the tender in two or three shifts if considered necessary by the Employer at no extra cost to the Employer.

I/We will submit the 5% security deposit amount in the form of DD/BC or BG in favour of State Bank of India payable at Bhubaneswar as stipulated in the NIT, respectively which, I/We note, will not bear any interest and is liable for forfeiture.

I/We understand that you are not bound to accept the lowest or any tender you receive.

Yours faithfully,
Signature ……..
Designation …….
Name of Partner / Director of the Firm, authorized to sign or name of person having power of attorney to sign the contract. (Certified true copy of power of attorney should be attached)
Signature and address of witnesses:
a. Signature ……
Name ……
Address ……
b. Signature……..
Name ……
Address ……

A. TESTING & INSPECTION

a) All materials required for the execution of the work should be new and should conform to applicable standard specification and approved by the Bank's Engineer before actually put to use. Commencement of work without prior approval shall be entirely at the risk and cost of the Vendor. No delay due to non-availability of the materials, tools, equipment etc. will be entertained by the SBI. In the case of certain Machinery / Equipment, the Bank's Engineer may inspect the item for approval, before they are brought to site.

b) The SBI shall be entitled at all times at the risk of the Vendor to inspect and/or test by themselves or through any independent person(s) or agency (ies) appointed by the SBI and/or to direct the Vendor to inspect and/or test all material(s), items and components whatsoever supplied or proposed for supply, for incorporation in the work inclusive, during the course of manufacture or fabrication by the Vendor and/or at the Vendors work or otherwise, such materials or items or components. The inspection and/or test shall be conducted at the expense of the Vendor and if conducted by the Vendor may be directed by the SBI to be conducted by agency (ies) nominated by SBI and/or in the presence of witness (ess) nominated by the SBI.

c) The Vendor shall furnish to the Bank's Engineer for approval when requested or as required by the specification or other contract documents, adequate samples of material intended for incorporation in the works. Such sample to be submitted before the work is commenced permitting sufficient time for tests, examination(s) thereto by the Bank's Engineer. All materials furnished and incorporated in the work shall conform to the sample(s) in all respects.

d) The Bank's Engineer shall be entitled to reject at any time any defective materials, item or components, (including special manufactured or fabricated items or components) supplied by the Vendor for incorporation in the works.

e) The Vendor shall at all times ensure highest standard of workmanship, relating to the work to the satisfaction of the Bank's Engineer. The Bank's Engineer shall have the power to inspect the work as also to test or instruct the Vendor to test the works or any structure, material or component thereto at the risk and cost of the Vendor, either by the Vendor or by any agency(ies) nominated by the Bank's Engineer or Site Engineer on his behalf.

f) The Vendor shall provide all facilities; instruments material / labour and accommodation required for testing the works (including checking the set time out of work) and shall provide Bank's Engineer all assistance necessary to conduct the test whenever and wherever required.

g) The Bank's Engineer, on inspection or test if not satisfied with the quality or workmanship of any work, structure, material, component (decision of the Bank's Engineer being final in this behalf), the Vendor shall re-perform, replace, re-install and / or re-erect as the case may be such work, structure material or component, as no such rejected work, structure, material, item or component shall be re-used without the prior permission of Bank's Engineer.

h) Notwithstanding any provided in the foregoing clauses hereto and notwithstanding the Bank's Engineer/ or his representative has inspected tested and/or approved any particular work, structure, material or component, such inspection, test or approval shall not absolve the Vendor of his full responsibilities under the contract inclusive or relative to the specification, performance guarantee. The said inspection and test

procedure being intended basically for satisfaction of the SBI / prima-facie erection and/or material and equipment supplied for incorporation in the work is in order.

i) On no account, shall the Vendor proceed with the covering up or otherwise placing beyond reach of inspection or measurement any work before necessary inspection, entries are filled in the Site Inspection Register by the Bank's Engineer or his authorized representative. The Vendor do so the same shall be uncovered at the Vendor's risk and expense for carrying out the inspection and measurement.

j) If any tests are required to be carried out in connection with the work or materials or workmanship not supplied by the Vendor, such tests shall be carried out by the Vendor as per the instructions of Bank's Engineer and cost of such tests shall be reimbursed by the SBI.

k) The SBI reserve the right to inspect the Equipment at Bidders' works by them or through a third party nominated by the SBI. Bidders will provide all assistance to SBI's inspector in carrying out such inspection at Bidder's works free of any charges.

B. WARRANTY: MAINTENANCE DURING WARRANTY PERIOD:

a) **Warranty / Guarantee** shall be a comprehensive one, of free replacement of any failed components in the system, except in cases of misuse, relocation, accidents or sabotage and replacement of batteries (**beyond their warranty)** for the battery back-up. *The warranty shall also entail free, on-site, preventive maintenance of the system* at **quarterly intervals** as per maintenance schedule. There shall be no let or relief on this account. A proper record of all such maintenance work duly authenticated by the authorized SBI Official shall be kept by you and a copy of the same shall be submitted to the Fire Officer for his record. The Vendor will repair and/or replace all defective parts, components / fittings, accessories etc. which shall be notified to them in writing within the Defect Liability Period Promptly at free of cost. The Vendor will provide similar warranty on the parts, components, fittings, accessories etc. repaired and/ or replaced.

b) During the currency of the warranty, any number of fault complaints shall have to be attended-to, free of charge. It is to be noted well that any such complaint has to be attended within the timeframe laid down i.e., within 72 hrs. Failure on this score may invite penal action. The initial maintenance during the warranty period of the system as well as the battery (which is covered by its separate warranty) will be free of charge and shall include free replacement of any / all failed components / spares, with regular quarterly visits to carry out maintenance of the system.

C. SITE PARTICULARS

The intending bidders shall be deemed to have visited the site and familiarized themselves thoroughly with the site conditions before submitting the tender. Non-familiarity with the site conditions will not be considered reason either for extra claims or for not carrying out the work in strict conformity with the drawings and specifications.

D. SUPPLY OF MATERIAL

9.01 All materials required for the work shall be supplied by the Vendor. In addition, all materials required for temporary and enabling work shall be arranged and provided by the Vendor. All incidental expenses, loading, unloading, transportation, handling etc. shall be the responsibility of the Vendor and cost towards such expenses should be included in the finished item rates.

9.02 All other materials, as required to complete the works in all respects according to the contract rates shall be inclusive of all freights, and other taxes, duties, loading, unloading, transporting, handling and storage charges etc. GST will be paid extra as applicable.

E. TIME FOR COMPLETION OF WORK

a) The Vendor shall complete in all respects in accordance with the Contract, the entire work at each job site within the time specified in this behalf in the Time Schedule**. One (01) - Calendar month from the date of placing work order.**

b) The opinion / decision of the Bank's Engineer on this behalf and as to the extension of time necessary shall be final and binding upon the Vendor.

c) The term "Force Majeure" as employed in this contract shall mean wars (declared or undeclared) or revolutions, civil wars, tidal waves, fires, major floods, earthquakes, epidemics, pandemic, quarantine restrictions and freight embargoes and transporters strike affecting the country as a whole.

F. LIQUIDATED DAMAGE

a) If the Vendor is unable to complete the jobs specified in the scope of work within the period specified in NIT, it may request SBI for extension of the time with unconditionally agreeing for payment of LD. Upon receipt of such a request, SBI may at its discretion extend the period of completion and shall recover from the Vendor's running account bill, as an ascertained and agreed Liquidated Damages, a sum equivalent to 0.5% of basic contract value for each week of delay or part thereof. The LD shall be limited to 5% of the total basic contract value.

b) Notwithstanding what is stated in Clause above, the SBI shall have the right to employ any other agency to complete the remaining work at the risk and cost of the Vendor, in the event of his failing to complete the work within the stipulated time or in the even progress of Vendor's work is behind schedule, as judged by the Bank's Engineer.

c) Then the Bank's Engineer upon receiving necessary approval from competent Authority may in writing make a fair and reasonable extension of time for completion of the works as per provision of tender, provided further that the Vendor shall constantly use his best endeavor to the satisfaction to proceed with the works. Nothing herein shall prejudice the rights of the Vendor under clause herein above.

G. TERMS OF PAYMENT

a) No mobilization advance shall be paid to the Vendor.

b) 50% against supply of item wise materials upon receiving of materials at site in good condition and duly inspected and certified by the Bank's Fire Officer.

c) 45% against successful installation upon verification and certification by the Fire Officer.

d) 05% against after completion of warranty period of one year.

e) Final payment shall be released based upon the measured installed quantity.

H. ARBITRATION

Any dispute or difference arising under this Contract shall be referred under jurisdiction of Bhubaneswar to a sole arbitrator to be appointed by the SBI and the provisions of Arbitration and Conciliation (Amendment) Act, 2015 including any statutory modifications or enactment thereof shall apply to the Arbitration proceedings. The fees of the arbitrator, if any, shall be shared equally by both the parties. The award shall be a speaking award stating reason therefore and is final & binding on the parties. The proceeding shall be conducted in English language and courts at Bhubaneswar will have exclusive jurisdiction to settle any dispute arising out of this contract.

I. EXTRA ITEMS OF WORK

a) During the course of execution of the work, should the Vendor come across items of work which are not covered under the Schedule of Rate or not included therein, the Vendor shall draw the attention of the SBI / Bank's Engineer to the same and such items of work shall be treated as extra only with the prior approval of Bank's Engineer in writing. Vendor shall submit a quotation along with the rate analysis for such accepted extra items before he commences work or purchases the materials in connection with such items.

b) For extra items, rates shall be derived from similar item rates included in the schedule of work. Where there is no such similar item available in the schedule, rate shall be analyzed as follows: Rate for extra item = Cost of material including transportation till site (a) + cost of labour inclusive of all necessary tools, tackles, equipment, machinery, and consumable (b) required to carry out the work + 15% of (a+b) towards profit and overhead + taxes, duties etc.

J. RIGHT OF SBI TO TERMINATE THE CONTRACT

a) SBI shall, at any time, be entitled to determine and terminate the Contract, if in the opinion of the SBI the cessation of the Work becomes necessary owing to paucity of funds or for any other cause whatsoever, in which case the cost of approved materials at the Site at current market rates as verified and approved by Bank's Engineer and of the value of the Work done to date by the Vendor shall be paid for in full at the specified in the Contract.

b) A notice in writing from the SBI to the Vendor of such determination and termination and the reason therefore shall be the conclusive proof of the fact that the Contract has been so determined and terminated by the SBI. The SBI's decision on the necessity and propriety of such expenditure shall be final and conclusive and binding on the Vendor.

K. LABOUR LAWS

a) No Labour below the age of eighteen (18) years shall be employed on Work. In case female workers are engaged, requisite provisions shall be made as per the statute.

b) Vendor shall not pay less than what is provided under law to laborers engaged by him on Work.

c) Vendor shall at his expense comply with all labor laws and keep SBI indemnified in respect thereof.

d) In addition to above, rules and regulations as contained in Contract Laborer (Regulation and Abolition) Act, 1970 will also be applicable for this contract.

e) Vendor shall secure full safety of the workers / employees engaged by him in the Site premises and shall take at his own cost, insurances, and such other safety regulations for the said purpose.

L. INSURANCE

a) Vendor shall at his own expense carry out and maintain insurance with reputable companies to the satisfaction of the SBI as follows:

b) Employee's Compensation and Liability Insurance:

c) Vendor shall obtain Workmen Compensation policy in his name in respect of Vendor's employees to be engaged for the work towards compensations as admissible under the Employee's Compensation Act, 1923 and Rules framed there under upon death/ disablement and also medical treatment of a worker and the same

has to be produced to the Bank's Engineer before start of the work. SBI should be mentioned as the Beneficiary.

M. HSE REQUIREMENTS BY VENDORS

1) Housekeeping:

a) Vendors shall ensure that their work area is kept clean, tidy, and free from debris. The work areas must be cleaned on a daily basis. Any disposal of waste shall be done by the Vendor.

b) All equipment, materials and vehicles shall be stored in an orderly manner. Access to emergency equipment, exits, telephones, safety showers, eye washes, fire extinguishers, pull boxes, fire hoses, etc. shall not be blocked or disturbed.

2) Confined Space:

Before commencing Work in a confined space, the Vendor must obtain from SBI a Permit to Work, the Permit to Work will define the requirements to be followed. As minimum Vendors must ensure the following:

a) Confined spaces are kept identified and marked by a sign near the entrance(s).
b) Adequate ventilation is provided
c) Adequate emergency provisions are in place
d) Appropriate air monitoring is performed to ensure oxygen is above 20%.
e) Persons are provided with Confined Space training.
f) All necessary equipment and support personnel required to enter a Confined space is provided.

3) Tools, Equipment and Machinery:

The Vendor must ensure that all tools & equipment provided for use during the Work is:

a) Suitable for its intended use.
b) Safe for use, maintained in a safe condition and where necessary inspected to ensure this remains the case (any inspection must be carried out by a competent person);
c) Used only by people who have received adequate information, instruction and training to use the tool or equipment.
d) Provided with Earth leakage circuit breaker (ELCBs) at all times when using electric power cords. Use of electrical tape for temporary repairs is prohibited.

4) Working at Height:

Any Work undertaken where there is a risk of fall and injury is considered to be working at height. For any Vendor Personnel working at height, Vendors shall provide fall prevention whenever possible and fall protection only when fall prevention is not practicable. Before commencing Work in a height, the Vendor must obtain from SBI a Permit to Work, the Permit to Work will define the requirements to be followed. Supervisor must be present at all point of time, to ensure no deviation occur during the course of work.

5) Fall Prevention System:

Fall prevention systems (e.g., fixed guardrails, scaffolds, elevated work platforms) must provide protection for areas with open sides, including exposed floor openings.

6) Fall Protection Systems:

Where fall protection systems are used then the Vendor must ensure the following is applied:

a) Only approved full body harness and two shock-absorbing lanyards are used,
b) Prior establishment of a rescue plan for the immediate rescue of an employee in the event they experience a fall while using the system,
c) Anchorage points must be at waist level or higher; and capable of supporting at least the attached weight,
d) Lifeline systems must be approved by SBI before use.
e) Use of ISI marked industrial helmet at all point of time.

7) Scaffolding:

a) All scaffolds shall subject to a documented inspection by a competent person and clearly marked prior to use. The footings or anchorage for scaffolds shall be sound, rigid and capable of carrying the maximum intended load without settling or displacement. All scaffolding materials should be of MS tubular type.

b) Guardrails and toe-boards shall be installed on all open sides and ends of scaffold platforms. Scaffolds shall be provided with an access ladder or equivalent safe access. Vendor Personnel shall not climb or work from scaffold handrails, mid-rails or brace members.

8) Stairways and Ladders:

a) Ladders should only be used for light duty, short-term work or access in line with the below and the Site Requirements.
b) Fabricated ladders are prohibited.
c) Ladders will be secured to keep them from shifting, slipping, being knocked or blown over.
d) Ladders will never be tied to facility services piping, conduits, or ventilation ducting.
e) Ladders will be lowered and securely stored at the end of each workday.
f) Ladders shall be maintained free of oil, grease and other slipping hazards
g) Ladders will be visually inspected by a competent person and approved for use before being put into service. Each user shall inspect ladders visually before using.
h) Ladders with structural defects shall be tagged "Do Not Use," immediately taken out of service, and removed from the Site by the end of the day.

9) Lifting Equipment and Accessories:

a) All lifting equipment / accessories e.g., slings, chains, webbing, chain blocks, winches, jacks etc shall be indicated with their safe working load have an identification number visible on the unit and be inspected and tested in accordance with legal requirements.
b) Damaged equipment / accessories and equipment shall be tagged “out of use” and immediately removed from Site.

10) Lockout Tag out (“LOTO”):

Prior to performing work on machines or equipment, the Vendor shall ensure that it is familiar with LOTO and Permit to Work procedures and that all of its affected Vendor Personnel receive the necessary training.

11) Barricades:

a) Floor openings, stairwells, platforms and walkways, and trenching where a person can fall any distance shall be adequately barricaded and where necessary, well lit. Where there is a risk of injury from a fall then rigid barriers must be used.
b) Barricades must also be used to prevent personnel entering an area where risk of injury is high e.g., during overhead work activity or electrical testing etc. Such barricading must provide clear visual warning. Compressed Gas Cylinders
c) Gas cylinder shall be securely stored and transported and identified and used in line with the local requirements. Hose lines shall be inspected and tested for leaks in line with local requirements. Flash back arrestor to be used to prevent any explosion due to backfire.

12) Electrical Safety

Prior to undertaking any work on live electrical equipment, the Vendor must obtain a Permit to Work from SBI. Wherever possible live work should be avoided. Any control measures highlighted shall be implemented prior to work commencing. The below measures will be taken:

a) Work practices must protect against direct or indirect body contact by means of tools or materials and be suitable for work conditions and the exposed voltage level.

b) Energized panels will be closed after normal working hours and whenever they are unattended. Temporary wiring will be de-energized when not in use.
c) Only qualified electrical Vendor Personnel may enter substations and/or transformer and only after being specifically authorized by SBI.
d) Electrical Safety device such as ELCB, MCB, RRCB etc to be provided before making connection.

13) Hot Works:

a) A Permit to Work must be obtained from SBI prior to any hot works (welding, grinding, open flame work). Suitable fire extinguishing equipment shall be immediately available. Objects to be welded, cut or heated shall be moved to a designated safe location, or, if they cannot be readily moved, all movable fire hazards in the vicinity shall be taken to a safe place. Personnel working around or below the hot works shall be protected from falling or flying objects.
b) Prior to the use of temporary propane or resistance heating devices approval must be obtained from SBI.

14) Trenching, Excavating, Drilling and Concreting:

a) A Permit to Work must be obtained from SBI and all underground lines; equipment and electrical cables shall be identified and located prior to beginning the work. The Vendor shall assign a competent Vendor Personnel to all trenching and excavation work.
b) Safe means of access and egress shall be located in trench excavations. Daily inspections shall be conducted by a competent Vendor Personnel for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems or other hazardous conditions. Physical barriers shall be placed around or over trenches and excavations.

15) Environmental Requirements:

a) **Waste Management:** The Vendor is responsible to remove any waste generated by the work being done on the Site. The Vendor must dispose of the waste in line with the relevant local legislative requirements. The waste disposal route shall be documented and made available for SBI to review at any time and may be subject to SBI's prior approval.
b) Wastes (includes rinse from washing of equipment, PPE, tools, etc) are not to be poured into sinks, drains, toilets, or storm sewers, or onto the ground. Solid or liquid wastes that are hazardous or regulated in any way are not to be disposed of in general site waste receptacles.
c) **Spills**: The Vendor is responsible for the provision of adequate spill kits/protection and the clean-up and disposal costs arising from such spills.
d) **Emissions:** The Vendor shall identify and quantify any emission sources associated with the Works. The control measures associated with these emissions shall be subject to the approval of SBI's Emissions include but are not limited to noise, dust, fumes, vapors.

16) Gas Cutting Activity:

a) The gas cylinder shall be carried in a trolley.
b) The rubber hose fitted to the gas cylinder shall of good quality and sufficiently long.
c) The gas cylinder shall be fitted with gas regulator and pressure gauges which must be in good working condition. Non-return valve shall be provided on the gas cylinder to prevent back fire.
d) All the joints on gas cylinder, gas cylinder valves, gas holder connection, gas rubber hose joints etc shall be free from any type of leakage.
e) The operator shall wear helmet, hand gloves, safety goggles, shoes etc while carrying out the activity. While working at height safety belt shall be used. The operator shall use gas lighter to light the gas.

f) The workplace and its surrounding areas shall be free from any flammable or combustible materials.
g) The gas cylinder shall be kept away from any hot object.
h) The gas hose shall be kept away to prevent any contact with the hot falling material.
i) The area below and its surrounding shall be free from any other activity or cordon off.
j) Fire extinguishing medium like fire extinguishers, water or sand shall be available at the workplace.
k) After completion of the job close the valve of the gas cylinder and discharge the gas from the gas hose. Keep the gas cylinder and gas pipe in a proper place.

N. <u>TECHNICAL SPECIFICATIONS OF PUBLIC ADDRESS SYSTEM (INDOOR USE)</u>:

The installation and use of amplifying systems for public and private functions have been greatly on the increase in the past few years. While in some instances such installations are done by professional engineers, more often than not, installation by non-professional people show inadequate attention to essential details and under such circumstances, even the best pieces of Public Address equipment do not give their optimum performance. This code has been prepared with a view to act, as a guide for indoor installations (permanent as well as temporary) taking into consideration the practical limitations and requirements which are normally met with

1.0 The installation of sound distribution system in closed auditoria and other enclosures calls for careful choice of equipment, positioning of the various units of the system and many other precautions to be taken in order to obtain the optimum performance from such a system. As is well known, the acoustics of the hall or enclosure itself plays a significant role in the ultimate effect of the installation. These aspects are taken into consideration while preparing this code. However, it is also recommended that for large scale installations, advice of a competent and qualified sound engineer should be sought. Such an engineer should be able to assist in preparing an initial statement of the exact requirements of the equipment to meet a particular situation and later on confirm that the installation offered is likely to meet the needs of such a situation. This code covers the preliminary steps to be taken, design consideration, choice of equipment and installation practices including installations of column loudspeakers.

1.1 Since most of the public-address installations work from electric mains supply, the need for safety precautions is obvious. Consideration has, therefore, been given in this code to the best practices of earthing and other steps to prevent electrical shocks from accidental contact. Besides, a nomogram for easy determination of audio power required in the specified enclosure has also been included. Unless specified otherwise, the requirements or characteristics of amplifier, specified in this standard are based on the methods of measurements specified in IS 9302 (Part 2): 1979 ‘Characteristics and methods of measurements for sound system equipment: Part 2 Amplifiers’. Installation of outdoor public address systems, though having many features in common with indoor systems, varies from the latter mainly on the question of effect of the acoustics of the hall or enclosure itself, and to cover it, a separate code of ~practice, namely, IS 1882: 1961 ‘Code of practice for outdoor installation of public address systems’, has been prepared. Wherever a reference to any Indian Standard appears in this code, it shall be taken as a reference to the latest version of the standard.

1.2 All quantities and dimensions appearing in this standard have been given in metric system. This code is intended chiefly to recommend the requirements of design and quality of equipment and the methods of installation of indoor public address amplifying and sound distribution systems, and it does not include all the necessary provisions of a contract. In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in

accordance with IS 2: 1960 'Rules for rounding off numerical values (revised)'. Generally, works to be carried out as per BIS standard and applicable and National Building Code of India (NBC). Items are required to be use in Public Address System is as under, which may be change as per the future requirement of the Bank:

S.No.	Items	Specification	Make/Brand
i.	Advanced Power Mixing Amplifier 120/240 Watt	120/240 Watt advanced power mixing amplifier within built blue tooth for audio streaming, supports audio play back from USB pen drive, 4 mike / line inputs plus music source input, 2 tone chime generator for channel 1, Inrush current 36 A, Freq response 80 to 18000 Hz, Distortion <1%, Bass & treble control +-8Db, Front panel has Power-ON switch with LED indication • LCD display, USB port, UBS/BT keyboard functions with IR remote sensor • Four volume knobs for microphone inputs • Volume knob for AUX input • Knob for treble level • Knob for bass level • Master volume knob • LED VU meter for master output (LEDs for -18, -12, -6,-3,0 dB) Headphone socket and surge voltage protection.	Ahuja / Honeywell/ Bosch or equivalent
ii	Booster Power Amplifier	Bosch 240/480 WATT booster power amplifier having multiple outputs 70 /100 Volts and 8/4 Ohms, Temperature controlled forced front to back ventilation directly stackable, mains / battery backup ,2U 19" case, input voltage 230 Volts AC Frequency 60 to 18000 Hz, S/N Ratio > 85dB . Power consumption 760 VA, gain 40 dB. Impedance > 20 K Ohms with surge voltage protection.	Ahuja / Honeywell/ Bosch or equivalent
iii.	Gooseneck microphone condenser type	Bosch Gooseneck microphone condenser type unidirectional with flexible stem, phantom powered, voltage range 12-48 Volts, sensitivity 2.5 mV/pascal, Freq 100 to 16000 Hz, output impedance < 200 Ohms. Mike to be fitted on some good quality desk stand with On /Off facility with announcement starting/alert tune.	Ahuja / Honeywell/ Bosch or equivalent
iv	Recessed mount (Ceiling), Speakers 4/6/8 watts with selectable 8 Ohms, 70 & 100 Volts taps	Recessed mount (Ceiling), 4/6/8 Watt with built in 100 Volt Line Matching transformers complete with dual cone loudspeaker and frame. A circular metal grille is an integrated part of the front. Ceiling speakers are supplied with a 100 V matching transformer with taps on the primary winding for full power, half-power, quarter-power and eighth-power radiation. The unit has integral spring clamps on the rear which can be used to easily fix the loudspeaker into the false ceiling. Rated power SPL 108 dB, Effective Freq 150 to 15000 Hz, Rated impedance 1667 Ohms. Max power 8 Watt & rated voltage 70 / 100 Volts	Ahuja / Honeywell/ Bosch or equivalent
v	Wall mounted Speakers 4/6/8 watts with selectable 8	Wall mounted 4/6/8 watt with built in 100 Volt Line Matching transformer complete with dual cone loudspeaker and frame. A circular metal grille is an integrated part of the front. Ceiling speakers are	Ahuja / Honeywell/ Bosch or

	Ohms, 70 & 100 Volts taps	supplied with a 100 V matching transformer with taps on the primary winding for full power, Half-power, quarter-power, and eighth-power radiation. The unit has integral spring clamps on the rear which can be used to easily fix the loudspeaker into the false ceiling. Rated power SPL 108 dB, Effective Freq 150 to 15000 Hz, Rated impedance 1667 Ohms. Max power 8 Watt & rated voltage 70 / 100 Volts	equivalent
vi	Steel Rack for Amplifiers complete with pre-wired and control accessible from the front	Convenient and quick movable on wheal Cable entry from the rear side Turning Angle of front and Rear Door over 180^0 Material SPC quality cold rolled sheet Powder coating frame Compatible with 19" international standard. Maximum Loading capacity 60-80 Kg Welded frame with reliable structure Front toughened Glass door	Leading Brand fulfill the specification
vii	Wiring Cable	Wiring: 1.5 sq mm 2 core PVC insulated preferably FRLS with low impedance	Polycab/Finolex/RR Kabel or equivalent
viii	PVC Conduit	PVC Conduit 1"-1.5"	Leading / ISI Brand

5.0 PART-V: SCOPE OF WORK

5.1 SUPPLY, INSTALLATION, TESTING, COMMISSIONING OF PUBLIC ADDRESS SYSTEM (INDOOR USE) COVERS THE FOLLOWING:

i. Supply, installation, testing, commissioning, handing over to owner the complete **PUBLIC ADDRESS SYSTEM (INDOOR USE)** as per IS-18881-1998 (CODE OF PRACTICE FOR INDOOR INSTALLATION OF PUBLIC ADDRESS SYSTEMS) and as per latest edition of National building code.

ii. Transportation to site, unloading and intermediate storage at site, complete work of erection including final grouting, testing, and commissioning and putting into operation of entire fire protection system.

iii. Supply, installation, testing & commissioning of Public Address System as per schedule of work & specification.

iv. Supply of all consumable materials required to complete erection of the system.

v. Supply, installation, testing, commissioning of complete cabling for PA system including earthing cable etc.

vi. Supply of various drawings, data, test reports, test certificates, operation, and Maintenance manual as necessary.

vii. The cost incurred for covering complete scope of work specified above shall be included in various items of schedule of works. No extra payment shall be given for covering anything of the above scope of works.

5.2 SHOP / EXECUTION DRAWINGS:

a) Before starting the work, the contractor shall submit to the Fire Officer for his approval in the prescribed manner, the shop / execution drawings for the entire Installation.

b) The BANK reserves the right to alter or modify these drawings if they are found to be

insufficient or not complying with the established technical standards or if they do not offer the most satisfactory performance or accessibility for maintenance. Contractor shall supply in six (6) sets of all approved shop drawings for execution. Shop drawings shall be submitted under the following conditions: -

i) Large scale drawings showing fixing detail of fixtures, equipment, and showing co-ordination with other services. Showing any change in layout in the Fire Fighting drawings.

ii) Equipment layout and wiring diagram along with Manufacturer's or Contractor's fabrication drawings for any materials or equipment supplied by him.

iii) The contractor shall submit four copies of catalogues, manufacturer's drawings, equipment characteristics data or performance chart as required by the Engineer-in-Charge.

5.3 INSTRUCTION/MAINTENANCE MANUAL:

The Contractor shall prepare and produce instruction, operation, and maintenance manuals in English for the use, operation and the maintenance of the supplied equipment and installations and submit to the Bank in (2) copies at the time of handing over. The manual shall generally consist of the following:

a) Description of the project.
b) Operating instructions.
c) Maintenance instructions including procedures for preventive maintenance.
d) Manufacturer's catalog.
e) Spare parts list.
f) Trouble shooting charts.
g) Drawings.
h) Type and routine test certificates of major items.
i) One (1) set of reproducible `as built' firefighting system drawings.

5.4 COMPLETION CERTIFICATE: On completion of the Fire Fighting installation a certificate shall be furnished by the contractor countersigned by the licensed supervisor, under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local supply authority.

5.5 GUARANTEE: At the close of the work and before issuance of final certificate of completion by the SBI Fire Officer/Consultants, the contractor shall furnish written guarantee indemnifying the owner against defective materials and workmanship for a period of **One Year.** The contractor shall hold himself fully responsible for reinstallation or replacement, free of cost to owner, the following:

a) Any defective work or material supplied by the Contractor.
b) Any material or equipment supplied by the owner which is damaged or destroyed as a result of defective workmanship by the contractor.
c) Any material or equipment damaged or destroyed as a result of defective Workmanship by the contractor.

5.6 MAINTENANCE DURING WARRANTY PERIOD:

a) During the currency of the warranty and annual maintenance contract, any number of fault complaints shall have to be attended-to, free of charge. It is to be noted well that any such complaint has to be attended within the timeframe laid down i.e. within 24 hrs. Failure on this score may invite penal action**.**

b) The initial maintenance during the warranty period of the system as well as the battery (which is covered by its separate warranty) will be free of charge and shall include free replacement of any / all failed components / spares, **with regular quarterly visits to carry out maintenance of the system, as per the enclosed schedule** and scope of work under AMC.

5.7 DEMONSTRATION /TRAINING OF PA SYSTEM

Imperative Training / demonstration on handling of PA System is vital role for the Bank's staff posted at the Branches / Offices. Therefore, to avert any Fire Incident in its incipient stage the occupants must have the knowledge on handling /operation of the PA System available at the site. It is necessary for the Vendors / Firms /Contractors, to visit the Branches for AMC/Maintenance as per schedule (whenever they due), or on any Breakdown whenever warranted. Representative of the Firm have to conduct demonstration with prior permission to the BM to conduct a small training session (10-15 minutes) during AMC/**NEW INSTALLATION**. The details of training /demonstration must be recorded in Security Information register and also mentioned in Service Certificate issued to the Branches/Offices.

6.0 TERMINOLOGY AND OTHER TECHNICALITY IN PA SYSTEM

6.1.0 AMPLIFYING SYSTEM: That part of the installation which comprises of preamplifiers, mixers, equalizers, and power amplifier.

6.1.1 PRE-AMPLIFIER: The part of the amplifying system, & essentially a voltage amplifier, suitable for operation with input source such as from microphone, tape player, etc. The output from such an amplifier is connected to a mixer or another amplifier operating at a higher input level.

6.1.2 POWER AMPLIFIER: The part of the amplifying system intended to amplify the signal derived from pre-amplifier, mixer, and equalizer to a level capable of driving load, that is, loudspeaker.

6.1.3 MIXER: A mixer is a device used to mix two or more input signals from microphones as well as from input sources like cassette tape players, electronic Morgan, etc. The mixer also has inbuilt pre-amplifier so that mixer can be connected to another amplifier operating at higher input level.

6.1.4 MIXER CONSOLES: When large number of microphone inputs are required, these cannot be handled by mixing stage provided in the amplifier. For such applications audio mixing consoles, should be provided. Normally audio mixing consoles are for 8, 12 and 18 inputs. Audio mixing consoles should provide following minimum facilities: b) 3 Band equalizers for '**Bass**', '**Mid**' and '**Treble**' cut and booster controls for each channel. Sensitivity control for each channel to adjust the input, thus preventing overloading of each channel. c) Overload indicator LED for each channel. d) Facility for programme. e) Facility for stage monitoring (fold back).

6.1.6 EQUALIZER: An equalizer is a circuit to perform equalization which is a technique employed in transmitting, recording or amplifying program material by which selected frequencies are compensated in order to obtain a desired overall frequency response. The term is also applied to the matching of sound systems to room acoustics by the use of filter.

6.1.7 LOUDSPEAKER CLUSTER: A combination of direct radiator type LF driver and HF driver (direct radiator or compression type) with frequency divider network. These are generally used for high quality installation.

6.1.8 CIRCUIT PLANS AND OPERATING INSTRUCTIONS: Complete block and schematic diagrams for the equipment installed should be prepared and made available along with the circuit diagrams for each of the equipment, at the place where the central equipment is located. The layout and sizes of the wiring and cabling should also be indicated. The loudspeaker load connected to each output line and the 'particulars of the line transformers should be indicated. The operating instructions should also be made available which, among others, should also indicate the rating of the fuses.

6.1.9 POWER SUPPLY: Local electricity authorities should be contacted for providing the electric power supply mains near the proposed location of the central equipment. The

installation should be normally operated from 240 volts, single phase, 50 Hz AC mains supply and preferably capable of operation from 12- 14 V storage battery.

6.1.10 INSTALLATION OF LOUDSPEAKERS, MICROPHONES AND WIRING: These items should be installed at appropriate time after other arrangements like decoration, seating, etc, are completed. This will minimize the risk of damage or loss. Necessary supports and structures for tithe loudspeakers may be erected after the information mentioned above has been obtained. The wiring for the loudspeakers and microphones may be laid just sufficiently in advance of the appropriate time for completing the installation so that preliminary tests that may be necessary to decide on the type and position of loudspeaker could be made after an acoustic survey. Normally the installations comprise the following principal items of equipment:

a) Source of Input Signals - One or more microphones, cassette player or any other sound recording and reproducing equipment.

b) Amplifying Equipment System-One or more amplifiers; and

c) Loudspeakers.

6.2.0 AMPLIFYING SYSTEM/EQUIPMENT: The rated output power of the amplifying equipment should be sufficient to work the loudspeaker load connected to the output line. The amplifier which may have sensitivity sufficient to operate only from the highest input voltage likely to be met with has to be supplemented with pre-amplifier for use with sources of lower voltage. Either integrated amplifier having facility for accepting input signal from various sources mentioned in above or a separate mixer and booster combination can be used. The output transformers of the amplifiers should have impedance tapings of 4, 8 and 16 ohms to enable operation with loudspeakers of these standard impedances. When specified, the transformer should be provided with 70 to 100 volts constant voltage tapings. High power amplifiers should be capable of withstanding short-term overload, etc. Also incorporate safeguards against excessive voltage or current rise in case of open circuit conditions or short. Circuit conditions respectively, in the output circuit. The frequency response of the amplifiers used for high quality reproduction should be within plus-minus 3 dB from 75 to 10 000 Hz. For general purpose, the response should -be within +3 dB from 100 to 7 500 Hz. The amplifying system may be provided with tone controls. For high quality reproduction, there should be provision for both bass and treble controls.

6.2.1 LOUDSPEAKER-LINE-MATCHING TRANSFORMERS: In certain indoor installations, a large number of loudspeakers of different type connected to the output of the amplifying system through loudspeaker line-matching transformers may be required. These transformers should have at least the minimum frequency characteristics required of the public address system. The power handling capacity of the transformer used with a loudspeaker should not be less than the power to be absorbed by the speaker. These should have several taps on primary and/or secondary to give multiple turns ratio. These transformers enable the loudspeakers, through the selection of proper turns ratio, to take an input of the determined value of audio from the amplifier, care being taken at the same time not to overload the loudspeaker. Where the constant voltage output line from the amplifier is used, the total wattage of loudspeaker load should not exceed the rated power of the amplifier.

6.2.2 INSTALLATION PRACTICE: All equipment should be robustly made and designed for continuous operation. Equipment should securely be installed in such a manner as to have convenient access to all sides of it. Access by unauthorized persons should be guarded against. Precautions should be taken to keep away dust from the equipment, especially if earth moving machines, concrete mixers, etc, are working in immediate vicinity of the accommodation provided. Controls All preset controls should be mounted behind cover

plates and designed for adjustment only by use of a tool, such as a screwdriver. The use of manual controls should be restricted to as few as necessary.

a) All controls should be mechanically and electrically noiseless. For temporary installation or when the number of items of equipment is not large, they may be placed on a table and wired. The positioning of the equipment should be such that the lengths of the interconnecting cables are kept minimum for convenience.

b) Rack mounting for permanent installation or in case the number of items is large; it is desirable to mount them in racks of suitable dimensions. The racks may be of metal or wood and having compartments of uniform width assembled. Each compartment shall contain one Item of equipment. The height of the rack will depend on the number of items to be mounted and accommodation available, ensuring that all manual controls arc within easy reach.

c) Switches should be provided for isolating any faulty section of the equipment, thereby facilitating operation, and avoiding danger to the operating personnel. The arrangements made should enable the remaining part of the equipment to be available for use. The patch cords, if used, should be tested and neatly arranged to avoid obstruction and should be easily identifiable. Necessary safety measures should be adopted to avoid accidental contacts with high voltage points in the rack.

6.2.3 MICROPHONE INSTALLATION: Microphones should be, as far as possible, behind the loudspeakers in order to minimize acoustic feedback. The microphone stands may be on the floor, table, or desk type, capable of adjustment so that the height and direction of the microphone can be adjusted to suit the speaker. The microphone plugs and sockets should preferably be multi-contact type and freely interchangeable. The microphone sockets may be permanently fixed on the foot-light troughs as shown in Fig. 3 or suspended from ceiling. When suspended types of microphones are used, these should be hung and concealed from the audience. The correct distance between the microphone and source should be predetermined and arranged to be constant as far as possible. It is important to see that if the level of reverberant sound (undesired) or surrounding poise near the microphone is high, the distance between the microphone and the source of sound (desired) should be reduced. The sound source should be directed towards the microphone as otherwise the high notes which are highly directional, would not be satisfactorily picked up by the microphone and thereby the clarity of the speech sound reproduced by the public-address system will be poor.

Microphone should be low impedance type which permits the use of long microphone cables without any loss of high frequencies. When more than one microphone is employed, the output from several microphones should be mixed m a mixer and the common output fed to the amplifiers. Where the amplifier itself is capable of mixing the individual microphone inputs, separate mixer is not required.

6.2.4 LOUDSPEAKER INSTALLATION: For high quality reproduction, directional type of loudspeakers should be used. Vertical directivity pattern of the system should be such as to feed the audience at uniform level, avoid harmful reverberant sound or echo, and avoid feedback of energy to the microphones. In the horizontal plane, the directivity should be uniform across the width of the hall.

6.2.5 WIRING AND CABLING: Microphone and Other Input Source Cables These carry low level signal currents and are therefore susceptible to electrical interference. It is preferable to use twin core screened (copper braiding) microphone cable. The copper braiding should be sheathed with an insulating covering. The microphone cables should be isolated from power, loudspeaker and telephone cables. Joints in the cables should be avoided as far as possible. The plugs and sockets used for microphone cables should have strong self-cleaning contacts so as to eliminate noise and they should be non-reversible and have a sufficient number of pins to connect not only the main conductors but also the cable shield.

Microphone cables should be laid without sharp bends as far as possible. Inside the building, they may be laid on the floor along the walls or under the carpet to avoid damage due to heavy object falling on them and cutting them. When laid in the open, they should be either buried in the ground to a depth of not less than 20 cm or laid through an iron pipe buried in the ground to a depth of 15 cm if heavy pressure is expected due to movement of personnel over the surface. They may also be laid overhead at a height not less than 3.5 m from the ground clipped securely to a bearer wire which may be galvanized iron of diameter 1.60 to 2.00 mm, the length depending on the span of suspension. Protection by conduit or capping should be provided wherever there is a risk of damage or interference with the wiring. Any wiring, that is, to be run below about 1.8 m in height along corridors or outside walls or on the floor should be protected likewise. The conduit should permit easy drawing in and out of the cables. The input and output cables of the amplifying equipment should not be run in the same conduit in which mains power supply cables are drawn.

6.2.6 WIRING OF THE EQUIPMENT: A schematic diagram of the equipment, switching arrangements and incoming and outgoing lines should be drawn before the equipment is assembled and wired. The main and stand by equipment (if any) is wired in accordance with the scheme. Patch cords, if used, for connecting the equipment should be carefully checked for faults before use.

7.0 POWER SUPPLIES: MAINS SUPPLY: The equipment should normally be operated from 240 volts single phase 50 Hz AC mains supply. If, however, the supply is different, for example, 110 volts AC, a transformer of the required capacity and rating may be used. A voltage regulating device will have to be provided if the regulation of the power supply is poorer than +5 percent. The supply mains should be terminated in an iron clad switch with fuses of adequate capacity to meet the estimated load and provided with indicator lamps for each phase. Auxiliary switch board with 3 pin socket outlets and switch controls should be provided for connecting the soldering iron, test gear, inspection lamps, etc.

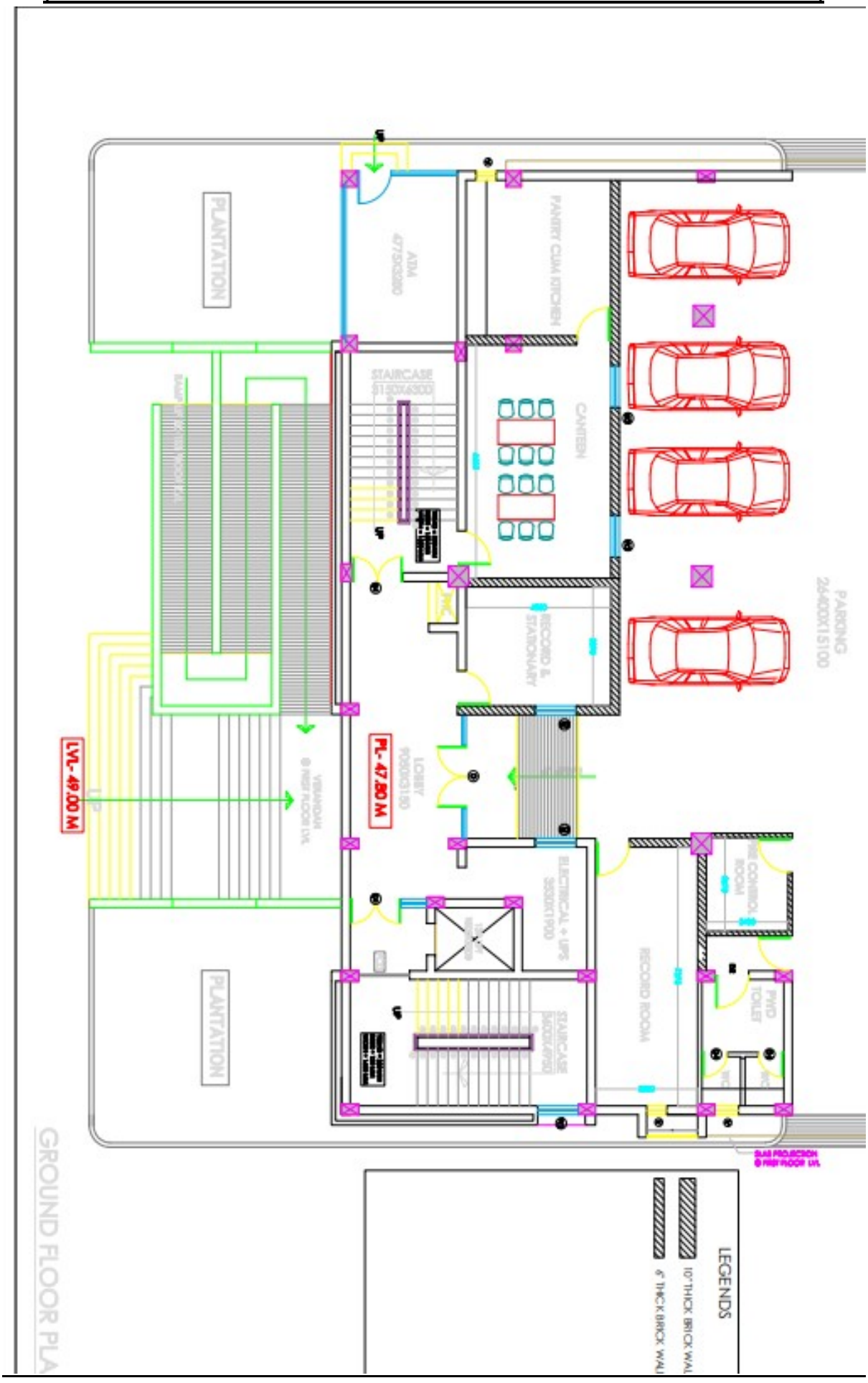
7.1.0 ABSENCE OF MAINS SUPPLY: If no mains supply is available, petrol or diesel engine driven generating sets of the required capacity giving 240 volts, single phase, 50 Hz AC power supply should be used. Such a generating set should be located at sufficient distance from the rostrum preferably a large building shielding it, so that its noise at the rostrum is not higher than what is present in the vicinity.

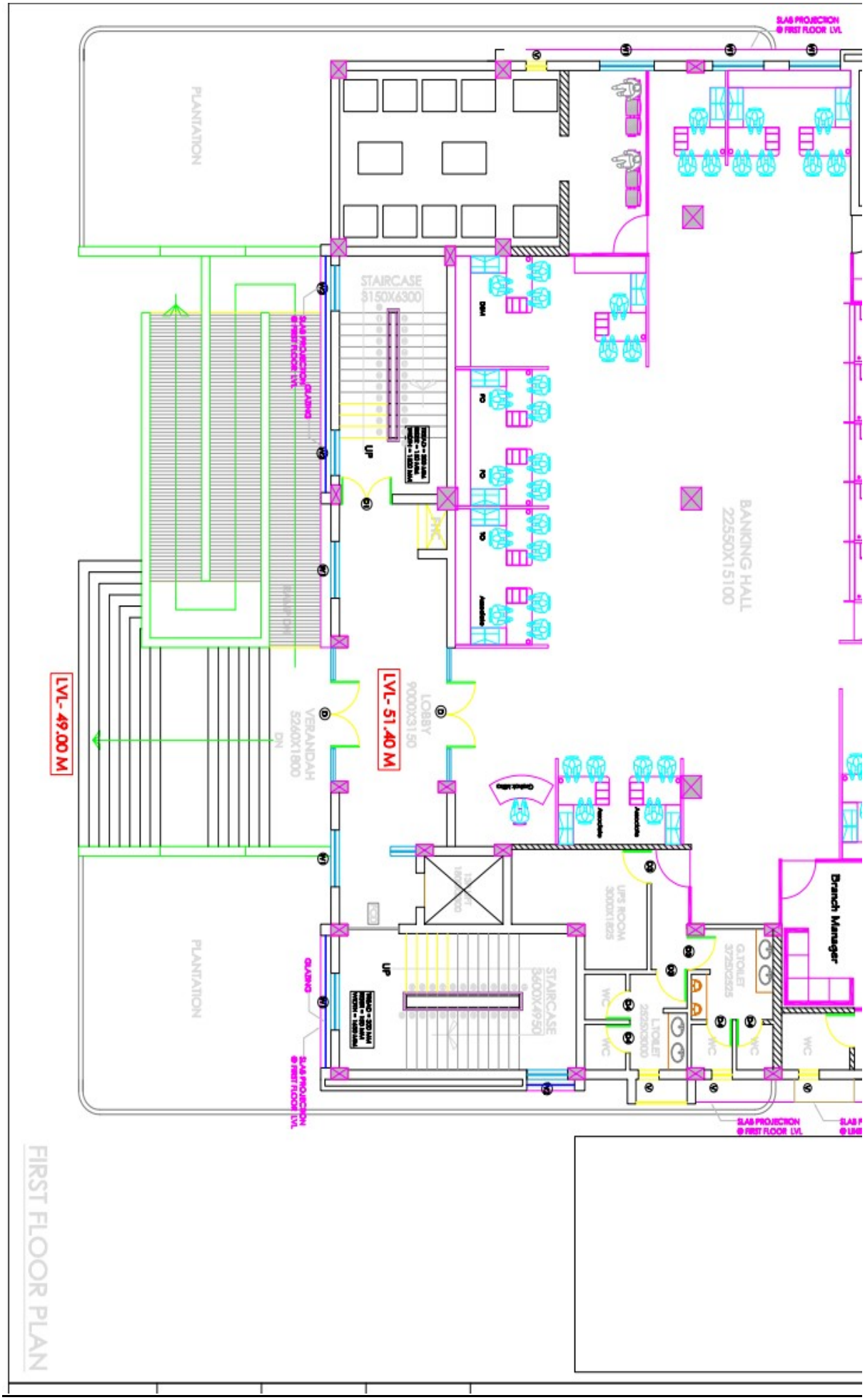
7.1.1 BATTERY SUPPLY: In case of low power installations or when no mains supply is available, the amplifying system should be capable of operation directly from a strong battery. All amplifiers should preferably be capable of operating on 12 V/24 V DC car battery besides on 240 V, 50 Hz AC supply.

7.1.2 EARTHING: Proper earthing of the entire installation (with appropriate earthing of the individual equipment also) is essential to avoid danger from any possible shock to the users of the equipment, the operating personnel, or the audience.

We have read carefully and understood the enclosed Terms & Conditions as **Annexure** and are acceptable to us.
Signature of Tenderer
Date & Place:

SCHEMATIC LAYOUT DIAGRAM
(ACTUAL TO BE MADE AS PER THE INSTALLATION AND TO BE SUBMITTED)




PLANTATION
STAIRCASE
3150X6300
UP
BANKING HALL
22550X15100
LVL- 49.00 M
LVL- 51.40 M
VERANDAH
5260X1800
LOBBY
9000X3150
PLANTATION
UP
STAIRCASE
5600X4950
UPS ROOM
3000X1825
Branch Manager
G.TOILET
3725X2525
L.TOILET
2925X3300
WC
WC
WC
WC
WC
SLAB PROJECTION
@ FIRST FLOOR LVL
SLAB PROJECTION
@ FIRST FLOOR LVL
SLAB PROJECTION
@ FIRST FLOOR LVL
FIRST FLOOR PLAN