

BANK OF BARODA



**Replacement, Supply, Installation, Testing and
Commissioning Of a Passenger Lift
For
Bank of Baroda
At
Staff Quarters, Sindhur Court, Mogappair, Chennai**

TECHNICAL BID

TENDER PERIOD FROM 25/10/2021 TO 16/11/2021 UPTO 3:00 PM

OPENING OF TECHNICAL BID ON 16/11/2021 AT 3:05 PM

BANK OF BARODA, ZONAL OFFICE, CHENNAI
REPLACEMENT, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF PASSENGER LIFTS

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Notice Inviting Tender

Approved Manufacturers

Bank of Baroda (BOB) invites sealed tenders under two cover system for Replacement, Supply, Installation, testing and Commissioning (SITC) of passenger lift (-6- passenger 408 kG capacity) for its residential building at Sindhur Court, 21 Church Road, Mogappair, Chennai -600 037 including the buy-back and replacement of existing lift.

The Annual Maintenance Services (AMC) shall also be provided by the approved manufacturer for 5 years after expiry of 12 months Defect Liability Period (DLP)

Details of tenders are as under:

1. Name of Work : Replace, Supply, Installation, Testing & Commissioning of a passenger lift for its staff quarters at Mogappair
2. Time allowed for completion : 3 months
3. Earnest Money Deposit : Rs. 1,00,000/- (Rupees One lakh only) in the form of DD in favour of General Manager, Bank of Baroda, payable at Chennai. Micro and Small Enterprises (MSEs) are exempted from submission Of EMD.
4. Initial Security Deposit : 2% of contract value
5. Security Deposit for Defect's Liability Period : 5% of contract value
6. Retention Money : 8% on Interim Bills
7. Last date and time of receipt of tenders : Up to **03:00 P.M. on 16.11.2021**
8. Address at which the tenders are to be submitted : The General Manager
Bank of Baroda
Zonal Office
3rd Floor, Baroda Pride
41, Luz Church Road, Mylapore, Chennai 600004
9. Date and time of opening of tender : Technical Bid/Cover I –16.11.2021 at 3:05 P.M.
10. Place of opening tenders : 1st floor, Baroda Pride, Mylapore, Chennai 600004
11. Defects Liability Period : 12 months from the date of commissioning
12. Validity of offer : 3 months from the date of opening of price bid of tender.
13. Liquidated Damages : 0.5% per week subject to a maximum of 5% of contract value.

14. Tender will be issued in two parts,

Part I: Containing terms and conditions, specifications etc. and
Part II: Contains Commercial part to be filled up as the Price Bid.

Tender shall have to be submitted in two Covers, Cover I and II.

Cover I shall be super scribed "**Tender for Passenger Lift - Cover I - Technical Bid.**"

and Cover II "**Tender for Passenger Lifts - Cover II - Price Bid.**"

Cover-I: Shall contain Earnest Money Deposit and Part I of the tender document signed and sealed on each page by authorized signatory. **Tenders without EMD / supporting document for EMD exemption will be summarily rejected.**

Cover I of the tender shall also contain the following:

(a) Power of attorney/authorization with seal of company/ firm in the name of person signing the tender documents.

(b) List of deviation, if any, in commercial terms & conditions

(c) List of deviation, if any, in technical specification.

(d) Any other technical information the tenderer wishes to furnish.

(e) Technical Literature/Catalogues of the equipment being offered along with related drawings.

(f) Copy of Approval/Letter issued by CPWD/other departments.

DETAILS OF SERVICE CENTRE IN **CHENNAI** WHO WILL BE PROVIDING AFTER SALES SERVICE.

HAVING ADEQUATE SERVICE FACILITY AT **CHENNAI** TO THE SATISFACTION OF BANK IS A MUST FOR THE TENDER TO BE CONSIDERED FURTHER.

In this connection feedback may be sought from other customers as to verify quality of services.

Cover-II: Shall contain the offered price in INDIAN RUPEES only with detailed break up of price as per Bill Of Quantity duly filled, in duplicate. Other than an unconditional general rebate, no other condition stipulated in Cover-II shall be accepted.

15. Cover-I will be opened on **16.11.2021 at 03:05 P.M** in the presence of Tenderers who desire to attend. After Technical evaluation, **Cover II of shortlisted bidders** shall be opened.

Delays in submission of any document arising out of the postal irregularities/or any other reason at any stage will not be considered. Also the Bank will not be responsible for damage to tender in transit in case of postal/courier delivery. Late tenders will not be accepted.

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. All bidders are requested to present at time of opening of Technical Bids.

Bank has the right to accept/reject any/all tenders without assigning any reasons.

Any Corrigendum/addendum, if any, shall be issued only on Bank's web site. Kindly visit our Bank's website before submission of Tender.

INSTRUCTIONS TO THE TENDERERS

1.0 Scope of Work

Complete replacement of existing Lift, design, manufacture, supply, erection & commissioning of new passengers lift & providing all inclusive service including all spares during warranty period & subsequent Comprehensive Annual maintenance contract for the committed period of 20 years (minimum) from the date of handing over the lift. Work also includes dismantling and taking away on buy back basis of the existing lifts being replaced by the new lift with necessary structural / civil works.

1.1 Site and Its Location

The proposed work is to be carried-out at the officers quarters located at Sindhur Court, 21 Church Road, Mogappair, Chennai 600037

2.0 Tender Documents

2.1 The work has to be carried out strictly according to the conditions stipulated in tender consisting the following documents and the most workman like manner,

Instructions to Tenderers
General Conditions of Contract
Special Conditions of Contract
Technical Specifications
Price Bid

2.2 The above documents shall be taken as complementary and mutually explanatory of one another but in case of ambiguities or discrepancies, shall take precedence in the order given below :

- a) Price Bid
- b) Technical Specifications
- c) Special Conditions of Contract
- d) General Conditions of Contract
- e) Instructions to Tenderers

2.3 Complete set of tender documents can be downloaded from the Banks website

3.0 Site Visit

The tenderer must obtain himself on his own responsibility and his own expenses all information and data which may be required for the purpose of filling this tender document and enter into a contract for the satisfactory performance of the work. The Tenderer is requested to satisfy himself regarding the availability of water, power, transport and communication facilities, the character quality and quantity of the materials, labour, the law and order situation, climatic conditions local authorities requirement, traffic regulations etc. The tenderer will be fully responsible for considering the financial

effect of any or all the factors while submitting the tender.

4.0 Earnest Money Deposit (EMD)

4.1 The tenderers are requested to submit the Earnest Money of **Rs. One lacs** in the form of Demand Draft in favour of the General Manager, Bank of Baroda, payable at Chennai, drawn on any scheduled Bank in India. Exemption for MSME is applicable on submission of necessary documents.

4.2 EMD in any other form other than as specified above will not be accepted. Tender not accompanied by the EMD in accordance with clause 4.1 above shall be rejected.

4.3 No interest will be paid on the EMD.

4.4 EMD of unsuccessful tenderers will be refunded within 15 days of award of work to successful bidder.

4.5 EMD of successful tenderer will be retained as a part of security deposit.

5.0 Initial Security Deposit (ISD)

The successful tenderer will have to submit a sum equivalent to 2% of contract value less EMD by means of Demand Draft/Bankers' Cheque drawn in favour of the Bank of Baroda, payable at Chennai within a period of 14 days of placement of order.

6.0 Security Deposit

6.1 Total security deposit shall be 5% of contract value. Out of this 2% of contract value is in the form of Initial Security Deposit plus EMD. Balance 3% shall be deducted from the running account bill of the work at the rate of 10% of the respective running account bill i.e. deduction from each running bill account will be 10% till total 3% of contract value is reached. 50% of the total security shall be paid to the contractors on the basis of Architect's certification on virtual completion of work. The balance 50% would be paid to the contractors without interest within 30 days after the end of the defect liability period provided the contractor has satisfactorily attended to all defects in accordance with the conditions of contract including site clearance. Bank Guarantee in Bank approved format in lieu of this 50% is acceptable.

6.2 No interest shall be paid to the amount retained by the Bank as Security Deposit.

7.0 Signing of Contract Documents

The successful tenderer shall be bound to implement the contract by signing an agreement and conditions of contract attached herewith within 14 days from the receipt of intimation of acceptance of his tender by the Bank. However, the written acceptance of the tender by the architects on behalf of the Bank/Bank will constitute a binding agreement between the Bank and successful tenderer whether such formal agreement is subsequently entered into or not.

8.0 Completion Period

Time is essence of the contract. The work should be completed in all respects in accordance with the terms of contract within a period of 3 (Three) months from the date of placement of order.

9.0 Validity of Tender

Tenders shall remain valid and open for acceptance for a period of three months from the date of opening price bid. If the tenderer withdraws his/her offer during the validity period or makes modifications in his/her original offer which are not acceptable to the Bank without prejudice to any other right or remedy the Bank shall be at liberty to forfeit the EMD.

10.0 Liquidated Damages

The liquidated damages shall be 0.5% per week subject to a maximum of 5% of contract value.

11.0 Rates and Prices

11.1 The contractors should quote in figures as well as in words the rate, and amount tendered by them. The amount for each item should be worked out and the requisite totals given,

Rates quoted by the contractor in item rate tender in figures and words shall be accurately filled in so that there is no discrepancy in the rates written in figures and words. If on check there are differences between the rates quoted by the Contractor in words and in figures or in the amount worked out by him, the following procedure shall be followed for comparative evaluation of BOQ for finalization of L-1 for awarding work:

- *When there is a difference between the rates in figures and in words, whichever corresponds to the amounts worked out by the contractor, shall be taken as correct.*
- *When the amount of an item is not worked out by the contractor or it does not correspond with the rate written either in figures or in words, then the rate quoted by the contractor in words shall be taken as correct.*
- *When the rate quoted by the contractor in figures and in words tallies but the amount is not worked out correctly, the rate quoted by the contractor shall be taken as correct and not the amount.*
- *When the rate is not quoted by contractor for any item, then maximum rate quoted by others contractor for that item shall be taken for evaluation and lowest rate quoted by other contractor for that item will be taken for award of work.*

Rates quoted shall cover the provision of site laboratory for routine test as required by Engineer - in – Charge.

11.2 The tenderers need not quote their rates for which no quantities have been given. In case the tenderers quote their rates for such items those rates will be ignored and will not be considered during execution.

11.3 The tenderers should not change the units as specified in the tender.

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/ Bank.

- 11.4** Each page of the BOQ shall be signed by the authorized person and cutting or overwriting shall be duly attested by him.
- 11.5** Each page shall be totaled and the grand total shall be given.
- 11.6** The rate quoted shall be firm and shall include all costs, allowances, taxes, levies etc as well as all other costs like transportation, handling etc.

FORM OF TENDER (To be filled up by the Tenderers)

The General Manager
Bank of Baroda
Zonal Office
3rd Floor, Baroda Pride
41, Luz Church Road, Mylapore, Chennai 600 004

Dear Sir,

Supply And Installation Of a Passenger Lift For Banks staff quarters at Sindhur Court, Mogappair

1. I/We refer to the tender notice issued for Lift Works at Staff quarters, Mogappair
2. I/We do hereby offer to perform, provide, execute, complete and maintain the works in conformity with the drawings, conditions of contract, specifications, bill of quantities at the rates quoted in the bill of quantities.
3. I/We have satisfied myself/ourselves as to the site conditions and all aspects of the tender conditions. Subject to above, I/We do hereby agree, should this tender be accepted in whole or in part, to :
 - a) Abide by and fulfill all the terms and provisions of the said conditions annexed hereto;
 - b) Complete the works within 3 months, as per the work programme enclosed with the tender in two or three shifts if considered necessary by the Owner/Architects at no extra cost to the Owner.
4. I/We have deposited the earnest money of Rs. 1,00,000/ (Rupees One Lakh only) in the form of Bank Draft/Banker's Cheque I/We note, the Earnest Money Deposit will not bear any interest and is liable for forfeiture :
 - i) If our offer is withdrawn within the validity period of acceptance.
Or
 - ii) If the work is not commenced within 14 days after issue of work order or handing over of site whichever is later.

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

6. Name of Partners/Directors of our Firm :

i)

ii)

iii)

iv)

Yours faithfully

Signature _____

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)

Designation

Signature and address of witness

a) Signature : _____

Name : _____

Address : _____

b) Signature : _____

Name : _____

Address : _____

APPENDIX – TF

Sr. No.	Description of work:	REPLACEMENT AND SITC OF LIFT FOR BANKS STAFF QUARTERS, SINDHUR COURT, MOGAPPAIR, CHENNAI
1.	Name of EMPLOYER	: M/s. BANK OF BARODA
2.	Time allowed for execution of work	: 3 Months
3.	Cost of Tender Document	: NIL
4.	Period of Issue of Tender Document	: From 25.10.2021 TO 16.11.2021
5.	Last date and time of submission of Tender Document	: On or before 16.11.2021 at 03.00 PM at Bank of Baroda, Zonal Office, Chennai
6.	Date and time of opening of Tender Documents	: On 16.11.2021 Technical bid – 03.05 PM
7.	Earnest Money	: Rs 1,00,000/- (Rupees One Lakh Only)
8.	Validity of the tender ___	: 03 months from the date of submission / as may be extended
9.	Retention Money	: 8% of gross value of work in Running bills to a maximum of Balance Security Deposit.
10.	Period of Commencement	: Immediately after receipt of confirmation of order.
11.	Amount of liquidated damages for delay.	: 0.5% of the Contract value per week subject to maximum of 5% of contract value.
12.	Defects liability period.	: 12 months
13.	Period of certification of interim bills by architect / consultant / Bank Engineer	: 10 working days from date of submission
14.	Time within which payment to be made after certificate.	: Within 10 working days from date of receipt of payment certificate.
15.	Secured Advance against supply of material on site	: As per terms given in Tender
16.	Performance Guarantee (Bank Guarantee)	: Performance Guarantee: 3% of Contract Amount to be submitted as Bank Guarantee / FDR within 28 days of receipt of Letter of Award (valid up to completion period of the contract/extended period if permitted). No extra charge is payable on extension of BG by Bank. This Performance Guarantee shall be returned within 14 days of the issue of Defect Liability Certificate/Virtual completion Certificate (Taking Over Certificate with a list of Defects).
17.	Escalation for Material & Labour	: No escalation /price variation is permissible. Rate is firm for entire contract period
18.	Release of Total Security Deposit (EMD, ISD & Retention Money) :-	: "50% of the Total Security Deposit (EMD, ISD& Retention Money) shall be refunded to the contractor

		<p>on”:</p> <p>i) Issue of Virtual Completion Certificate by the Architect/Consultant/ Banks Engineer.</p> <p>ii) Contractor’s removal of his materials, equipment, labour force, temporary sheds/ stores etc. from the site, (excepting for a small presence required if any for the Defect Liability Period and approved by the Bank.)The remaining 50% of the amount shall be refunded 14(fourteen) days after the end of defects liability period provided he has satisfactorily carried out all the works and attended to all defects in accordance with the conditions of the contract, including site clearance.</p>
19	AMC	<p>AMC is mandatory and binding on contractor for minimum period of 5 years. Half yearly satisfactory report shall be produced by contractor during DLP/AMC.</p> <p>Payment for AMC will be made on half yearly basis after completion / providing satisfactory services for the said period.</p>

MODEL ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT made this -----day of ----- Two Thousand Twenty One between the Bank of Baroda, a corporate body constituted under the Banking Companies (Acquisition and Transfer of Undertakings) Act 1970 and having its **Zonal Office at 3rd Floor, Baroda Pride, 41 Luz Church Road, Mylapore, Chennai 600 004** represented by **The General Manager** (hereinafter referred to as the "OWNER/EMPLOYER") which expression shall include its successor/s and assignee/s of the ONE PART.

AND

M/S.....having its registered office at (hereinafter referred to as the 'CONTRACTOR') which expression shall include its successor/s and assignee/s of the OTHER PART.

Whereas The Employer' desires to engage one contracting agency for Lift works of their **Staff quarters at Sindhur Court, Mogappair**, as per Specifications /Designs, etc.

The term 'Architect' in the said conditions shall mean persons as shall be nominated for that purpose by the Owner/Employer, provided always that no person subsequently appointed to be the Architect /Consultants under this contract shall be entitled to disregard or over rule any decision or direction or approval given or expressed in writing by the Outgoing Architect /Consultants for the time being if the same had been done under instruction from the owner/ Employer.

The term 'Project management Consultant' (PMC) in the said condition shall mean Agency as appointed by the bank for day to day supervision and quality control check and shall include their successors, and assignees or in the event of its being wound up/dissolved/liquidated or ceasing to be the PMC for the purpose by the employer, such 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 person subsequently appointed to be entitled to disregard or overrule any previous decisions or approvals or directions given or expressed by the Project Management Consultant for the time being.

In response to the tenders invited by Employer, the Contractor have inspected the site and surroundings of the works specified in the tender documents and have before accepting the Contract, satisfied themselves by careful examination about the nature of the work and nature of the site and local conditions, quantities nature and magnitude of work, the availability of labour and material necessary for the execution of work, the means of access to work site, the supply of power and water thereto and the accommodation they may require and have made local and independent enquiries and obtained complete information as to the matters and things referred to or implied in the Contract or having any connection therewith and have considered the nature and extent of all probable and possible situations, delays, hindrances or interferences to or with the execution and completion of work to be carried out under the Contract being awarded hereunder and have examined and considered all other matters, conditions and things and probable and possible contingencies thereto affecting the execution and completion of work and which might have influenced them in accepting the Contract.

The following documents annexed hereto shall form the integral part of this agreement as if these were fully incorporated herein and this Agreement together with all its Annexure are hereinafter referred to as the Contract.

Executed Tender copy

Security of Rs..... and EMD of Rs.....

Performance bank guarantee of Rs.....

Minutes of Meeting dated..... bearing no.....

Letter of Intent no.....

The Employer has accepted the offer of the Contractor and the Contractor has agreed to execute the said works, subject to the terms and conditions contained herein and those referred in above for the provision and the execution of the works mentioned in the Contract to an amount of Rs..... (Inclusive of all Taxes, Transportation, etc.)

NOW THESE PRESENTS WITNESSETH AND IS HEREBY AGREED AND DECLARED AS FOLLOWS

The Contractors shall provide, execute and complete all the works mentioned in the Contract and shall do and perform all other acts and things mentioned or described in the Contract or which are to be implied there from or may be reasonably necessary for the completion of the said works and the times and in the manner and subject to the terms and conditions or stipulations mentioned in the Contract.

It has been understood by the parties hereto that the Employer will have right to make reasonable changes in the drawings and designs during the progress of the works without prejudice to the Contract. Notwithstanding anything to the contrary contained in any of the Annexure hereto the Contractors shall commence the work as per letter of intent dated..... and shall complete the same on or before and the time shall be the essence of the Contract. In consideration of the due provision, execution and completion of all the works, in terms of the Contract the Employer does hereby agree with the Contractors that the Employer will pay to the Contractors the respective amounts for the work actually done by them and approved by the Employer. Such payments shall be made at such time and in such a manner as provided for in the Contract.

The Contractors do hereby agree to pay such sums as may be due to the Employer for the service rendered or material supplied by the Employer to the Contractors as set out in the Contract.

The contractors do hereby agree that the amount of liquidated damages specified conditions of contract/special conditions of contract represents a genuine and fair estimate of the loss likely to be suffered by the Employer in the event of the works not being completed in time.

It is specifically and distinctly understood and agreed between the Employer and the Contractors that the Contractors shall have no right, title or interest in the site made available by the Employer for the execution of the work or in the building, structures or works executed on the said site by the Contractors in the goods articles, materials etc brought on the said site (Unless the same specifically belongs to the Contractors) and the Contractors shall not have or deemed to have any lien or charge whatsoever for unpaid bills and it will not be entitled to assume or retain possession or control of the site or structure and the Employer shall have an absolute and unfettered right to take full possession of the site and to remove the Contractors, their servants, agents and materials belonging to the Contractors lying in the site.

The Contractors and its agent/servants/workers/employees shall be allowed to enter upon the site for execution of the works only for the purpose of executing the contract work and shall not have any claim, right title or interest in the site or the structures erected thereon and shall not enter upon the site of construction for any other purpose without assigning any reason thereof.

The dispute or differences if any, relating to this agreement or any document appended hereto shall be settled by arbitration under the provisions of Indian Arbitration & Conciliation Act, 1996 or any rules and regulations framed there under and the venue of arbitration shall only be at the city of Chennai

In Witness WHEREOF the parties have executed these presents of the day and the year first above written.

Signed and delivered for and on behalf of Employer

Signed and delivered for and on behalf of Contractor

Witnesses

Witnesses

- 1.
- 2.

- 1.
- 2.

GENERAL CONDITIONS OF CONTRACT

1.0 Definitions

“Contract” means the documents forming the tender and the acceptance thereof and the formal agreement executed between Bank of Baroda (Client) and the contractor, together with the documents referred therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Architects/Bank and all these documents taken together shall be deemed to form one contract and shall be complementary to one another.

1.1 In the contract the following expressions shall, unless the context otherwise requires, have the meaning hereby respectively assigned to them.

1.1.1 ‘Owner/BOB/Bank’ shall mean Bank of Baroda having it’s Zonal Office, Chennai including their representatives, successors and assigns.

1.1.2 a) ‘Site Engineer’ shall mean an Engineer appointed by the Bank as their representative to give instructions to the contractors and recording of measurements etc.

b) ‘Resident Engineer’ shall mean an Engineer posted at site on behalf of Architect.

1.1.3 ‘The Contractor’ shall mean the individual or firm or company whether incorporated or not, undertaking the works and shall include legal personal representative of such individual or the composing the firm or company and the permitted assignees of such individual or firms of company.

The expression ‘works’ or ‘work’ shall mean the permanent or temporary work described in the ‘Scope of Work’ and/or to be executed in accordance with the contract and includes materials, apparatus, equipment, temporary supports, fittings and things of all kinds to be provided, the obligations of the contractor hereunder and work to be done by the contractor under the contract.

1.1.4 ‘Engineer’ shall mean the representative of the Architect/ BOB.

1.1.5 ‘Drawings’ shall mean the drawings prepared by the Architects and issued by the Engineer and referred to in the specifications and any modifications of such drawings as may be issued by the Engineer from time to time ‘

1.1.6 ‘Contract value’ shall mean the value of the entire work as stipulated in the letter of acceptance of tender subject to such additions thereto or deductions there from as may be made under the provision herein after contained.

1.1.7 ‘Specifications’ shall mean the specifications referred to in the tender and any modifications thereof as may time to time be furnished or approved by the Architect.

1.1.8 “Month” means calendar month.

1.1.9 “Week” means seven consecutive days.

1.1.10 “Day” means a calendar day beginning and ending at 00 Hrs and 24 Hrs respectively.

1.0 Security Deposit

Security deposit comprises of:

- a) Earnest Money Deposit
- b) Initial Security Deposit
- c) Retention Money

a) **Earnest Money Deposit**

The tenderer shall furnish EMD of Rs.1,00,000/- (Rupees One Lakh only) in the form of Demand draft/Banker's Cheque drawn in favour of the Bank of Baroda, payable at Chennai on any Scheduled Bank. No tender shall be considered unless the EMD is so deposited in the required form. No interest shall be paid on this EMD. The EMD of the unsuccessful tenderer shall be refunded soon after the decision to award the contract is taken without interest. The EMD shall stand absolutely forfeited if the tenderer revokes his tender at any time during the period when he is required to keep his tender open for acceptance by the BOB or after it is accepted by the BOB the contractor fails to enter into a formal agreement or fails to pay the initial security deposit as stipulated or fails to commence the work within the stipulated time.

b) **Initial Security Deposit (ISD)**

The amount of ISD shall be 2% of accepted value of tender minus the EMD. ISD is to be submitted in the form of Demand Draft/Banker's Cheque favoring Bank of Baroda, payable at Gandhinagar drawn on any scheduled Bank and shall be deposited within 14 days from the date of acceptance of tender.

c) **Retention Money**

Besides the ISD plus EMD as deposited by the contractor in the above said manner the retention money shall be deducted from the running account bill at the rate of 8 % of the gross value of work done by the contractor and claimed in each bill provided the total security deposit i.e. the ISD plus EMD plus Retention Money, called security deposit hereafter, shall together not exceed 5% of the contract value. 50% of the security deposit shall be refunded to the contractor without any interest on issue of Virtual Completion certificate and certificate for release of the amount by the Architect. The balance 50% of the security deposit shall be refunded to the contractors without interest within thirty days after the end of defects liability period provided the contractor has satisfactorily attended to all defects in accordance with the conditions of contract including site clearance.

2.0 Language

The language in which the contract documents shall be drawn shall be English.

3.0 Errors, Omissions and Discrepancies

In case of errors, omissions and/or disagreement between written and scaled dimensions on the drawings or between the drawings and specifications etc, the following order shall apply.

- i) Between scaled and written dimension (or description) on a drawing, the latter shall be adopted.

- ii) Between the written or shown description or dimensions in the drawings and the corresponding one in the specification the former shall be taken as correct.
- iii) Between written description of the item in the specifications and descriptions in bills of quantities of the same item, the latter shall be adopted.
- iv) In case of difference between rates written in figures and words, the rate in words shall prevail.
- v) Between the duplicate/subsequent copies of the tender, the original tender shall be taken as correct.

4.0 Scope of Work

5.0 i) Letter of Acceptance

Within the validity period of the tender the BOB shall issue a letter of acceptance either directly or through the Architect by registered post or otherwise depositing at the address of the contractor as given in the tender to enter into a Contract for the execution of the work as per the terms of the tender. The letter of acceptance shall constitute a binding contract between the BOB and the contractor.

ii) Contract Agreement

On receipt of intimation of the acceptance of tender from the BOB/Architect the successful tenderer shall be bound to implement the contract and within fifteen days thereof he shall sign an agreement on a non judicial stamp paper of appropriate value. They, shall also on receipt of intimation of the acceptance of tender, acknowledge through a letter, acceptance of the intimation of the acceptance of tender.

6.0 Ownership of drawings

All drawings, specifications and copies thereof furnished by the BOB are the properties of the BOB. They are not to be used on other work.

7.0 Detailed drawings and instructions

The BOB through its Architects shall furnish with reasonable promptness additional instructions by means of drawings or otherwise necessary for the proper execution of the work. All such drawings and instructions shall be consistent with the contract documents, true developments thereof and reasonably inferable there from.

The work shall be executed in conformity therewith and the contractor shall prepare a detailed programme schedule indicating therein the date of start and completion of various activities on receipt of the work order and submit the same to the BOB through the Architect.

8.0 Copies of Agreement

One copy of contract document duly shall signed & stamped be handed over to the contractors.

9.0 Liquidated Damages

If the contractor fails to maintain the required progress as per the stipulated terms or to complete the work and clear the site including vacating their office on or before the contracted or extended date or completion without justification in support of the cause of delay, he may be called upon without prejudice to any other right of remedy available under the law to the BOB on account of such breach to pay a liquidated damages at the rate of 0.5% of the contract value per week subject to a maximum of 5% of the contract value.

10.0 Materials, Appliances and Employees

Unless or otherwise specified the contractor shall provide and pay for all materials, labour, tools, equipment transportation and any other facilities that are required for the satisfactory execution and completion of the work. Unless or otherwise specified all materials shall be new and both workmanship and materials shall be of best quality. The contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him. Workman whose work or behavior is found to be unsatisfactory by the BOB/Architect, shall be removed from the site immediately.

11.0 Permits, Laws and Regulations

Permits and licenses required for the execution of the work shall be obtained by the contractor at his own expenses. The contractor shall give notices and comply with the regulations, laws, and ordinances, rules, applicable to the Contract. If the contractor observes any discrepancy between the drawings and specifications, he shall promptly notify the BOB in writing under intimation to the Architect. If the contractor performs any act which is against the law, rules and regulations he shall meet all the costs arising there from and shall indemnify the BOB any legal actions arising there from.

12.0 Setting out Work

The contractor shall set out the work and shall be responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions, and alignment of all parts thereof and get it approved by the Architect/Bank before proceeding with the work. If at any time any error in this respect shall appear during the progress of the works, irrespective of the fact that the layout had been approved by the Architect/Bank, the contractor shall be responsible for the same and shall at his own expenses rectify such error, if so, required to satisfaction of the BOB.

13.0 Protection of works and property

The contractor shall continuously maintain adequate protection, of all his work from damage and shall protect the BOB's properties from injury or loss arising in connection with contract. He shall make good any such damage, injury, loss due to his fault or negligence except which are due to causes beyond his control.

He shall take adequate care and steps for protection of the adjacent properties. The contractor shall take all precautions for safety and protection of his employees on the works and shall comply with all applicable provisions of Government and local bodies' safety laws and building codes to prevent accidents, or injuries to persons or property of about or adjacent to his place of work. The contractor shall take insurance covers at his own cost. The policy may be taken in joint names of the contractors and the BOB and the original policy may be lodged with the BOB.

14.0 Inspection of Work :

The BOB/Architect or their representatives shall at all reasonable time have free access to the work site and/or to the workshop, factories or other places where materials are lying or from where they are obtained and the contractor shall give every facility to the BOB, Architect and their representatives necessary for inspection and examination and test of the materials and workmanship. No person unless authorized by the BOB/Architect except the representative of Public authorities shall be allowed on the work at any time. The proposed work either during its execution stage or its completion can also be inspected by the Chief Technical Examiner's organization a wing of Central Vigilance Commission.

15.0 Assignment and subletting

The whole of work included in the contract shall be executed by the contractor and he shall not directly entrust and engage or indirectly transfer, assign or underlet the contract or any part or share thereof or interest therein without the written consent of the BOB through the Architect and no undertaking shall relieve the contractor from the responsibility of the contractor from active superintendence of the work during its progress.

16.0 Quality of Materials, Workmanship & Test

- i) All materials and workmanship shall be best of the respective kinds described in the contract and in accordance with BOB/Architect instructions and shall be subject from time to time to such tests as the Architect may direct at the place of manufacture or fabrication or on the site or an approved testing laboratory. The contractor shall provide such assistance, instruments, machinery, labour and materials as are normally required for examining, measuring, sampling and testing any material or part of the work before incorporation in the work for testing as may be selected and required by the BOB/Architect.
- ii) **Samples**

All samples of adequate numbers, size, shades & pattern as per specifications shall be supplied by the contractor without any extra charges. If certain items proposed to be used are of such nature that samples cannot be presented or prepared at the site, detailed literature/test certificate of the same shall be provided to the satisfaction of the Architect/BOB. Before submitting the sample/literature the contractor shall satisfy himself that the material/equipment for which he is submitting the samples/literature meet with the requirement of tender specification. Only when the samples are approved in writing by the Architect/BOB the contractor shall proceed with the procurement and installation of the particular material/equipment. The approved samples shall be signed by the Architect /BOB for identification and shall be kept on record at site office until the completion of the work for inspection/comparison at any time. The Architect shall take reasonable time to approve the sample. Any delay that might occur in approving the samples for reasons of its not meeting the specifications or other discrepancies, inadequacy in furnishing samples of best qualities from various manufacturers and such other aspects causing delay on the approval of the materials/equipments etc shall be to the account of the contractor.

iii) **Cost of tests**

a) Test provided for in the specifications or BOQ :

The cost of test and material for testing shall be borne by the Contractor and test shall be carried out in manufacturer's works or if need be in a test facility/ laboratory approved by the Bank/Architect.

b) Test not provided for in the Specifications or BOQ :

If any test is ordered by the Architect/BOB which is either to be carried out by an independent person at any place other than the site or the place of manufacture or fabrication of the materials tested or any Government/approved laboratory, then the cost of such test shall be borne by the contractor.

17.0 Obtaining Information related to execution of work

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

18.0 Contractor's superintendence

The contractor shall give necessary personal superintendence during the execution of the works and as long, thereafter, as the Architect/BOB may consider necessary until the expiry of the defects liability period, stated hereto.

19.0 Quantities

i) The bill of quantities (BOQ) unless or otherwise stated shall be deemed to have been prepared in accordance with the Indian Standard Method of Measurements and quantities. The rate quoted shall remain valid for variation of quantity against individual item to any extent subject to maximum variation of the contract value by 25%. All the amount paid under Clause 20 & 21 hereof as well as amounts of prime cost and provisional sums, if any, shall be excluded.

ii) Variation exceeding 25%: The items of work executed in relation to variation exceeding 25% shall be paid on the basis of provisions of clause 22(e) hereof.

20.0 Works to be measured

The Architect/BOB may from time to time intimate to the contractor that the required work to be measured and the contractor shall forthwith attend or send a qualified representative to assist the Architect/BOB in taking such measurements and calculation and to furnish all particulars or to give all assistance required by any of them. Such measurements shall be taken in accordance with the Mode of measurements detailed in the specifications. The representative of the Architect/BOB shall take joint measurements with the contractor's representative and the measurements shall be entered in the measurement book. The contractor or his authorized representative shall sign all the pages of the measurement book in which the measurements have been recorded in token of his acceptance. All the corrections shall be duly attested by both

representatives. No over writings shall be made in the Measurement Book. Should the contractor not attend or neglect or omit to depute his representative to take measurements then the measurements recorded by the representative of the Architect/BOB shall be final. All authorized extra work, omissions and all variations made shall be included in such measurements.

21.0 Variations

No alteration, omission or variation ordered in writing by the BOB/Architect shall vitiate the contract. In case the BOB/Architect thinks proper at any time during the progress of works to make any alteration in, or additions to or omission from the works or any alteration in the kind or quality of the materials to be used therein, the BOB/Architect shall give notice thereof in writing to the contractor or shall confirm in writing within seven days of giving such oral instructions the contractor shall alter to, add to, or omit from as the case may be in accordance with such notice but the contractor shall not do any work extra to or make any alteration or additions to or omissions from the works or any deviation from any of the provisions of the contract, stipulations, specifications or contract drawings without previous consent in writing of the BOB/Architect and the value of such extras, alterations, additions or omissions shall in all cases be determined by the BOB/Architect and the same shall be added to or deducted from the contract value, as the case may be.

22.0 Valuation of Variations

No claim for an extra item shall be allowed unless it has been executed under the authority of the Architect with the concurrence of the BOB as herein mentioned. Any such extra work is herein referred to as authorized extra work and shall be made in accordance with the following provisions.

- a)
 - i) The net rates or prices in the contract shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced herein.
 - ii) Rates for all items, wherever possible should be derived out of the rates given in the priced BOQ.
- b) The net prices of the original tender shall determine the value of the items omitted, provided if omissions do not vary the conditions under which any remaining items of works are carried out, otherwise the prices for the same shall be valued under sub clause (c) hereunder.
- c) Where the extra works are not of similar character and/or executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items or works are carried out, then the contractor shall within 7 days of the receipt of the letter of acceptance inform the BOB/Architect of the rate which he intends to charge for such items of work, duly supported by analysis of the rate or rates claimed and the BOB/Architect shall fix such rate or prices as in the circumstances in his opinion are reasonable and proper, based on the market rate.
- d) Where extra work cannot be properly measured or valued, the contractor shall be allowed day work prices at the net rates stated in the tender of the BOQ or, if not, so stated then in accordance with the local day work rates and wages for the district; provided that in either case, vouchers specifying the daily time (and if required by the BOB/Architect) the workman's name and materials employed be delivered for verifications to the

BOB/Architect at or before the end of the week following that in which the work has been executed.

- e) It is further clarified that for all such authorized extra items where rates cannot be derived from the tender, the contractor shall submit rates duly supported by rate analysis worked on the “market rate basis” for material, labour, hire/running charges of equipment and wastages etc plus 15% towards establishment charges, contractor’s overheads and profit. Such items shall not be eligible for escalation.

23.0 Final Measurement

The measurement and valuation in respect of the contract shall be completed within three months of the virtual completion of the work.

24.0 Virtual Completion Certificate (VCC)

On successful completion of entire works covered by the contract to the full satisfaction of the Architect/BOB, the contractor shall ensure that the following works have been completed to the satisfaction of the BOB.

- a) Clear the site of all scaffolding, wiring, pipes, surplus materials, contractor’s labour, equipment and machinery.
- b) Demolish, dismantle and remove the contractor’s site office, temporary works, structures including labour sheds/camps and constructions and other items and things whatsoever brought upon or erected at the site or any land allotted to the contractor by the BOB and not incorporated in the permanent works.
- c) Remove all rubbish, debris etc from the site and the land allotted to the contractor by the BOB and shall clear, level and dress, compact the site as required by the BOB.
- d) Shall put the BOB in undisputed custody and possession of the site and all land allotted by the BOB.
- e) Shall hand over the work in a peaceful manner to the BOB.
- f) All defects/imperfections have been attended and rectified as pointed out by the BOB to the full satisfaction of BOB.

Upon the satisfactory fulfillment by the contractor as stated above, the contractor shall be entitled to apply to the Architect for the certificate. If the Architect is satisfied of the completion of the work, related to which the completion certificate has been sought, the Architect shall within fourteen (14) days of the receipt of the application for virtual completion certificate, issue a VCC in respect of the work for which the VCC has been applied.

This issuance of a VCC shall be without prejudice to the BOB’s rights and contractor’s liabilities under the contract including the contractor’s liability for defects liability period nor shall the issuance of VCC in respect of the works or work at any site be construed as a waiver of any right or claim of the BOB against the contractor in respect of works or work at the site and in respect of which the VCC has been issued.

Virtual Completion shall be considered the date of receipt of Lift License.

25.0 Work by other agencies

The BOB/Architect reserves the rights to use premises and any portion of the site for execution of any work not included in the scope of this contract which it may desire to have carried out by other persons simultaneously and the contractor shall not only allow but also extend reasonable facilities for the execution of such work. The contractor however shall not be required to provide any plant or material for the execution of such work except by special arrangement with the BOB. Such work shall be carried out in such manners not to impede the progress of the works included in the contract.

26.0 Insurance of Works

26.1 Without limiting his obligations and responsibilities under the contract, the contractor shall insure in the joint names of the BOB and the contractor against all loss or damages from whatever cause arising other than the excepted risks, for which he is responsible under the terms of contract and in such a manner that the BOB and contractor are covered for the entire work execution period and are also covered during the period of maintenance for loss or damage arising from a cause, occurring prior to the commencement of the period of maintenance and for any loss or damage occasioned by the contractor in the course of any operations carried out by him for the purpose of complying with his obligations under clause.

- a) The works for the time being executed to the estimated current Contract value thereof, or such additional sum as may be specified together with the materials for incorporation in the works at their replacement value.
- b) The constructional plant and other things brought on to the site by the contractor to the replacement value of such constructional plant and other things.
- c) Such insurance shall be effected with an insurer and in terms approved by the BOB which approval shall not be unreasonably withheld and the contractor shall whenever required produce to the Architect/BOB the policy of insurance and the receipts for payment of the current premiums.

26.1.1 Contractor will have to obtain Contractors All Risk insurance policy with required cover for third party compensation (see clause 26.5.2 and 26.5.3 for Minimum Amount of Third Party Insurance) as workman compensation policy so as to cover the risks detailed in clause 26.0 and that the listed policies normally cover. Original policies will have to be submitted to BOB.

26.2 Damage to persons and property

The contractor shall, except if and so far as the contract provides otherwise indemnify the BOB against all losses and claims in respect of injuries or damages to any person or material or physical damage to any property whatsoever which may arise out of or in consequence of the execution and maintenance of the works and against all claims proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto except any compensation of damages for or with respect to :

- a) The permanent use or occupation of land by or any part thereof.
- b) The right of BOB to execute the works or any part thereof, on, over, under, in or through any lands.
- c) Injuries or damages to persons or properties which are unavoidable result of the execution or maintenance of the works in accordance with the contract.
- d) Injuries or damage to persons or property resulting from any act or neglect of the BOB, their agents, employees or other contractors not being employed by the contractor or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or where the injury or damage was contributed to by the contractor, his servants or agents such part of the compensation as may be just and

equitable having regard to the extent of the responsibility of the BOB, their employees, or agents or other employees, or agents or other contractors for the damage or injury.

26.3 Contractor to indemnify BOB

The contractor shall indemnify the BOB against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the provision sub-clause 26.2 of this clause.

26.4 Contractor's superintendence

The contractor shall fully indemnify and keep indemnified the BOB against any action, claim, or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claim made under or action brought against BOB in respect of such matters as aforesaid the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expenses to settle any dispute or to conduct any litigation that may arise there from, provided that the contractor shall not be liable to indemnify the BOB if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Architect in this behalf.

26.5 Third Party Insurance

26.5.1 Before commencing the execution of the work the contractor, but without limiting his obligations and responsibilities under GCC, shall insure against his liability for any material or physical damage, loss, or injury which may occur to any property including that of BOB, or to any person, including any employee of the BOB, by or arising out of the execution of the works or in the carrying out of the contract, otherwise than due to the matters referred to in the provision.

26.5.2 Minimum Amount of Third Party Insurance

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

26.5.3 The minimum insurance cover for physical property, injury, and death is Rs.2.0 lacs per occurrence with the number of occurrences limited to four. After each occurrence contractor will pay additional premium necessary to make insurance valid for four occurrences always.

26.6 Accident or Injury to Workmen

26.6.1 The BOB shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workmen or other person in the employment of the contractor or any sub-contractor, save and except an accident or injury resulting from any act or default of the BOB or their agents, or employees. The contractor shall indemnify and keep indemnified BOB against all such damages and compensation, save and except as aforesaid and against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

26.6.2 Insurance against accidents etc to workmen

The contractor shall insure against such liability by obtaining requisite insurance cover during the whole of the time any person employed by him on the works and shall, when required, produce to the BOB/Architect such policy of insurance and receipt for payment of the current premium. Provided always that, in respect of any persons employed by any sub-contractor the contractor's obligation to insure as aforesaid under this sub-clause shall be satisfied if the sub contractor shall have insured against the liability in respect of such persons in such manner that BOB is indemnified under the policy but the contractor shall require such sub-contractor to produce to the BOB/Architect when required such policy of insurance and the receipt for the payment of the current premium.

26.6.3 Remedy on Contractor's failure to insure

If the contractor fails to effect and keep in force the insurance referred to above or any other insurance which he may be required to effect under the terms of contract, then and in any such case the BOB may effect and keep in force any such insurance and pay such premium or premiums as may be necessary for that purpose and from time to time deduct the amount so paid by the BOB as aforesaid from any amount due or which may become due to the contractor, or recover the same as debt from the contractor.

26.6.4 Without prejudice to the other rights of the BOB against contractors, in respect of such default, the employer shall be entitled to deduct from any sums payable to the contractor the amount of any damages costs, charges, and other expenses paid by the BOB and which are payable by the contractors under this clause. The contractor shall upon settlement by the insurer of any claim made against the insurer pursuant to a policy taken under this clause, proceed with due diligence to rebuild or repair the works destroyed or damaged. In this event all the monies received from the insurer in respect of such damage shall be paid to the contractor and the contractor shall not be entitled to any further payment in respect of the expenditure incurred for rebuilding or repairing of the materials or goods destroyed or damaged.

27.0 Commencement of Works

The date of commencement of the work will be reckoned as the recorded date of handing over site or 14 (fourteen) days from the date of issue of letter of acceptance of the tender by the BOB whichever is later.

28.0 Time for completion

Time is the essence of the contract and shall be strictly observed by the contractor. The entire work shall be completed within a period of 3 calendar months from the date of purchase order. If required in the contract or as directed by the Architect/BOB, the contractor shall complete certain portions of work before completion of the entire work. However the completion date shall be reckoned as the date by which the whole work is completed as per the terms of the contract. Contractor shall submit a detailed bar/PERT chart of work programme keeping the stipulated time of completion of work as mentioned above for approval of BOB/Architect showing the supply and installation of various activities of the work. The contractor shall proceed with work as per approved bar/PERT chart.

29.0 Extension of Time

If, in the opinion of the Architect, the work be delayed for reasons beyond the control of the contractor, the Architect may submit a recommendation to the BOB to grant a fair and reasonable extension of time for completion of work as per the terms of contract. If the contractor needs an extension of time for the completion of work or if the completion of work is likely to be delayed for any reasons beyond the due date of completion as stipulated in the contract, the contractor shall apply to the BOB through the Architect in writing at least 30 days before the expiry of the scheduled time and while applying for extension of time he shall furnish the reasons in detail and his justification if any, for the delays. The Architect shall submit their recommendations to the BOB in the prescribed format for granting extension of time. While granting extension of time the contractor shall be informed about the period of extended time which will qualify for levy of liquidated damages. For the balance period in excess of original stipulated period and duly sanctioned extension of time by the BOB the provision of liquidated damages as stated under General Conditions Of Contract (GCC) shall become applicable. Further contract shall remain in force even for the period beyond the due date of completion irrespective whether the extension is granted or not.

30.0 Rate of progress

Whole of the materials, plant and labour to be provided by the contractor and the mode, manner and speed of execution and maintenance of the works are to be of a kind and conducted in a manner to the satisfaction of the BOB/Architect. Should the rate of progress of the work or any part thereof be at any time be in the opinion of the BOB/Architect too slow to ensure the completion of the whole of the work by the prescribed time or extended time for completion the BOB/Architect shall thereupon take such steps as considered necessary by the BOB/Architect to expedite progress so as to complete the woks by the prescribed time or extended time. Such communications from the BOB/Architect neither shall relieve the contractor from fulfilling obligations under the contract nor he will be entitled to raise any claims arising out of such directions.

31.0 Work during nights and holidays

Subject to any provision to the contrary contained in the contract no permanent work shall save as herein provided be carried on during the night or on holidays without the permission in writing of the BOB/Architect, save when the work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the work in which case the contractor shall immediately advise the BOB/Architect. However the provision of the clause shall not be applicable in the case of any work which becomes essential to carry by rotary or double shifts in order to achieve the progress and quality of the part of the works being technically required /continued with the prior approval of the BOB/Architect at no extra cost to the BOB.

All work at night after obtaining approval from competent authorities shall be carried out without unreasonable noise and disturbance.

32.0 No compensation for restrictions of work

If at any time after acceptance of the tender BOB shall decide to abandon or reduce the scope of work for any reason whatsoever and hence not require the whole or any part of the work to be carried out, the BOB/Architect shall give notice in writing to that effect to the contractor and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the work fully but which he did not derive in

consequence of the foreclosure of the whole or part of the work.

Provided that the contractor shall be paid the charges on the cartage only of materials actually and bonafide brought to the site of the work by the contractor and rendered surplus as a result of the abandonment, curtailment of the work or any portion thereof and then taken back by the contractor, provided however that the BOB/Architect shall have in such cases the option of taking over all or any such materials at their purchase price or a local current rate whichever is less.

In case of such stores having been issued from BOB, stores and returned by the contractor to stores, credit shall be given to him at the rates not exceeding those at which were originally issued to the contractor after taking into consideration and deduction for claims on account of any deterioration or damage while in the custody of the contractor and in this respect the decision of BOB/Architect shall be final.

33.0 Suspension of work

- i) The contractor shall, on receipt of the order in writing from the BOB/Architect (whose decision shall be final and binding on the contractor) suspend the progress of works or any part thereof for such time and in such manner as BOB/Architect may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of following reasons.
 - a) On account any default on the part of the contractor, or
 - b) For proper execution of the works or part thereof for reasons other than the default of the contractor, or
 - c) For safety of the works or part thereof.

The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Architect.

- ii) If the suspension is ordered for reasons (b) and (c) in sub-para (i) above :

The contractor shall be entitled to an extension of time equal to the period of every such suspension. No compensation whatsoever shall be paid on this account.

34.0 Action when the whole security deposit is forfeited

In any case in which under any clause or clauses of this contract, the Contractor shall have rendered himself liable to pay compensation amounting to the whole of his security deposit the BOB/Architect shall have the power to adopt any of the following course as they may deem best suited to the interest of the BOB.

- a) To rescind the contract (of which rescission notice in writing to the contractor by the BOB/Architect shall be conclusive evidence) and in which case the security deposit of the contractor shall be forfeited and be absolutely at the disposal of BOB.
- b) To employ labour paid by the BOB and to supply materials to carry out the work, or any part of the work, debiting the contractor with the cost of the labour and materials (the cost of such labour and materials as worked out by the BOB/ Architect shall be final and conclusive against the contractor) and crediting him with the value of the work done, in all respects in the same manner and at the same manner and at the same rates as if it had been carried out by the contractor under the terms of this contract the certificate of BOB/Architect as to the value of work done shall be final and conclusive against the contractor.
- c) To measure up the work of the contractor, and to take such part thereof as shall be unexecuted, out of his hands, and to give it to another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (of the amount of which excess the certificates in writing of the BOB/Architects shall be final and conclusive) shall be borne by original contractor and may be deducted from any money due to him by BOB under the contract or otherwise, or from his security deposit or the proceeds of sale thereof, or sufficient part thereof.

In the event of any of above courses being adopted by the BOB the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any material or entered into any engagements or make any advances on account of, or with a view to the execution of the work or the performance of the contract and in case the contract shall be rescinded under the provision aforesaid, the contractor shall not be entitled to recover or to be paid any sum or any work thereto for actually performed under this contract, unless, and until the BOB/ Architect will have certified in writing the performance of such work and the value payable in respect thereof, and he shall only be entitled to be paid the value so certified.

35.0 Owner's Right to Terminate the Contract

If the contractor being an individual or a firm commit any 'Act of Insolvency' or shall be adjusted an insolvent or being an incorporated company shall have an order for compulsory winding up voluntarily or subject to the supervision of Government 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 to do so, to show to the reasonable satisfaction of the BOB/Architect that he is able to carry out and fulfill the contract, and to give security therefore if so required by the BOB/Architect.

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

Or shall assign or sublet this contract without the consent in writing of the BOB through the Architect or shall charge or encumber this contract or any payment due to which may become due to the contractor there under.

- a) Has abandoned the contract; or
- b) Has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for 14 days after receiving from the BOB through the Architect written notice to proceed, or
- c) Has failed to proceed with the works with such diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or has failed to remove the materials from the site or to pull down and replace work within seven days after written notice from the BOB through the Architect that the said materials were condemned and rejected by the Architect under these conditions; or has neglected or failed persistently to observe and perform all or any of the acts, matters or things by this contract to be observed and performed by the contractor for seven days after written notice shall have been given to the contractor to observe or perform the same or has to the detriment of good workmanship or in defiance of the BOB's or Architect's instructions to the contrary subject any part of the contract. Then and in any of said cases the BOB and or the Architect, may not withstanding any previous waiver, after giving seven days notice in writing to the contractor, determine the contract, but without thereby affecting the powers of the BOB or the Architect or the obligation and liabilities of the contractor the whole of which shall continue in force as fully as if the contract had not been so determined and as if the works subsequently had been executed by or on behalf of the contractor. And, further the BOB through the Architect, their agents or employees may enter upon and take possession of the work and all plants, tools, scaffoldings, materials, sheds, machineries lying upon the premises or on the adjoining lands or roads, use the same by means of their own employees or workmen in carrying on and completing

the work or by engaging any other contractors or persons to complete the work 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 persons employed for completing and finishing or using the materials and plant for the works.

When the works shall be completed or as soon thereafter as convenient the BOB or the Architect shall give a notice in writing to the contractor to remove his surplus materials and plants and should the contractor fail to do so within 14 days after receipt thereof by him the BOB shall sell the same by public auction after due publication and shall adjust the amount realized by such auction. The contractor shall have no right to question any of the act of the BOB incidental to the sale of the materials etc.

36.0 Certificate of Payment

The contractor shall be entitled under the certificates to be issued by the Architect/Engineer to the contractor within 15 working days from the date of certificate to the payment from BOB from time to time. The BOB shall recover the statutory recoveries towards trade tax on works contract & income tax etc and other dues including the retention amount from the certificate of payment.

Provided always that the issue of any certificate by the Architect/Engineer during the progress of works or completion shall not have effect as certificate of satisfaction or relieve the contractor from his liability under clause.

The Architect/Engineer shall have power to withhold the certificate if the work or any part thereof is not carried out to their satisfaction.

The Architect/Engineer may by any certificate make any corrections required in previous certificate.

The BOB shall modify the certificate of payment as issued by the Architect from time to time while making the payment.

The final bill may be submitted by contractor within a period of 15 days from the date of virtual completion and Architect shall issue the certificate of payment within a period of One months. The BOB shall pay the amount within a period of 40 days from the date of issue of certificate provided there is no dispute in respect of rates and quantities.

The contractor shall submit the interim bills in the prescribed format with all details.

36.1 PAYMENT TERMS

The following percentage of contract rates {rate for supply, installation, testing and commissioning of lift(s) minus dismantling and buy back rate of the same lift(s)} in the tender shall be payable at different stages of work:

- a. 50% after delivery of material at site with all required documentation, test certificates as may be required and its verification/ inspection. Payment can be made on per lift basis but only after all material except erection accessories for the lift is delivered.
- b. 25% after completion of installation in all respects and taking away of all dismantled material for the lift(s).
- c. Balance 25% will be paid after all statutory clearances are obtained and lift(s) are handed over after required testing & commissioning .

- d. Retention money as detailed in Clause 1.0 above shall be deducted from each bill for payment.
- e. Applicable taxes shall be deducted as per the rules of the Government FROM CONTRACTOR'S BILL.

37.0 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 or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the work or the execution or failure to execute the same, whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter :

- i) If the contractor considers that he is entitled to any extra payment or compensation in respect of the works over and above the amounts admitted as payable by the Architect/Engineer 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 the Dy. General Manager & DZH, Bank of Baroda, Zonal Office, Chennai 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 Bank be in any way liable in respect of any claim by the contractor unless notice of such claim shall have been given by the contractor to the DGM in the manner and within the time as aforesaid. The contractor shall be deemed to have waived and extinguished all his rights in respect of any claim not notified to the DGM in writing in the manner and within the time aforesaid.
- ii) The DGM shall give his decision in writing on the claims notified by the contractor.
- iii) 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 Zonal Manager of the Bank for appointment of an arbitrator to adjudicate the notified claims falling which the claims of the contractor shall be deemed to have been considered absolutely barred and waived.
- iv) Except where the decision has become final, binding and conclusive in terms of the contract, all disputes or differences arising out of the notified claims of the contractor as aforesaid and all claims of the Bank shall be referred for adjudication through arbitration by the Sole Arbitrator appointed by the General Manager.

Also, there will be no objection to any such appointment that the Arbitrator so appointed is a Bank Officer and that he had to deal with the matters to which the Contract relates in the course of his duties as Bank Officer. If the arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever another sole arbitrator shall be appointed in the manner aforesaid by the said General Manager. 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 General Manager as aforesaid should act as arbitrator.

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

It is also a term of the contract 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 Bank Officer.

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

38.0 Water Supply

Water supply should be made available free of cost.

39.0 Power Supply

Free of cost single point power supply shall be made available to the contractor.

40.0 Treasure Trove etc

Any treasure trove, coin or object antique which may be found on the site shall be the property of BOB and shall be handed over to the BOB immediately.

41.0 Method of Measurement

Unless otherwise mentioned in the schedule of quantities or in mode of measurement, the measurement will be on the net quantities or work produced in accordance with up to date. Rules laid down by the Bureau of Indian Standards. In the event any dispute/disagreement the decision of the BOB/Architect shall be final and binding on the contractor.

42.0 Maintenance of Registers

The contractor shall maintain the following registers as per the enclosed proforma at site of work and should produce the same for inspection of BOB/Architect whenever desired by them. The contractor shall also maintain the records/registers as required by the local authorities/Govt. from time to time.

- i) Register for Hindrance to Work
- ii) Register for Running Account Bill

- iii) Register for Labour

43.0 Price Variation

Price should remain firm and no price variation will be admitted.

44.0 Force Majeure

44.1 Neither contractor nor BOB shall be considered in default in performance of their obligations if such performance is prevented or delayed by events such as war, hostilities revolution, riots, civil commotion, strikes, lockout, conflagrations, epidemics, accidents, fire, storms, floods, droughts, earthquakes or ordinances or any act of god or for any other cause beyond the reasonable control of the party affected or prevented or delayed. However a notice is required to be given within 30 days from the happening of the event with complete details, to the other party to the contract, if it is not possible to serve a notice, within the shortest possible period without delay.

44.2 As soon as the cause of force majeure has been removed the party whose ability to perform its obligations has been affected, shall notify the other of such cessation and the actual delay incurred in such affected activity adducing necessary evidence in support thereof.

44.3 From the date of occurrence of a case of force majeure obligations of the party affected shall be suspended during the continuance of any inability so caused. With the cause itself and inability resulting there from having been removed, the agreed time of completion of the respective obligations under this agreement shall stand extended by a period equal to the period of delay occasioned by such events.

44.4 Should one or both parties be prevented from fulfilling the contractual obligations by a state of force majeure lasting to a period of 6 months or more the two parties shall mutually decide regarding the future execution of this agreement.

45.0 Local Laws, Acts, Regulations

The contractor shall strictly adhere to all prevailing labour laws inclusive of contract labour (regulation and abolition act of 1970) and other safety regulations. The contractor shall comply with the provision of all labour legislation including the latest requirements of all the Acts, laws, any other regulations that are applicable to the execution of the project.

- i) Minimum Wages Act, 1948 (Amended)
- ii) Payment of Wages Act 1936 (Amended)
- iii) Workmen's Compensation Act 1923 (Amended)
- iv) Contract Labour Regulation and Abolition Act 1970 and Central Rules 1971 (Amended)
- v) Apprentice Act 1961 (Amended)
- vi) Industrial Employment (Standing Order) Act 1946 (Amended)
- vii) Personal Injuries (Compensation Insurance) Act 1963 and any other modifications
- viii) Employees' Provident Fund and Miscellaneous Provisions Act 1952 and amendment thereof

- ix) Shop and Establishment Act
- x) Any other Act or enactment relating thereto and rules framed there under from time to time.
- xi) Indian Electricity Act

46.0 Accidents

The contractor shall immediately on occurrence of any accident at or about the site or in connection with the execution of the work report such accident to the BOB/Architect. The contractor shall also report immediately to the competent authority whenever such report is required to be lodged by the law and take appropriate actions thereof.

SPECIAL CONDITIONS OF CONTRACT

1.0 Scope of Work:

Complete replacement, design, manufacture, supply, erection & commissioning of a passenger lifts, for general utility for its staff quarters at Sindhur Court, Mogappair & providing all inclusive service including all spares during warranty period & subsequent comprehensive annual maintenance contract for a minimum committed period of 20 years from the date of handing over the lift installation to the Bank and dismantling all material of existing lift being replaced and its handling and taking out of Bank premises on buy back basis. Work also includes obtaining all necessary statutory clearances, all related civil work like modification in doorway size, provision of granite floor tiles in lift car, painting of lift well walls.

2.0 Address of Site:

Staff Quarters, Sindhur Court, Church Road, Mogappair, Chennai

3.0 Dimensions and Levels :

All dimensions and levels shown on the drawing shall be verified by the contractor on the site and he will be held responsible for the accuracy and maintenance of all the dimensions and the levels. Figured dimensions are in all cases to be accepted and no dimension shall be scaled. Large scale details shall take precedence over small-scale drawings. In case of discrepancy the contractor shall ask for clarification from the BOB/ Architect before proceeding with the work.

4.0 Notice of Operation

The contractor shall not carry-out any important operation without the consent in writing from the Architect/BOB.

5.0 Construction Records

The contractor shall keep and provide to the BOB/Architect full and accurate records of the dimensions and positions of all new work and any other information necessary to prepare complete drawings recording details of the work as constructed.

6.0 Safety of Adjacent Structures and Trees

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

7.0 Temporary Works

Before any temporary works are commenced the contractor shall submit at least 7 days in advance to the BOB/Architect for approval complete drawings of all temporary works he may require for the execution of the works. The contractor shall carry out the modifications relating to strength, if required by the BOB/Architect may require in accordance with the conditions of contract at his own cost. The contractor shall be solely responsible for the stability and safety of all temporary works and unfinished works and for the quality of the permanent works resulting from the arrangement eventually adopted for their execution.

8.0 Water, Power and Other Facilities

- a) Water supply should be made available free of cost.
- b) Free of cost single point power supply shall be made available to the contractor.

9.0 Office Accommodation

- a) The contractor shall provide and maintain all necessary offices, workshops, stores, shelters, sanitary facilities, canteens and other temporary structures for themselves in connection with the work at the site at their own cost after getting the approval from the BOB/Architect.
- b) All the expenses for obtaining statutory approvals and maintenance of the above facilities as well as running expenses shall be borne by the contractor at no extra cost. It is also the responsibility of the contractor to obtain statutory approvals for providing the above facilities.
- c) All temporary buildings and facilities as mentioned above shall be removed on completion of the work or at any other earlier date as directed by the BOB/Architect.

10.0 Facilities for contractor's employees

The contractor shall make his own arrangement for the housing and welfare of his staff and workmen. The contractor shall also make the arrangements at his own cost for transport where necessary for his staff and workmen to and from site of work at his own cost.

11.0 Lighting of Works

The contractor shall at all times provide adequate and approved lighting as required for the proper execution and supervision and inspection of work.

12.0 Fire Fighting Arrangement

- i) The contractor shall provide suitable arrangement for fire fighting at his own cost. For this purpose he shall provide requisite number of fire extinguishers and adequate number of buckets, some of which are to be always kept filled with sand and some with water. These equipments shall be provided at suitable prominent and easily accessible places and shall be properly maintained.
- ii) Any deficiency in the fire safety or unsafe conditions shall be corrected by the contractor at his own cost and to the approval of the relevant authorities. The contractor shall make the following arrangements at his own cost but not limited to the following :
 - a) Proper handling, storage and disposal of combustible materials and waste.
 - b) Work operations which can create fire hazards.
 - c) Access for firefighting equipment
 - d) Type, number and location of containers for the removal of surplus materials and rubbish.
 - e) Type, size, number and location of the fire extinguishers or other firefighting equipment.
 - f) General housekeeping.

13.0 Site Order Book

A site order book shall be maintained at site for the purpose of quick communication between the BOB/Architect. Any communication relating to the works may be conveyed through records in the site order book and signed by the BOB/Architects/Site Engineer. Such a communication from one party to the other shall be deemed to have been adequately served in terms of contract. Each site order book shall have machine numbered pages in triplicate and shall be carefully maintained and preserved by the contractor and shall be made available to the BOB/Architect as and when demanded. Any instruction which the BOB/Architect may like to issue to the contractor or the contractor may like to bring to the BOB/Architect two copies of such instructions shall be taken from the site order book and one copy will be handed over to the party against proper acknowledgement and the second copy will be retained for their record.

14.0 Temporary Fencing/Barricading

The contractor shall provide and maintain a suitable temporary fencing/barricading and gate at his cost to adequately enclose all boundaries of the site for the protection of the public and for the proper execution and security of the work and in accordance with the requirement of the Architect/BOB and regulations of local authorities. These shall be altered, relocated and adopted from time to time as necessary and removed on completion of the work.

15.0 Site Meetings

Site meetings will be held to review the progress and quality evaluation. The contractor shall depute a senior representative along with the site representative and other staff of approved sub-contractors and suppliers as required to the site meetings and ensure all follow up actions. Any additional review meetings shall be held if required by the Architect /BOB.

16.0 Disposal of Refuse

The contractor shall cart away all debris, refuse etc arising from the work from the site and deposit the same as directed by the BOB/Architect at his own cost. It is the responsibility of the contractor to obtain from the local authorities concerned to the effect that all rubbish arising out of contractor's activities at the construction site or any other off-site activities borrow pits has been properly disposed off.

17.0 Contractor to verify site measurement

The contractor shall check and verify all site measurements whenever requested by other specialists contractors or other sub contractors to enable them to prepare their own shop drawings and pass on the information with sufficient promptness as will not in any way delay the works.

18.0 Displaying the name of the work

The contractor shall put up a name board of suitable size as directed by the BOB/ Architect indicating there in the name of the project and other details as given by the BOB/Architect at his own cost and remove the same on completion of work.

19.0 PERT chart and Drawings

- i) Before commencement of installation work, contractor will have to get detailed drawings approved by the architects incorporating changes/modifications as made by the architects after first submission. Drawings should be submitted in a timely manner as per the work

schedule to be submitted as a PERT chart by the contractor and got approved by the architects before start of work.

- ii) In preparing the PERT chart for scheduling of work , following points should be taken care of:
 - a. For each lift, the time slot between date of start of work and delivery of material should be utilised to fully dismantle the existing lift being replaced.
 - b. Atleast one passenger lift should be completed and made functional before the other lifts are replaced.
- ii) Before handing over the lifts, contractor will have submit detailed wiring diagram and User/Operation manual in three copies for each lift, one to be kept in the lift room.

20.0 Approved Make

Elsewhere in the tender the tenderer has been asked to detail list of makes of various equipment/ material being offered. BOB/ Architect will approve the makes which will have to be provided. Ropes shall be of ISI marked Usha Martin or equivalent make. Electrical wires of Flinolex/RRKabel/KEI/Torrent make. Electrical cables of Skytone/ CCI/Gloster/ INCAB/Havells/KEI/Torrent make. Electrical motors to be of Siemens/CG/ABB/Kirloskar/Torin or equivalent make

21.0 Procurement of Materials

The contractor shall make his own arrangements to procure all the required materials for the work. All wastages and losses in weight shall be to the contractor's account.

22.0 Excise Duty, Taxes, Levies etc

The contractor shall pay and be responsible for payment of all taxes, including GST as applicable, duties, levies, royalties, fees, cess or charges in respect of the works including but not limited to GST, works contract tax, excise duty, and octroi, payable in respect of materials, equipment plant and other things required for the contractor. All of the aforesaid taxes, duties, levies, fees and charges shall be to the contractor's account and the BOB shall not be required to pay any additional or extra amount on this account. Variation of taxes, duties, fees, levies etc if any, till completion of work shall be deemed to be included in the quoted rates and no extra amount on this account will in any case be entertained. If a new tax or duty or levy or cess or royalty or octroi is imposed under as statue or law during the currency of contract the same shall be borne by the contractor.

23.0 Acceptance of Tender

The BOB shall have the right to reject any or all tenders without assigning any reason. They are not to bound to accept the lowest or any tender and the tenderer or tenderers shall have no right to question the acts of the BOB. However adequate transparency would be maintained by the BOB.

24.0 Government and Local Rules

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

defend all actions arising from such claims or liabilities.

25.0 Possession Prior to Completion

The BOB shall have the right to take possession of or use any completed or partially completed part of the work. Such possession or use shall not be an acceptance of any work not completed in accordance with the contract Agreement.

26.0 Tools, Storage of Materials, Protective Works and Site Office Requirements

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

Approved drawings and wiring diagram should be at display at site carefully mounted on boards/frames of appropriate size and suitably laminated. They are to be protected from ravages of termites, ants, and other insects and made available to the BOB/Architects for inspection or such other purposes they may require.

The contractor shall provide at his own cost all artificial light required to complete the work within the specified time.

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

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

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

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

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

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

Storage of Materials: As regards storage of lift material, BOB shall provide space covered on the terrace floor. Contractor will have to make necessary arrangements as required for temporary barricading on sides. Watch and ward for safety of material will have to be arranged by the contractor.

Tools :

All measuring tapes shall be of steel. Suitable scaffolding and ladders that may be required for safe working and taking measurement shall be supplied by the contractor.

The head of workmen at site and the supervisors on the works shall always carry with them a three meter steel tape, a measuring tape of 30 meters, a spirit level, a plumb bob and a square and shall check the work to see that the work is being done according to the drawing and specifications. Lift workmen head and Supervisors shall also carry one test lamp with leads and one neon tester and necessary working instruments. The Site Engineer will use any or all measuring instruments or tools belonging to the contractors as he chooses for checking the works executed or being executed on the contract.

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

27.0 Datum

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

28.0 Benches

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

29.0 Removal of Improper Work

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

30.0 Dismissal of Workmen

The contractor shall on the request of the BOB immediately dismiss from works any person employed thereon by him, who may in the opinion of the BOB be unsuitable or incompetent or who may misconduct himself. Such discharges shall not be the basis of any claim for compensation or damages against the BOB or any of their officer or employee.

31.0 Concealed Work

The contractor shall give not less than 5 days notice to the BOB/Architects whenever any work is to be buried in the earth, concrete or in the bodies of walls or otherwise becoming inaccessible later on, in order that the work may be inspected and correct dimensions taken before such burial. In default whereof the same shall, at the opinion of the BOB/Architect be either opened up for measurement at the contractor's expense or no payment may be made for such materials. Should any dispute or differences arise after the execution of any work as to measurements etc or other matters which cannot be conveniently tested or checked, the notes of the BOB/Architects shall be accepted as correct and binding on the contractor. The BOB/Architect be either opened up for measurement at the contractor's expense or no payment may be made for such materials. Should any dispute or differences arise after the execution of any work as to measurements etc or other matters which cannot be conveniently tested or checked, the notes of the BOB/Architects shall be accepted as correct and binding on the contractor.

32.0 Substitution

Should the contractor desire to substitute any materials and workmanship, he/they must obtain the approval of the BOB/Architects in writing for any such substitution well in advance. For materials designated in the specifications indefinitely by such term as "Equal" or "Other approved" etc specific approval of the BOB/Architects shall be obtained in writing.

33.0 Preparation of Building works for Occupation and Use of Completion

The whole of the work will be thoroughly inspected by the contractor and deficiencies and defects put right. On completion of such inspection the contractor shall inform the BOB that he has completed the work and it is ready for inspection.

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

34.0 Defects after Completion

The contractor shall make good at his own cost and to the satisfaction of the BOB/architect all defects and other faults which may appear within 12 months after completion of the work. In default, the BOB may employ other persons to amend and make good such damages, defects etc. Expenses consequent thereon or incidental thereto shall be recoverable from the contractor by the BOB from any money due to the contractor. In the event of the amount being insufficient the BOB may recover the balance from the contractor, from the amount retained under Clause No. 1 (Security Deposit) of General Conditions of Contract together with any expenses the BOB may have incurred in connection therewith.

35.0 Idle Labour

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

36.0 Guarantee for the Specialized Works

Wherever provision for submission of a guarantee has been advised, the same shall be submitted

from the specialized agency along with a counter guarantee by the main contractor engaged for the work. The guarantee shall be furnished on a non-judicial stamp

Paper of appropriate value. If the contractor is required to submit guarantee/ guarantees for any item/items for a period of more than 12 months, the guarantee/ guarantees in case of those items shall remain valid even after expiry of the defect liability period of 12 months as stipulated in the contract.

37.0 Warranty And All Inclusive Maintenance Contract

The entire equipment shall be guaranteed to be free from defective workmanship or materials and any defects that may appear within 12 months from the date of issue of completion certificate for the entire work, which in the opinion of the Employer have arisen from bad workmanship or materials, shall upon intimation by the Employer, be made good by the Contractor at his own cost within the time specified. During the said period of 12 months, the contractor (successful tenderer) shall make periodical inspection of the working of the lifts free of charge at least once a month or earlier, if required, and attend to the lubrication of the various parts and such other service that may be required of him. All routine maintenance/service calls during the defects liability period will also have to be attended in a prompt manner. The warranty period shall be 12 months from the date of handing over of the last lift to the Bank.

Comprehensive Annual Maintenance Contract (AMC)

The tenderer shall quote his rates in rupees per lift per annum for all inclusive Comprehensive Maintenance Contract inclusive of all material, labour and any other costs. The quoted AMC rate should be inclusive of all duties, levies, taxes, costs like transportation, handling, insurance etc.

AMC, if the Bank so desires will commence after the end of Defects Liability Period. **AMC RATES ARE TO BE QUOTED EXCLUSIVE OF GST WHICH WILL BE ADMITTED ADDITIONALLY AT PREVALENT RATES IF ADMISSIBLE.** These rates shall remain firm for the period of AMC.

Contractor shall have to submit a Bank Guarantee in Bank approved format for an amount equal to 5% of the value of this work for fulfillment of terms and obligations of the AMC contract. The Bank Guarantee shall commence from the first day of start of AMC and shall be valid up to the last day. Thereafter fresh, similar Bank Guarantee will have to be submitted for each successive AMC, except that each year the Guarantee amount will get reduced by 1/20th of the first year AMC amount

Scope of works during AMC

The scope of work shall include but not be limited to the following:

- (i) Routine servicing/ troubleshooting/ setting/ adjustments/ cleaning/ lubrication/ checking of safeties etc. to ensure smooth and trouble free working of the lifts.
- (ii) Repairs/ replacement to the lifts including re-loading software etc. in the event of any breakdown including replacement of spares/ components/ sub-system/ cards/ motors/ ropes and any other component, part or whole, which may need replacement/ repairs.
- (iii) Import of spares and stocking them shall be responsibility of the tenderer. Non availability of spares/ components will not be accepted as a reason for waiving of penalty towards delay in rendering prompt service.
- (iv) All manufacturers preventive maintenance schedules/ replacement periodicity of components like ropes, electrical/electronics parts including checking of safety devices, protections like rope slip, load testing etc. shall be strictly followed as per the manufacturer's periodicity or as required in addition to the scope of maintenance

- indicated above.
- (v) The scope of maintenance in addition to periodic maintenance will also include attending to /any number of breakdown calls.
 - (vi) During the currency of the Annual Maintenance Service Contract, all care shall be taken so that the downtime of any lift is kept at minimum and the lift shall be attended within 4 hours of receiving the complaint. In case, the lift remains under breakdown for more than a day, then a penalty equivalent to 4 times the daily rate of service contract shall be recovered from the payment due to the contractor.

They shall also ensure that the required spares etc. for proper maintenance are readily available with them for the complete life span of the lift.

The payment towards AMC charges will be made on two equal half yearly installments after satisfactory completion of the service for the period installment becoming due after six months of service and the second after twelve months of service.

38.0 CLEARANCES

All required statutory clearances for the work from the local Government agency, State Electrical Inspectorate and Lift License shall have to be obtained by the contractor within his quoted rates, BOB shall bear any official charges as towards inspection & applications fees.

39.0 WORK SPECIFIC POINTS TO BE TAKEN CARE OF BY THE CONTRACTOR

- i. **As the work is to be done in a staff quarters maximum care should be taken by the contractor to ensure that disturbance is minimal and occupants are not inconvenienced.**
- ii. **Since lift lobbies would remain in use , it is very important that all safety precautions like the doorway not being kept open for access , are taken to guard against any mis happening.**
- iii. **TENDERERS ARE STRONGLY ADVISED TO VISIT SITE BEFORE TENDERING , GET FULLY AQUAINTED WITH SITE CONDITIONS AND TAKE NECESSARY MEASUREMENTS LIKE DIMENSIONS OF LIFTWELL, PIT ETC. THEMSELVES AS NEW LIFTS WOULD BE REPLACING OLD LIFTS AND DESIGN OF NEW LIFTS SHOULD BE SUITABLE FOR SITE CONDITIONS. THEY MAY ALSO INSPECT IN DETAIL THE OLD LIFTS AND RELATED MATERIAL TO BE DISMANTLED AND TAKEN AWAY UNDER BUY BACK ITEM IN THE BILL OF QUANTITY.**
- iv. **ALL MATERIAL AND STEEL MEMBERS REQUIRED TO BE INSTALLED IN THE BARE LIFTWELL FOR PROPER INSTALLATION OF LIFTS AND ARRANGEMENTS TO MAKE LIFTWELL CLEARANCES SUITED TO THE LIFT SHALL BE IN THE SCOPE OF THE CONTRACTOR AT NO ADDITIONAL COST.**
- v. **ALL MATERIAL RELATED TO THE OLD LIFT INCLUDING STEEL COMPONENTS SHALL HAVE TO BE DISMANTLED AND TAKEN AWAY UNDER BUY BACK.**

40.0 Declaration

I/We have inspected the site of works and have made me/us fully acquainted with the local conditions in and around the sites of works. I/We hereby declare that I/We have gone through the conditions laid down in the Notice Inviting Tender, General Conditions of Contract, Special Conditions of Contract, Technical Specifications and understood the same and on the basis of the same I/We quoted our rates in the schedule of quantities attached with the tender documents.

I/We shall also uniformly maintain such progress with the work, as may be directed by the BOB/Architects to ensure completion of same within the target date as mentioned in the tender document.

Signature of Tenderer

Witness :

Address :

Date :

I - RUNNING A/C BILL

- i) Name of Contractor/Agency :
- ii) Name of Work :
- iii) Sr No. of this bill :
- iv) No. and date of previous bill :
- v) Reference to Agreement No. :
- vi) Date of written order to commence :
- vii) Date of completion as per agreement

Sl. No.	Item Description	Unit	Rate (Rs.)	As per tender	
				Qty	Amount (Rs.)
1	2	3	4	5	

Up to Previous R/A Bill		Up to Date (Gross)		Present Bill		Remarks
Qty	Amount (Rs)	Qty	Amount (Rs.)	Qty	Amount (Rs.)	
6		7		8		9

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

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

Net value since previous bill

**II – ACCOUNT OF SECURED ADVANCE, IF ADMISSIBLE ON
MATERIALS HELD AT SITE BY THE CONTRACTOR**

No. 1	Item 2	Quantity 3	Unit 4	Amount 5	Remarks 6
----------	-----------	---------------	-----------	-------------	--------------

Total Value of materials at site

Secured Advance @% of above value

B

Certified (i) that the materials mentioned above have actually been brought by the contractor to the site of the work and no advance on any quantity of any of this item is outstanding on their security, (ii) that the materials are of imperishable nature and are all required by the contractor for use in the work in connection with the items for which rates of finished work have been agreed upon.

Dated signature of Site
Engineer preparing the bill

Designation

Dated signature of Bank's
Architects

(Name of the Architects)

Signature of the Contractor-----

III. CERTIFICATE

The measurements on the basis of which the above entries for the Running Bill No. _____ were made have been taken jointly on _____ and are recorded at pages _____ to _____ of measurement book No. _____.

Signature and date of
contractor

Signature and date of
Architect's representative
(seal)

Signature and date of
Site Engineer

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

Architect

Site Engineer

IV - MEMORANDUM FOR PAYMENT

R. BILL NO. _____

1. Total amount due since previous bill (D) (A+B) Rs. _____
2. PVA on account of escalation in price of steel, cement and other materials and labour as detailed in separate statement enclosed Rs. _____
3. Deductions :
- i) Secured Advance paid in the previous R.A. Bill Rs. _____
- ii) Retention money on value of works as per accepted tenders : up to date amount Rs. _____
- Less : Already recovered (-) Rs. _____
- Balance to be recovered Rs. _____ (-) Rs. _____
- iii) Mobilization advance, if any
- a) Outstanding amount (Principal + Interest) as on date Rs. _____
- b) To be recovered in this bill Rs. _____
- iv) Any other departmental material cost to be recovered as per contract, if any Rs. _____
- v) Any other departmental service charges to be recovered if any, as per contract (water, power etc) Enclose statement Rs. _____
- Total deduction as per contractor Rs. _____ (-) Rs. _____
- Net amount payable as per Contract (E-F) Rs. _____ Rs. _____ (G)

(Rupees) in words

The bill amounting to(both figures and words) has been scrutinized by me after due check of the measurement of works as required and is recommended for payment.

Signature of architect with seal

Date:

The architects' certification amounting to(both figures and words) has been scrutinized by me and after due test check of the measurement of works as required is recommended for payment amounting to(both figures and words)

Signature of Bank's Engineer

Date:

STATUTORY DEDUCTIONS :

1. Total amount due (E)	Rs. _____
2. Less : Income Tax Payable	Rs. _____
Net Payable	Rs. _____

The figure given in the Memorandum for Payment has been verified and the bill passed for payment Rs..... (Words and figures)

Date :

The Dy. General Manager

PROFORMA OF CERTIFICATE OF PAYMENT BY ARCHITECTS

Certificate No. Interim/	Dated																												
Client :	Project No.	Building Work/Interior Work																											
	Particulars :																												
Contractor :	Contract/Letter NO.	Dated :																											
	Contractor's Bill No.	Dated :																											
<p>This is to certify that the amount given below (*) is due to the Contractors for the work done by them and/or against materials delivered at site and/or for advance towards contract on the above referred project.</p> <table> <tr> <td>Advance against contract</td> <td>Rs.</td> <td>_____</td> </tr> <tr> <td>Less : Advance adjusted to-date</td> <td>Rs.</td> <td>_____</td> </tr> <tr> <td>Balance Advance</td> <td>Rs.</td> <td>_____</td> </tr> <tr> <td>Advance against material delivered at site</td> <td>Rs.</td> <td>_____</td> </tr> <tr> <td>Amount of work done to-date</td> <td>Rs.</td> <td>_____</td> </tr> <tr> <td>Total</td> <td>Rs.</td> <td>_____</td> </tr> <tr> <td>Less : Retention on work done</td> <td>Rs.</td> <td>_____</td> </tr> <tr> <td>Less : Previously certified upto</td> <td>Rs.</td> <td>_____</td> </tr> <tr> <td>PRESENT CERTIFICATE (*)</td> <td>Rs.</td> <td>_____</td> </tr> </table> <p>RUPEES</p> <p>The cost of cement or any other material supplied or payments made by BOB directly, if any and not covered herein above, should be adjusted before making the payment of the certified amount (*)</p> <p>Necessary Deduction U/S 194C of the Income Tax 1961 and sales tax may be made before paying the above certified amount.</p> <p>By a copy of this letter, we are intimating the Contractors to call on you for the necessary payment.</p>			Advance against contract	Rs.	_____	Less : Advance adjusted to-date	Rs.	_____	Balance Advance	Rs.	_____	Advance against material delivered at site	Rs.	_____	Amount of work done to-date	Rs.	_____	Total	Rs.	_____	Less : Retention on work done	Rs.	_____	Less : Previously certified upto	Rs.	_____	PRESENT CERTIFICATE (*)	Rs.	_____
Advance against contract	Rs.	_____																											
Less : Advance adjusted to-date	Rs.	_____																											
Balance Advance	Rs.	_____																											
Advance against material delivered at site	Rs.	_____																											
Amount of work done to-date	Rs.	_____																											
Total	Rs.	_____																											
Less : Retention on work done	Rs.	_____																											
Less : Previously certified upto	Rs.	_____																											
PRESENT CERTIFICATE (*)	Rs.	_____																											
Remarks, if any :																													
The details of Insurance Policy are given in the next page.																													
Enclosures : Bill		Signature of Architects _____																											

Client's Copy

DETAILS OF INSURANCE POLICIES

Type of policies	Name of Insurance	Amount Rs.	Policy No.	Validity
CAR Policy including 3 rd Party liability Workmen's Compensation				
Remarks :				
1. 2. 3.	This is only an 'on-account' payment and is not to be interpreted either as approval of work, materials brought or affixed at site or for that matter approval of any sort. The quantum of work done and materials delivered at site have been certified by Should you wish to audit such work, kindly contact the undersigned and oblige.			
				_____ Architects

PROFORMA OF HINDRANCE REGISTER

Name of Work : Date of start of work :

Name of Contractor : Period of completion :

Agreement No. : Date of completion :

Sr. No.	Nature of hindrance	Date of occurrence of hindrance	Date of which hindrance was removed	Period of hindrance	Signature SE/PE	Remarks
1	2	3	4	5	6	7

BANK ENGINEER & ARCHITECT

SAFETY CODE

1. First aid appliances including adequate supply of sterilized dressing and cotton wool shall be kept in a readily accessible place.
2. An injured person shall be taken to a public hospital without loss of time, in case where the injury necessitates hospitalization.
3. Suitable and strong scaffolds should be provided for workmen for all works that cannot safely be done from the ground.
4. No portable single ladder shall be over 8 meters in length. The width between the side rails shall not be less than 30 cm (clear) and the distance between two adjacent rungs shall not be more than 30 cm. When a ladder is used an extra mazdoor shall engaged for holding ladder.
5. The excavated material shall not be placed within 1.5 meters of the edge of the trench of the half of the depth of trench whichever is more. All trenches and excavation shall be provided with necessary fencing and lighting.
6. 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 rails whose minimum height shall be one meter.
7. NO floor, roof or other part of the structure shall be so overloaded with debris or materials as to render it unsafe.
8. Workers employed on mixing and handling material such as asphalt, cement mortar of concrete and lime mortar shall be provided with protective footwear and rubber hand-glove.
9. Those engaged in welding works shall be provided with welder's protective eye shield and gloves.
10.
 - i) No paint containing lead or lead products shall be used except in the form of paste and readymade paint.
 - ii) Suitable facemasks should be supplied for use by the workers when the paints applied in the form of spray or surface having lead paint dry rubbed and scrapped.
11. Overalls shall be supplied by the Contractor to the painters and adequate facilities shall provide to enable the working painters to wash during the periods of cessation of work.
12. Hoisting machines and tackle used in the works, including their attachments, anchored and supports shall be in perfect condition.
13. The ropes used in hoisting or lowering material or as a means of suspension shall be durable quality and adequate strength and free from defects.
14. Since lift lobbies would remain in use , it is very important that all safety precautions like the doorway not being kept open for access , are taken to guard against any mishappening.

PROFORMA FOR APPLICATION BY CONTRACTOR FOR EXTENSION OF TIME

1. Name of the Contractor
2. Name of the work as given in the Agreement
3. Agreement WO
4. Tender amount
5. Date of commencement of work
6. Period allowed for completion as per agreement
7. Date of completion as per agreement
8. Period for which extension of time has been given

Dated Month Year

- a) 1st extension vide Bank's Letter No.
 - b) 2nd extension vide Bank's Letter No.
 - c) 3rd Extension vide Bank's Letter NO.
9. Reasons for which extensions have been previously given (copies of the previous applications should be attached)
 10. Period for which extension is applied for and the reasons thereof including hindrances, time for extra work assigned, if any etc.

Signature of Contractor

General Technical Specifications with Scope of Work

1.0 Scope

This section deals with general technical requirements of lift installation, its components, safety devices various type of controls and methods of operation. The selection of a particular type of control and method of operation will be guided by the requirements in individual case such as nature of building, usage, occupancy, traffic pattern etc. and has to be decided in individual cases.

2.0 Drive Machinery

2.1 *Electric Supply*

Three phase, 50 Hz, 415 V electric supply shall be made available. The entire lift equipment should be suitable for operation at +10% to –20% of the rated supply voltage.

2.2 *Gearless machine*

The gearless machine shall consist of a motor, traction sheave and break-drum or brake disc completely aligned on a single shaft. Gearless machine shall be A.C. gearless with VVVF drive.

2.3 *Geared machine*

The lift machine shall be of worm gear reduction type with motor, brake, worm gearing and driving sheave and suitable for type of control specified.

2.4 *Sheaves*

Sheaves and pulleys shall be of hard alloy, cast iron, SG iron or steel and free from cracks, sand holes and other defects. They shall have machined rope grooves. The traction sheave shall be grooved to produce proper traction and shall be sufficient dimension to provide for wear in the groove. The deflector sheave shall be grooved so as to provide a smooth bed for the rope. The deflector or secondary sheave assemblies where used shall be mounted in proper alignment with the traction sheave. Such deflector sheaves shall have grooves larger than rope diameter as specified in clause 8 of IS 14665 (Part–4 Sec 3): 2000. The size of all the sheaves shall be in accordance with clause 8.4 of IS 14665 (Part–4 Sec3) : 2000. Wherever necessary suitable protective guards may be provided.

2.5 *Shaft Keys*

Shaft which supports sheaves, gears, coupling and other members which transmit torque shall be provided with tight fittings keys of sufficient strength and quality.

2.6 *Brake*

The lift drive machinery shall be provided with an electromagnetic brake or motor operated brake normally applied by means of springs in compression when the operating device is in off position. The brake shall be suitably curved over the brake drum or brake disc and provided with fire proof friction lining. The operation of brake shall be smooth, gradual and with minimum noise. The brake shall be designed to be of sufficient size and strength to stop and hold the car at rest with rated load. The brake should be capable of operation automatically by the various safety devices current failure and by the normal stopping of the car. The brake shall be released electrically. It shall also be possible to release the brake manually, such released requiring the permanent application of manual force so as to move the lift car in short stops. For this purpose suitable brake release

equipment wherever necessary shall be supplied with each lift installation and the same shall be kept in safe custody to prevent misuse.

2.6.1 Hand winding wheel or handle:

At times of lift stoppage due to any reasons, it shall be possible to move the lift car to the nearest landing manually. The manual operation shall be by means of winding wheel or handle mounted on the end of the motor shaft. The up or down direction of the movement of the car should be clearly marked on the motor or at suitable location. A warning plate written in bold signal red colour advising the maintenance staff to switch off the mains supply before releasing the brake and operating the wheel is to be prominently displayed.

2.7 Bearings

Bearings shall be either of anti-friction metal sleeve type with oil reservoirs, self, lubrication, oil gauges, capped filler openings and drains of the ball roller or sintered type subject to oil flood lubrication or grease lubrication.

Grease lubricated bearings shall have grease gun connections and drain plugs. The bearings and lubricant reservoirs shall be dust tight and shall incorporate effective seals to prevent leakage. The outer end of the bearings shall be closed with a removable oil tight plate. Thrust bearings shall be of the ball or roller type and shall have two sets of balls or rollers arranged to minimize backlash for efficient working.

3.0 Type of controls

3.1 Single speed alternating current control

A control for a driving machine induction motor which is arranged to run at a single speed.

3.2 Variable Voltage Variable Frequency

Incoming mains AC power is first rectified to DC and then inverted to provide controlled AC current to the elevator drive. Precision monitoring of motor speed and car direction, position and load enable the pulse width of the AC power supplied to the motor to be adjusted to ensure that elevator speed is maintained very accurately to an ideal profile.

Thus in VVVF controls pulse width modulation control of AC motors has following advantages compared with the older servo controlled elevators :-

- a) Total control at all stages of the motion cycle.
- b) A consistent fully adjustable smooth ride.
- c) Better levelling accuracy under all conditions.
- d) A higher power factor
- e) Lower starting current.
- f) Energy saving through reduced power consumption.

4.0 Installation aspects:

4.1 Installation in Machine Room—Lift Machine Room to accommodate the drive machinery, controller, etc., shall as far as possible be located on top of the lift shaft. The layout of equipment there should be such as to allow free movement of maintenance personnel inside. Machine room shall not be used for storage purpose.

4.1.1 Air Conditioning of Machine Rooms- Machine Rooms shall either be Air- Conditioned or non air conditioned according to the requirement. Heat Load Details shall be furnished by the Elevator Contactor.

4.1.2 **Vibration, Isolation**– Vibration and isolation arrangement shall be provided to prevent transmission of vibration to the building and structure.

4.2 **General Illumination of Lift well**

Suitable light points shall be provided in the lift well at a spacing of not more than 5 meters in between, starting at the ground floor. All the points should be group controlled from the M/C room. The wiring shall be carried out in surface conduit as per CPWD General Specification. One socket outlet shall be provided in the shaft for use by maintenance personnel at a level slightly above the ground floor landing.

5.0 **Guide rails**

Guide rails shall be in accordance with clause 3 of IS 14665 (Part 4–Sec 2) 2000. Only machined guide rails shall be permitted for cars for passengers and hospital lifts. Formed sheet metal rails shall be used up to speeds of 1.75mps for counter weight applications. In the case of goods lifts, unmachined guides rails shall be permitted for the counterweight for all speeds and for the cars only up to a speed of 0.5m/sec.

The guide rails shall be continuous throughout the entire travel and shall withstand without any deformation the action of safety gear with a fully loaded car.

Generally the guide rails shall be supported by brackets secured to the hoist way frame at each floor. The rails shall be securely fastened to the brackets or other supports by approved heavy rail clamps. All necessary guide rails packing or additional supports shall be provided to prevent guide rail deflection and stresses exceeding the prescribed limits. The stresses on the guide rail due to the horizontal forces imposed on it during loading, unloading and running calculated without impact, shall not exceed 1100 kg/sq.cm based upon the class of loading and the deflection shall not exceed 5mm. the guide rail brackets, their fastenings and supports shall be capable of resisting the horizontal forces mentioned above, with the total deflection at the point of support not in excess of 3mm.

Guide rails shall extend from pit floor to the underside of concrete slabs or grafting at top of the lift well. They shall be erected in plumb and parallel with a maximum deviation of 3mm. All shimming required shall be of metal securely held in place. Jointing plates shall be so located as not to interfere with supporting clamps and brackets. The bolts shall be used with spring lock washers. The guide rail anchorage pit floor must be made without puncturing the water proofing. The expansion joints in the guide rails shall be so designed as to avoid jerks in the lift car. Machined guide rails shall have finished surfaces which shall be coated with corrosion preventive compound which shall be maintained till the commissioning of the installation. Before the car is placed in operation, the preventive coating shall be removed and the guide rails thoroughly cleaned and smoothed.

6.0 **Lift Car**

6.1 **Car Frame**

The car frame shall be in accordance with clause-4 of IS 14665 (Part 4-Sec 3) : 2001 made of sheet Steel of rigid construction to withstand without permanent deformation the operation of safety gear. The car shall be so mounted on the frame that vibration and noise transmitted to the passengers inside is minimized.

6.2 **Car Platform**

6.2.1 The car platform shall be of framed construction and designed on the basis of rated load evenly distributed. The dimensions shall conform to IS:14665 (Part-1) 2000 unless otherwise specified. The flooring shall be smooth and of anti-skid surface. The flooring shall be strong enough to take the rated load without any deformation or damage.

6.2.2 A load plate along with overload alarm, giving the rated load and permissible maximum number of passengers should be fitted in each lift car in a conspicuous position.

6.3 Car body

The car shall be enclosed on all sides by a metallic enclosure. The enclosure including the door shall withstand without deformation a thrust of 35 Kg applied normally at any point and as per IS 14665 (Part 4/ Sec 3)-2001. Ventilation openings if specified shall be as per IS 14665 (Part4/Sec 3) - 2001.

6.3.1 Stretcher guards/ trolley guards made of PVC/Rubber extrusion housed in a stainless steel beading shall be fitted at suitable level (s) to rear/ side panels for bed lifts/ goods lifts.

6.3.2 Lift Car door shall have a fire rating of one hour.

6.3.3 Grounding switch (es), at ground floor level, shall be provided on all the lifts to enable the fire service to ground the lifts.

6.4 Car roof

The roof of the car shall be capable of supporting a weight of at least 140 Kg and as per IS 14665 (Part-4 – Sec3) : 2001.

6.5 Car Thresholds

Car entrance shall be provided with metal thresholds having a grooved surface. Thresholds for lifts having horizontally sliding car doors shall have machined or extruded guide grooves.

6.6 Toe Guard Aprons

The toe guard apron of gauge not less than 1.6mm of Galvanized sheet steel may be provided extending at least 15mm beyond entrance jambs at each side. The guards shall have a straight vertical face extending below the level of the finished car floor and not less than the depth of the leveling zone plus 7.5mm. The bottom of guard shall extend 700mm for lifts up to speed of 1.5 mps & 1000 mm for lifts above speed of 1.5 mps below vertical face and beveled at 15° angle from the vertical. It shall be seamed to car platform construction and be reinforced and braced.

6.7 Clearance

The clearance between the top of the car and the soffit of the lift shaft roof, bottom of the car and the pit floor, the buffers etc., and the clearance between the car and the lift well, between the car and the landing sill, between two lift cars in the same shaft etc. shall be provided as per IS 14665 (Part 1, 2 & 4) and relevant lift rules mentioned in Appendix-I.

6.8 Car Apron, Landing thresholds and Sills

An apron shall be fitted to the car platform such that no dangerous gap exist at any time when the landing door is opening, Thresholds and sill plates shall be provided at the landings also. The distance between landing sill and the sill on car platform shall not be more than 30mm.

6.9 Inter-communication system

6.9.1 Though para 8.4.3 of IS 14665 (Part 2/ sec 1) : 2000 recommends for provision of either an emergency signal or a telephone inside the car but as a general experience, it is seen that over a period of time these devices become inoperative due to one reasons or the other. Therefore, in order to have at least one device of communication functioning at all the

times, an alternative arrangement in terms of provision of both i.e. telephone with minimum three connections - one at the operator's room and other at guard room and the emergency signal with re-chargeable batteries as source of supply shall be made in the lift cars.

6.9.2 The device used for emergency signals should incorporate a feature that gives immediate feed back to the car passengers that the device has worked properly and the signal has been passed on the intended agency. This shall be achieved by pressing of bottom from control room which shall give audio signal to the passengers in the car.

6.9.3 Provision of group indicator panel in the control room shall be made to indicate working of lifts.

6.9.4 **Emergency Power Supply for Lift Car**

This shall include suitable secondary battery with trickle/ boost charge arrangement and inverter power pack with necessary contactors for supplying the light fixtures in the lift car. The same battery shall also feed the alarm bell and communication equipment.

6.10 **Ratings and Instructions**

Inside the lift car, the lift supplier shall also provide a stainless steel metallic plate indicating the rated load and detailed instructions for the passengers. This shall be mounted at a suitable place.

6.11 **Lift Car Interior Finish**

The side, rear and fascia panel shall be of scratch free stainless steel sheet. The flooring shall be with Granite Stone. The false ceiling in the lift car shall be crafted from mild steel powder coated to suitable colour with LED lamps and fan diffuser (s) in different colour.

6.11.1 **Operating Panel Inside the car**

The car operating panel shall be of metal, flush mounted and duly finished to match the car interior décor and shall contain all the devices as may be specified depending upon the type of operation required. In addition separate illuminated panel for indicating the floor and direction may be provided on the top and the door way. All switches shall be fade proof and the devices shall be of suitable quality.

Each device and its operating position shall be legible fade proof and marked.

7.0 **Car and landing entrances**

The car and landing doors shall be flush type Vandal Resistant Stainless steel only for power operation. The flush type may further be of single sliding, centre opening. Power operated car and landing doors shall be so designed as not to injure any person during their closure by means of provision of a safety pressure switch which shall cause the doors to reopen on the slightest pressure. In case of power operated doors, it shall be possible on power failure, to open them from the car side. The door opening and closing shall be accomplished smoothly and quickly without undue noise, vibration and shock and their movements shall be cushioned and checked at both limits.

7.1 **Car doors:**

7.1.1 The car door shall be hung from the top M.S. fabricated track and means shall be provided to prevent the door from jumping off the track. The doors shall be provided with two point suspension sheave type hangers suitable for the type of door operation specified. The

hangers shall be securely fastened on bearings mounted on a malleable iron or steel bracket. Arrangement shall be provided for vertical and lateral adjustment of car doors. The sheaves shall move on M.S. fabricated track so shaped as to permit free movement of sheaves with regard to vertical adjustment of sheave bracket or housing.

The car door shall be centre opening horizontal sliding stainless steel scratch proof (moon rock finish) for office, residential & goods lift applications whereas telescopic horizontal sliding stainless scratch proof surface (moon rock finish).

7.1.2 A potential cause of accidents could be the attempts made to open the landing door lock of lower floor in case the car stops away from floor level due to power failure. Since the car door can be opened in case of power failure so as to improve the ventilation and avoid claustrophobic situations etc. As outlined in IS 14665 (Part 2/Sec 1) : 2000 para 10.9.1, there is a tendency among trapped passengers to make attempts to open any accessible landing door. This attempt in panic may result in accidental fall into the lift pit. In order to ensure that the trapped passengers do not attempt landing door, the electromechanical latch should be so designed that it is inaccessible or invisible to the passenger in the car.

7.1.3 In order to avoid accidental closure of doors while boarding or alighting the car, tamper proof infrared curtain covering almost the entire height of the door should be provided in the lift doors.

8.0 Levelling

All lifts shall be incorporated with suitable floor levelling devices. In case of lifts with automatic power operated doors and with A.C. VVVF controller a separate level device for automatic levelling with levelling accuracy of + 5mm shall be incorporated.

9.0 Counter Weight

The counter weight for lift cars shall be in accordance with clause 6 of IS 14665 (Part 4-Sec-3) : 2001 and shall be designed to balance the weight of empty lift car plus approximately 50 percent of the rated load. It shall consist of cast sections firmly secured in relative movement by at least two numbers steel tie rods having lock nuts/split pins at each end and passing through each section and Housed in a rigid steel frame work. Cracked and broken sub weights shall not be accepted.

9.1 Counter Weight Guards

Stainless Steel Guards shall be provided in the lift pit to a suitable height above the pit floor to eliminate the possibility of injuries to the maintenance personnel.

10.0 Guide shoes

Two numbers of guide shoes at the top and two numbers at the bottom shall be provided on the lift car and counter-weight.

10.1 Type of Shoes

10.1.1 For passengers lift and freight -cum-passengers lifts

(a) For speed upto 1.5mps sliding guide shoes shall be used. Sliding guide shoes for car shall be always flexible and for counterweight solid guide shoes can be used upto 1.0mps.

(b) For speeds more than 1.5mps roller guide shoes shall be used for car and counterweight.

10.1.2 For Freight lifts solid shoes can be used.

10.2 Flexible type/solid type sliding guide shoes

The car shall be provide with solid or spring loaded swiveling guide shoes with renewable liners, where the lift car speeds are upto and including 1 MPS. The cars with speeds beyond 1 MPS shall be provided with spring loaded guide shoes with renewable liners or the guide shoes shall be of roller type.

10.3 Roller type guide shoes

Each roller type shoe shall be of an approved type consisting of rollers assembled on a substantial metal base and mounted as to provide continuous contact of all rollers with the corresponding guide rail surfaces under all conditions of load and operation. The rollers shall run on the three finished guide rail surfaces and shall operate quietly.

10.3.1 Mounting of guide shoes

Guide shoes shall be provided with adjustable mountings & shall be rigidly secured in accurate alignment at the top and bottom on each side of the car sling and counter weight frame construction. When oil buffers attached to the bottom of the counter weight are used, additional guide shoe shall be provided on each side of the buffer same. The design of guide shoes and car safety devices shall be coordinated so as to ensure the provision and installation of equipment with clearance specified in Clause 2.10 (VIII) of this Chapter.

11.0 Lift Ropes- IS 14665 (part 4/Sec 8)-2001

Round strand steel wires ropes made from steel wire ropes having a tensile strength not less than 12.5 tonnes/cm² and of good flexibility shall be used for lift.

Lubrications between the strands shall be achieved by providing impregnated hemp core. The lift ropes shall conform to IS 14665-(Part-4-Sec. 8):2001. The minimum diameter of rope for cars and counter weight of passenger and goods lift shall be 8mm, and shall confirm to IS 14665 (part 4/Sec.8) including all amendments. No. of Ropes Specially Manufactured for Elevator use shall be employed for suspension of Elevator Car & Counterweight as per IS 14665. At least three Steel Wire Ropes specifically manufactured for Elevator use, shall be employed for the suspension of Elevator car & counter weight.

Rope speed of Passenger & goods lifts (m/s)	Factor of safety
0.5 or less	8
exceeding 0.5 to 1.0	8.6
exceeding 1.0 to 2.0	10
exceeding 2.0 to 3.5	11
exceeding 3.5	12

11.1 Rope fastenings

The ends of lift ropes shall be properly secured to the car and counter weight hitch plates as the case may be with adjustable rope shackles having individual tapers babbitt sockets, or any other suitable arrangement. Each lift rope shackle shall be fitted with a suitable shackle spring, seat washer, shackle nut & lock & shackle nut split pin.

11.2 Guards for Lift Ropes

Where lift ropes run round a sheave or sheaves on the car and/ or counterweight of geared/ gearless machine suitable guards shall be provided to prevent injury to maintenance personnel.

11.3 **Number & Size of Ropes**

The contractor must indicate the number and size of lift ropes and governor ropes proposed to be used, their origin, type, ultimate Tensile strength and factor of safety. The contractor should furnish certificate or ropes from the rope manufacturers issued by competent authority.

12.0 **Safety Equipments**

Every lift installation shall necessarily be provided with the following safety features:

12.1 The safety gear shall be provided in accordance with IS 14665 (Part-4- Sec.4):2001, each type of car safety shall be actuated by a speed governor.

12.2 **Governor** – the car safety shall be operated by speed governor located overhead and driven by governor rope suitably connected to the car and mounted on its pulleys. The rope shall be maintained in tension by means of weighted or spring loaded tension sheaves located in the pit. Governor shall be provided for lifts with a travel of more than 5.5 meters. The governor rope shall be not less than 6mm in dia and shall be made of steel or phosphor bronze. These shall be in accordance with IS 14665 (Part4/sec-4):2001. Governor for car safety gears shall be adjusted to actuate the safety gear at the following speeds:-

(a) For rated speeds upto 1 m/s maximum governor tripping speed shall be either 140 percent of rated speed or 0.88 m/s, whichever is higher. For rated speed above 1 m/s maximum governor tripping speed shall be 115 percent of the rated speed plus 0.25 m/s.

(b) Minimum governor tripping speed shall be 115 percent of the rated speed.

12.2.1 The governor shall be of “V” groove wheel design and only wheel is stopped to actuate the car safety upon a pre-determined over speed downward without damaging the rope.

12.3. The governor, rope and sheave shall be so located so as to minimize danger of accidental injury to the equipment.

12.3.1. The governor sheave and tension sheave shall be according to Clause 2.4 and the Sheave bearing shall be according to Clause 2.7 of this Chapter.

12.3.2 The requirements for field test on car safety and governor and for drop tests to sliding type car safety shall be as specified in section IV of this specifications.

12.4 **Terminal limit switches**

12.4.1 Terminal switches

These shall stop the car automatically at terminal floors within the top and bottom Permissible over travel. They shall act independently of the operating devices, the Ultimate limits switches and the buffers. They shall be in accordance with clause 8 of IS: 14665 (Part 3-Sec 1): 2000.

12.4.2 Terminal stopping devices located in shaft or in the car and operated by cams shall be fitted with rollers having a rubber or other approved composition to provide silent operation when actuated by the cam. When the lift car cross head is 60cm from the nearest obstruction above it, no projection on the car shall strike any part of the overhead structure.

12.4.3 Lifts with speeds over 1.25 meters/ second shall have the normal terminal stopping device located on the car or on the guide rails or in the machine room.

12.5 **Ultimate Terminal Switches**

These shall be provided in accordance with the statutory requirements and standing practices. When provided these shall arrange to stop the car automatically within top and bottom clearances independently of the normal terminal switches but with the buffer operative. These shall be in accordance with clause 8 of IS : 14665 (Part 3/Sec 1)-2000.

12.6 **Buffers – (IS 14665 (Part 4/Sec 1) – 2001)**

Buffers shall be oil resistant rubber pad type for speeds upto 0.25 mps and spring/oil type for speeds upto 1.5 mps and only oil type for speeds higher than 1.5 mps.

Buffers shall be suitable for installation in the space available. Buffer anchorage at pit floors shall be installed avoiding puncturing of water proofing.

The partial compression of spring return oil buffers when the car is in level with terminal landing will not be acceptable.

All buffers shall be tested at manufacturers works and a copy of the test report shall be submitted.

When the lift car rests on fully compressed buffers there shall be at least 60 cms clearance between the lowest point in its car frame and any obstruction in the pit exclusive of buffers and their supports. Similarly when the lift car cross head is 60 cm from the nearest obstruction above it, no projection on the car shall strike any part of the overhead structure.

The contractor must indicate the name of buffer manufacturers, buffer stroke & certified maximum loads.

12.7 **Door Locks**

Electro-mechanical door lock shall be provided for all the landing doors and they shall be such that the doors cannot open unless the car is at rest at the particular landing. It shall not be possible to move the car unless all the landing doors and the car door are closed and locked. This requirement however does not apply when the lift car is provided with automatic leveling devices and in such cases, it shall be permitted to move the car with both the doors open in the leveling zone for the purpose of leveling.

All the locks and contacts shall conform to IS : 14665 (Part 1/Sec 6)-2001 shall be Positive and pass the prescribed endurance and reliability test from a recognized testing laboratory. They shall be so located as to be inaccessible to un-authorized Personnel. The electromechanical latch should be so designed that it is inaccessible or invisible to the passengers in the car. **For safety separate car gate lock in addition to the landing lock mechanism to be provided.**

12.8 **Other Safety Devices**

Besides these safety devices mentioned above, motor operated electro-mechanical brake (Clause 1.6) counter-weight guards (Clause 8.1) alarm bell, emergency door lock release operating key and associated safety and other requirements shall also be included.

13.0 **Lift Operations**

13.1 **Automatic- cum-attendant operation**

13.1.1 Single Automatic Push Button with/ without attendant – The operating devices for this operation shall incorporate in the car control panel, car buttons corresponding to the various landings served and single landing button at each landing, all electrically connected to controller governing floor selection, direction of travel, acceleration, retardation etc.

this system shall be so arranged that when the car is not in use, on pressing a landing call button the car shall start automatically provided all the doors are closed. During the movement of the car and also when car stops at floor landing, other landing call buttons are in-operative for a predetermined time. The pressing of a car button shall automatically start the car and send it to the desired landing. In all the cases, the starting of the car is contingent on the establishment of landing door and car inter-lock circuits. To indicate the availability, or 'in use' light shall be placed in the landing call button panel. When light shall be 'OFF' the passenger shall be able to call the car. In case of manual operated door if the lift is standing at any landing with doors open (when not in use), the pressing of the landing call button shall ring a bell, fitted at the top of car to attract the attention of the people soliciting their help for closing the lift door if any one of the them happens to be near the lift.

In case of power operated doors, the landing and car doors shall be arranged to open automatically when the car is parked at landing after all the calls are served and the lift is parked at any landing. The doors can remain open or alternatively if desired, the car shall be arranged to close after a pre-determined time unless closing is prevented or interpreted by the car doors re-opening device or the door open button.

The lift shall be suitable for dual operation with or without attendant by the provision of key operated transfer switch indicating 'attendant' and 'automatic' positions. During 'attendant' operations the landing call shall be disconnected from the control system and shall be connected to an annunciator in the lift car. The attendant shall then operate the car to answer the registered calls. This operation is recommended for single speed control lift for low rising building having a single lift installation.

13.1.2 Simplex Selective-Collective operative with/without attendant

Automatic operation by means of one button in the car for each landing level served and by up and down buttons at the landings, wherein all stops registered by the momentary actuation of the car made as defined under non-selective Automatic Operation but where in the stops registered by the momentary actuation of the landing buttons are made in the order in which the landings are reached in each direction of travel (irrespective of the sequence in which the buttons have been actuated). With this type of operation, all 'up' landing calls are answered when the car is traveling in the up direction and all 'down' landing calls are answered when the car is traveling in the down direction, except in the case of the uppermost or lowermost calls which are answered as soon as they are reached in-respective of the direction of travel of the car.

13.1.3 Collective selective operation with / without attendant

The control system for this operation shall be similar to the one described under simplex selective collective operation except that in this system there shall be more than one lift cars with adjacent wells. It shall be arranged to coordinate all cars for efficient service and prevent them from answering the same calls by the provisions of two sets of landing call button fixtures one each between the two adjacent cars. It shall automatically assign each call to the car that will be in the best position to answer promptly. The system shall be so arranged that when the cars are idle, Normally One car will be parked at the lower main landing with its doors closed or open and the other car shall be parked with the doors closed or open to the landing where it answered its last call, and one of it shall be the one to attend to the nearest call.

Each car shall always respond to calls registered by its own car call buttons. Besides the control system shall also be arranged for independent service from inside the car. A by pass button (non-stop button) shall also be provided inside the car to enable the attendant to by pass any landing if the car is full or if otherwise so required.

The two lifts shall be arranged with or without attendant operation and shall function as described using single car selective collective operation. When the transfer switch is in the attendant position the operation of the cars shall be identical with that described for automatic operations except that:

- a) Closing of doors and starting of cars shall be initiated by the car buttons only
- b) Buzzers and directional lights in the car are operative and
- c) Landing by pass shall be effective.

The pressing of an up or down landing call shall illuminate appropriate direction indicator in the car panel, which is to answer that call and if the doors are open shall also sound buzzers as a signal to the attendant. If both cars are parked at the lower landing the above signals shall be given to the car which has been at the floor for longest time.

Automatic group supervisory control

13.2.1 General operating principle

The calls registered inside the car as well as the landings are answered in the sequence in which the floors are reached irrespective of the sequence in which the buttons have been pressed. Only one car will stop in response to any one landing call and will be the nearest car travelling in the corresponding direction of the call. While this car is stopping at this landing, the call will be automatically cancelled to prevent other cars stopping against the same call.

13.2.2 Automatic selection of traffic programme

The group supervisory control continuously examines traffic conditions in the building and automatically puts into operation the programme which can best cope with the demand at any particular time. This is fully automatic and requires no supervision or attendant. To suit the traffic demand in the building, suitable traffic programmes can be selected for inclusion in this control. The following are the traffic programmes available:

- (a) Up Peak Programme,
- (b) Down Peak Programme,
- (c) Up down Interfloor Programme, and
- (d) Night Programme,

- (a) Up Peak Programme:- The group supervisory control responds to the increasing influx of passengers at the main landing in the morning hours, at the start of work, by automatically switching on the up peak programme. The cars are dispatched from the main landing automatically at a pre-determined interval after the previous dispatched car. The 'Leaves First' signal is transferred instantaneously from the car dispatched to another car at the main landing. The car answers the registered calls in the natural sequence of the floors and returns directly to the main landing after last passenger has been discharged. At the main landing they are kept for a predetermined time for taking new passengers. However, a car starts its up travel the moment it becomes fully loaded, without waiting for the dispatch interval to lapse.
- (b) Down Peak Programme- An intense traffic flow from the upper floors towards main landing will automatically switch on the down peak programme. The cars, when fully loaded at upper floors, travel directly to the main landing and after discharging the passenger,

immediately start up to answer further down landing calls. The down landing call which has been bypassed gets a priority over other down calls, which ensured equal service to all floors.

- (c) UP-down Interfloor Programme:- A steady traffic between main floor and upper floor, and between floor to floor causes automatic switching on of the Interfloor Programme. Specific cars are assigned to answer specific calls by traffic analyzer so that the calls are handled most efficiently. The cars are so well distributed that every call gets equal service with short waiting intervals.

As soon as the numbers of calls drop to occasional calls only such as at night, the cars get automatically parked in their assigned zones to give personalized service with minimum lift travel. If no calls are registered for some time the motor generator sets are automatically switched off.

- (d) Night Programme:- When the traffic ceases to occasional calls only, the supervisory control automatically switches over to Night Programme. All cars remain parked at the main landing with doors closed, but are at all times ready for operation. One of the lifts has its 'Leave first' signal lighted. On pressing of call button at the main landing, the doors of this particular lift open and the passenger can travel with the lift. The same lift also responds to landing calls from above. The moment this car leaves the main landing the 'Leave First' signal is transferred to a second lift. Further passengers entering main lobby will take this second lift. This second lift also responds to landing calls from above if one lift can no longer cope with the demand. After these lifts have answered their calls, the one reaching the main landing last will retain the 'Leave First' signal. Thereby, the service is practically confined to one lift alone and motor generator sets of the remaining lifts remain switched off. If no calls are registered for sometime, the motor generator of the stand by lift also automatically be switched off. The motor generator will start up again, the moment the call is received. The number of lifts going into action is automatically regulated to just so many as are necessary to cope with the occasional traffic surge.

In case where more than 3 lifts installed in a bank, a better utilization of these lifts can be obtained by two additional programmes to deal with heavier traffic in each direction in difficult time. These are (i) Heavier 'Up' programme (ii) Heavier (DOWN' Programme).

- (i) Heavier 'UP' Programme:- This shall require the cars to make more stops in the up direction, necessitating more time for the up travel. For this purpose the automatic traffic analyzer shall dispatch cars from both terminal at automatically adjusted time intervals so that the car are equally spaced, thus reducing passenger waiting interval (this programme caters for the traffic which is likely to be in both directions but predominantly in the up direction e.g. immediately after the morning peak or after lunch).

- (ii) Heavier 'DOWN' Programme:- This shall require the cars to make more stops in the down direction and the dispatch times shall be adjusted accordingly by the traffic analyzer.

If any of the cars in the group develops any defect it shall be automatically disconnected from the group control until it is rectified.

In the event of failure of automatic dispatch system the lifts shall function by auxiliary means to avoid any disruption of service.

Audio visual indication shall be provided to bring such failures to notice.

The lifts shall be designed for attendant operation as described under single (simplex) selective collective operation car except as follow:-

- (a) The indicating lights in car shall be operative to inform the attendant when to start loading a car at a terminal and when to leave the terminal.
- (b) Landing call by pass switch and car reversal switch and switches shall be effective and load weighing devices shall be inoperative.
- (c) Call above signal shall be illuminated whenever a call is registered at a landing above the car location indicating to attendant that car is to proceed upwards. When the

highest call has been answered the light shall be extinguished indicating to the attendant that when the car is started it will proceed downward.

14.0 Controlling Equipment

The movement of the car shall be electrically controlled by means of a controller located in the machine room.

14.1 Control Circuits

The control circuit shall be designed to the type of lift specified for safety operation. It shall not be possible to start the car unless all the car and landing doors are fully closed and landing doors locked. The circuit shall have an independent fuse protection for fault and over loads and be arranged so that earth fault or an open circuit shall not create unsafe condition. The circuit shall be so arranged that for the stoppage of the car at specified landing or for actuation of a contactor by emergency switches or operation of safety gears the system shall not depend upto the completion or maintenance of an electrical circuit to cut off power supply and apply the breaks. This requirement is not applicable to dynamic braking and speed control devices.

14.2 Terminal Boards

All wiring for external control circuits shall be brought to a terminal board with means of identification of each wire. Metallic/ plastic identification tags shall invariably be provided. All connections of wires to terminal boards shall be adequately clamped or screwed.

14.3 Auxiliary Switches

14.3.1 Emergency stop Switches:

On top of the lift car an emergency stop switch shall be provided for use by maintenance personnel. Stop switch shall be provided in the machine room. Operation of these switches/ buttons shall cancel all the registered calls and landing calls for that particular lift.

14.3.2 Maintenance Switch on top of the Car:

For purpose of inspection and maintenance, maintenance switch shall be provided on top of the car. The control circuitry shall be so arranged that in the event of the operation of this switch :

(a) The car speed shall be less than the rated speed not exceeding 0.85 metres/ sec.

(b) The car movement shall be possible only on the application of the continuous pressure on a button. It shall be so mounted to prevent any inadvertent operation.

14.3.3 Fireman Switch :

Fireman switch with glass to break for access shall be provided at ground or main floor for all the lifts. The operation of this switch shall isolate/ or cancel all calls to all the lifts and the lifts will stop at the next nearest landing if travelling upward. The doors will not open at this landing and the lifts will start travelling to ground floor. If these were already travelling down, they will go straight to ground floor direct without stopping reroute.

14.3.4 Inspection Facility :

An Inspector's change over switch and set of test buttons shall be provided in the controller. Operation of the Inspector's changeover switch shall make both the car and landing buttons inoperative and permit the lift to be worked in either direction from machine room for test purposes by pressing corresponding test buttons in the controller. It shall not however interfere with the emergency stop switches inside the car or on the top

of the car.

14.3.5 **Safety Line Indicators :**

If specified visual tell tele lights may be provided to monitor the conditions of faults in the safety line of the lift for easier fault finding. These indicators will remain lit when safety circuits are normal.

One indicator shall be provided for each safety on the controller. If any indicators fail to light up as the lift proceeds in its sequence of operation, there shall be visual indication of the safety line open circuit and also its location for easier fault finding.

14.4 **Control Wiring**

14.4.1 **Wiring in Machine Room :**

Power wiring between the controller and main board controller to various landings shall be done in heavy gauge conduit or metal duct & shall conform to I.E. Rules 1956 and CPWD. Specifications for electrical works. Following general principal shall be followed in wiring:

(a) (i) – Control cables carrying DC and power cable carrying AC shall not be run in the same conduit or metal duct and they shall be laid as per I.E. rules.

(ii) Metal duct with removable inspection cover shall be preferred.

(iii) In case of control cables also the harness shall be separate as far as feasible for separate functions and laid separately in suitably dimensioned metal duct or in a separate conduit such as the signaling, locking, lamp indication and safeties. Control cables for different voltages in the lift installation works should be laid as per I.E. Rules.

(b) At least 5 percent with a minimum of 5 unconnected spare wires shall be available out of all the lines to be provided in the wiring harness from the midway junction box to the machine room.

(c) There shall be a master isolating switch fuse associated with the controller heavy duty load break, quick make, quick break, quick break type TP&N preferably interlocked with controller cabinet door. Isolator handle shall have provision for external locking in off position.

All relays shall be suitable for lift service and shall incorporate adequate contact wipe for reliable operation. Relays shall operate satisfactorily between 80 percent to 110 percent of their voltage.

Main motor contactors shall be suitable for A.C. duty. Tenderer shall be required to furnish full details of make, type, applicable standard, voltage and current rating, duty class, type and routine tests done etc., on contactors and relays. Copies of type test certificates and other test certificates shall also be furnished by the successful tenderer.

All cables shall be with copper conductors and flame retardant or PVC insulated of appropriate size. The cables feeding motor and in heavy current flow paths shall be so selected that the size matches the protecting fuses and will not result in more than 2 percent voltage drop from the main board to the terminals of motor. Control cables shall not be less than 0.5 sq. mm. or equivalent if stranded; where installation of heavy gauge conduits present difficulties, short lengths of flexible conduits will be permitted but effective electrical continuity and earth bonding shall be ensured. Ferrules shall be slipped at the ends of all cables as per standard control wiring practice. All terminal blocks shall be suitably marked.

14.4.2 **Trailing Cables :**

A single trailing cable for lighting control and signal circuit is permitted, if all the conductors of this trailing cables are insulated for maximum voltage running through any one conductor of this cable. The lengths of the cables shall be adequate to prevent any strain due to movement of the car. All cables shall be properly tagged by metallic / plastic tags for

identification.

Trailing cables shall run from a junction box on the top of the car to a junction box located in the shaft bear mid point of travel and from these junction boxes conductors shall be run to the various locations.

Trailing cables exceeding 30 meters in length shall run so that the strain on individual cable conductors will be reduced to a minimum and the cables are free from contact with the car counterweight, shaft walls or other equipment.

Trailing cables exceeding 30 meters in length shall have steel supporting fillers and shall be suspended directly by them without rubbing over other supports.

Cables less than 30 meters in length shall have no – metallic fillers and shall be suspended by looping cables around supports of porcelain spools type or equivalent.

5 percent of the total capacity subject to a minimum of 5 wires shall be available unutilised in the trailing cable everywhere suitable distributed between various functions.

14.4.3 **Earthing:**

Metal frames and all metal work of the lift controller frame etc., shall be earthed with double earth leads taken to the earth bar. Looping shall be permitted if such routing is feasible. All other individual metallic frame work of components etc., shall be loop earthed.

14.5 **Miscellaneous:**

Principle of segregation function wise shall be accepted as far as possible in the general arrangement of components. All terminal blocks shall be of 650 V grade.

14.6 **Controller Casing:**

The controller unit comprising of the main circuit breaker adjustable overload and phase reversal and phase failure protection all the circuit elements transformer, rectifier for D.C. control supply, inverter power pack, terminal blocks etc., shall be enclosed in an insect proof, sheet steel floor or wall mounted cabinet with hinged doors at front or at both front and rear. Proper warning boards and danger plates shall be provided on both sides of the controller casing. CRCA Sheet steel used for controller cabinet shall not be less than 16 gauge and shall be properly braced where necessary. Suitable gland plate shall be provided for cable entry. The battery for the charger unit shall be suitably placed in the machine room.

All sheet steel work shall be painted with two coats of synthetic enamel paint of suitable shade both inside and outside over two coats of zinc primer.

15.0 **Lift Rope Compensation**

The lift rope compensation for lift travel shall be provided for lift travels beyond 40m in all cases.

16.0 **Automatic rescue Devices (ARD)**

The Automatic Rescue Devices (ARD) meant for the purpose of bringing the lift car to the nearest landing doors, are being used selectively and is generally restricted to commercial buildings having heavy traffic. However, frequent power failures being the common phenomenon, the provision of ARD shall be made in all the lifts in public building. The ARD shall have the following specifications.

16.1 ARD should move the elevator to the nearest landing in case of power failure during normal operation of elevator.

16.2 ARD should monitor the normal power supply in the main controller and shall activate rescue operation within 10 second of normal power supply failure. It should bring the

elevator to the nearest floor at a slower speed than the normal run. While proceeding to the nearest floor the elevator will detect the zone and stop. After the elevator has stopped, it automatically opens the doors and parks the door open. After the operation is completed by the ARD the elevator is automatically switched over to normal operation as soon as normal power supply resumes.

- 16.3 In case the normal supply resumes during ARD in operation, the elevator will continue to run in ARD mode until it reaches the nearest landing and the doors are fully opened. If normal power supply resumes when the elevator is at the landing, it will automatically be switched to normal power operation.
- 16.4 All the Lift Safety Devices shall remain active during the ARD mode of Operation.
- 16.5 The battery capacity should be adequate so as to operate the ARD at least seven times a day provided the duration between usage is at least 30 minutes.

**TECHNICAL REQUIREMENT FOR PASSENGERS LIFT FOR STAFF QUARTERS AT SINDHUR COURT,
MOGAPPAIR, CHENNAI**
(To be read in conjunction with the Bill Of Quantity)

1	Type of Lift	Passenger Lift
2	Number of lifts required	ONE
3	Load: Number of persons	Minimum 6 Passengers, 408 kG
4	Rated speed	1 Metre Per Second
5	Travel in meters	14 Meters (approx.).
6	Stops & Openings(Max)	4 STOPS / 4 OPENINGS (All opening on same side) , G+3
7	Power Supply	415 V +/- 10%, 3 phase, 50HZ +/- 5% A C
8	Control	AC VVVF
9	Operation	SIMPLE
10	Machine	<i>Gearless</i>
11	Car Size (Approx.)	1100 mmx1300mm Inside Dimension
12	Car Entrance Size (Approx.)	800mm Wide x 2000mm High
13	Car Entrance Doors	Car Door and Landing Door shall be minimum SS 304 grade, hairline finish (2 Hr fire rating)
14	Car Door Operation	Automatic with ACVVVF Door Operation
15	Car Door Protection	Automatic full height light curtain Door Protection
16	Flooring of Car	As per approved Colour and pattern (Granite Flooring)
17	Ceiling of Car	Metallic in an aesthetically pleasing design with LED down lighters and cabin type pressure fan with concealed vents for ventilation. Ceiling should also have provision for emergency light
18	Hoist Entrances	Side Opening Doors
19	Car Interior Finish	Finish shall be SS 304 hairline finish
20	Landing Door Finish	Stainless Steel in Hairline
21	Hand Rails (Optional)	Hand rails on back side of the car at 900mm above floor level to be fixed on the lift car.
21	Signals	a) Combined luminous Hall Button And Digital Hall Button Indicator at all Floors. b) Battery Operated Alarm Bell And Emergency Light. c) Integral Full Height car Operating Panel With Luminous Buttons, Digital Car Position Indicator Combined With Direction Arrows, Overload Warning Indicator with floor announcement d) Fireman's Switch At Main Lobby. e) 3 Way Intercom System with three wall mounted telephone instruments (in lift car, machine room & guard room)

		<p>f) Braille marking on all buttons inside car.</p> <p>g) Voice announcement system</p> <p>h) Floor annunciation with music</p> <p>i) Stainless Steel Operating Panel</p> <p>j) Buttons suitable for operation by a passenger on wheelchair.</p>
22	Number of floors served	Ground floor to 3 rd floor
23	Suitable device for lowering or raising car	Normal cranking device or superior
24	Arrangement for opening all lift doors	Car entrance & landing entrance doors at all floors shall be openable with one master key in case of emergency.
25	Rescue Devices	Automatic Rescue Device, over load device, full load by pass.
26	Lift well and pit dimensions	Tenderer is advised to visit site and take measurements for themselves as lift design will have to suit site conditions
27	Fire Rating	<ol style="list-style-type: none"> 1. Landing doors in lift enclosures shall have a fire resistance of not less than Two hour. 2. Lift car door shall have a fire resistance rating of minimum one hour. 3. Lift body shall be of solid steel.

Note: Dimensions of lift car, doors etc. might have to suitably adapted to suit site conditions.

TESTING OF LIFT INSTALLATION

1. Tests at site:

a. Leveling Test:

Accuracy of the floor leveling shall be tested with the lift empty, fully loaded.

The lift shall be run to each floor while traveling both in upward and downward directions and the actual distance of car floor above/ below landing floor shall be measured. In each case there shall not be any appreciable difference in these measurements for leveling at the floors when the car is empty and when it is fully loaded. The tolerances for leveling shall be as specified .

b. Safety Gear Tests:

Instantaneous safety gear controlled by a governor, should be tested with contract load and a contract speed. The stopping distance obtained should be compared with the specified figures and the guides, car platform, and safety gear should be carefully examined afterwards for signs of permanent distortion.

Counterweight safety gear should be tripped by the counter weight governor and the stopping distance noted. In this case, however the governor tripping speed should exceed that of the car safety governor but by not more than 10 percent.

During the safety gear tests, car speed (from the governor or the main sheave) should be determined at the instant or tripping speed with that stated in I.S. The governor jaws and rope should be examined for any undue wear.

c. Contract speed:

This should be measured with contract load in the car, with half load with no load, and should not vary from the contract speed by more than 10 percent. The convenient method is by counting the number of revolutions, made by the sheave or drum in a known time, Chalk mark on the sheave or drum and a stop switch will facilitate timing but care must be exercised to ensure that no acceleration or retardation periods are included. If the roping is 2 to 1 the sheave speed is twice the car speed. Alternatively, the speed can be measured by a tachometer applied directly to shaft immediately below the sheave.

d. Lift balance:

After the above test, some of the weight shall be removed until the remaining weights represent the figures specified by the tenderer. With this condition car at half way travel the effort required to move the lift car in either direction with the help of winding wheel shall be as nearly as can be judged by the same.

e. Car and landing doors interlocks:

The lift shall not move with any door open. The car door relay contact and the retiring release can must be tested. The workings of the door operation and the safety edges and light equipment if any provided shall also be examined.

f. Controllers:

The operation of the controllers and interlocks shall be examined and it shall be ascertained whether all the requirements laid down in the specifications have been met.

g. Normal terminal stopping switches:

These shall be tested by letting the car run to each terminal landing in turn, first with no load

and then with contract load and by taking measurements, top and bottom over travels can be ascertained.

h. Final terminal stopping switches:

The normal terminal stopping switches shall be disconnected for this test. It shall be ensured that these switches operate before the buffers are engaged.

i. Insulation Resistance:

This shall be measured (after removing the electronic PCB's and their connection) between power and control lines and earth and shall not be less than 5 mega-ohms when measured with D.C. voltage of 500 volts. The test shall be carried out with contractors so connected together as to ensure that all parts of every circuit are simultaneously tested.

j. Earthing:

All conduits, switches, casing and similar metal work shall have earthing continuity.

k. Ropes:

The size, number construction and fastenings of the ropes should be carefully examined and recorded.

l. Buffers:

The car should be run on to its buffers at contract speed and with contract load in the car to test whether there is any permanent distortion of the car or buffers. The counter weight buffers should be tested similarly.

2. Tests at Manufacturer's works:

a. High voltage test:

The dielectric or electrical apparatus (excluding motors, generators and instruments which are tested in accordance with the appropriate Indian Standards wherever they exist) shall be capable of withstanding a test voltage of ten times the working voltage with a maximum of 2000 volts when applied.

- (ii) between the live parts and case of frame with all circuits completed.
- (iii) Between main terminals or equivalent parts with all circuits open, and
- (iv) Between any live parts of independent circuits.

Note: Owing to the impracticability of applying tests (ii), (iii) mentioned above on controllers and similar apparatus after controller wiring has been completed, these tests may be made at convenient stages of manufacture.

b. (i) Method of applying high voltage:

The test shall be made with alternating voltage of any convenient frequency, preferably between 49 and 60 cycles per second. The test voltage shall be of approximately sine-wave form and during the application of voltage with peak value, as would be determined by spark gap by oscillograph or by any other approved method shall not be more than 1.45 times the rms value. The rms values of the applied voltage shall be measured by means of a volt meter used with a suitably calibrated potential transformer or by means of voltmeter used in connection with a special calibrated voltmeter winding or testing transformer by any other suitable voltmeter connected to the output side of the testing transformer.

(ii) Duration of high voltage test:

The test shall be commenced at a voltage of about one third of the test voltage which shall be increased to the full test voltage as rapidly as is consistent with the value being indicated by the

measuring instruments. The full test voltage shall be maintained for one minute. At the end of this period, the test voltage shall be rapidly diminished to one third of its full value before switching off.

The oil buffers are examined after the above tests have been made to determine if there has been any oil leakage or distortion and to ensure that the buffers return to their normal positions.

(c) Buffer test:

A copy of the test report shall be intimated after testing at works.

4. Performance Test:

This test is meant for passenger lifts and is conducted to watch the performance of lift installation in terms of passenger handling capacity and waiting interval as obtained at site vis-à-vis design, data and conducted as below:

- (i) Waiting interval : (T)- This can be worked out by taking the average of several round trip times as observed physically and then dividing it by the number of lifts in the bank.
- (ii) Handling capacity $H = \frac{300 \times Q \times 100}{T \times P}$

Where

H= Handling capacity as the percentage of the peak population handled during 5 minutes.

P= Total population to be handled during peak morning period. (It is related to the area for which particular bank of lifts services).

Q= Average number of passenger carried in a car.

T= Waiting interval.

(iii) Service temperature Test:

A continuous run of one hour should be made with number of starts and stops to reproduce as nearly as practical the anticipated duty in service. (The standard duty cycle is for 90 to 180 start per hour). It is very difficult in practice to carry out this test with alternate starts at full load and no load and it is necessary therefore to simulate these cycles. A suitable test for all motors except squirrel cage motors is to run the car up from the bottom landing with contract load and stop at each floor. From the top floor a non stop run is made to the lowest floor and the upward journey with stop is then repeated. The time intervals between stops and starts at the floors should be uniform and such as to give about 150 starts in one hour. At the end of this run the temperatures of the armatures and fields of the motor and generator are recorded. The temperature rise should, not exceed 55 deg C or 75 deg C for classes A or B insulation respectively.

APPENDIX –VI
FIRE SAFETY GENERAL REQUIREMENTS

General requirements of lifts shall be as follows:

1. Walls of lift enclosures shall have a fire rating of 2 hours; lifts shafts shall have a vent at the top, of area not less than 0.2 m².
2. Lift motor room shall be located preferably on top of the shaft and separated from the shaft by the floor of the room.
3. Landing doors in lift enclosures shall have a fire resistance of not less than two hours.
4. Individual shafts in a bank shall be separated by a wall of 2 hours fire rating.
5. Lift car door shall have a fire resistance rating of one hour.
6. For building 15m in height or above, collapsible gates shall not be permitted for lifts and shall have solid doors with fire resistance of a least 2 hour. If the lift shaft and lobby is in the core of the building, a positive pressured between 25 and 30Pa shall be maintained in the lobby and a positive pressure of 50 Pa shall be maintained in the lift shaft. The mechanism for pressurization shall act automatically with the fire alarm; it shall be possible to operate this mechanically also.
7. Exit from the lift lobby, if located in the core of the building, shall be through a self-closing smoke stop door of half an hour fire resistance.
8. Lift shall not normally communicate with the basement. If, however, lifts are in communication, the lift lobby of the basements shall be pressurized as in (6), with self-closing door as in (7).
9. Grounding switch (es), at ground floor level, shall be provided on all the lifts to enable the fire service to ground the lifts.
10. Telephone or other communication facilities shall be provided in lift cars for building of 30m in height and above. Communication system for lifts shall be connected to fire control room for the building.
11. Suitable arrangements such as providing slope in the floor of lift lobby shall be made to prevent water used during fire fighting etc. at any landing from entering the lift shafts.
A sign shall be posted and maintained on every floor at or near the lift indicating that in case of fire, occupants shall use the stairs unless instructed other wise. The sign shall also contain a plan for each floor showing the locations of the stairways. Alternate source of power supply shall be provided for all the lifts through a manually operated changeover switch.
12. Fire Lifts- All lifts shall be provided with fire man's switch and shall be termed as 'Fire Lifts'.
13. In case of fire, only fireman shall operate fire lifts. In normal course, it may be used by other persons.
14. Automatic Rescue Device:- Supply and installation of Automatic Rescue Device.
15. Infra-Red Screen: - Supply and installation of Infra-Red Screen.
16. Main Wire Rope -10mm: - Supply and installation of Main Wire Rope -10mm. –Usha Martin Make / Tracko & Vishnu
17. Kit Wedge Socket: - Supply and installation of 10mm Kit Wedge Socket.
18. Bull Dog Clip: - Supply and installation of 10mm Bull Dog Clip.
19. Speed Governor Unit With Rope:- Supply & fixing of new Speed governor unit with rope.
20. Car & Landing Gate Lock Safety: - Supply and installation of Car & Landing Gate Lock Safety.
21. Voice Announcing Unit Standard:- Supply and fixing of Voice Announcing Unit.
22. Pit Stop Switch with Hooter: - Supply and fixing of Pit Stop Switch with Hooter.
23. Emergency Alarm Unit:- Supply and fixing of Emergency Alarm Unit.
24. Fireman Switch: - Supply and fixing of Fireman Switch.
25. Safe and Reliable – Better safety features and higher design specifications delivers enhanced passenger protection.

26. Automatic Rescue Device - Automatic Rescue Device as standard feature which protects passenger from getting trapped inside the elevator in case of an unexpected power outage by rescuing them to the nearest floor level.
27. Progressive safety gear – Gradual activation of progressive safety gear stop the elevator in a safe way in case of a safety activation, thus reducing the risk of tripping hazard. Its “reduced jerk” action enhances elevator safety and increases the elevator’s life as well.
28. Safe and reliable door system
 - Compact PMS AC door motor with V3F closed control loop system facilitates smooth and gentle door opening during ingress and exit.
 - Full-height infrared curtain renders an invisible safety net of criss - cross beams across elevator entrance and avoids passengers being hit by leading edges of doors.
 - Reliable door system prevents the doors from opening when the elevator is in between the floors, Landing door is fully compliant with the fire rating code as per IS.
29. Reliable overspeed governor – Reliable and accurate overspeed governor ensures prompt activation and thereby improves passenger safety. It activates electrically in both UP and DOWN directions to prevent over speeding in both the directions.
30. Auto re-leveling of car – This elevator comes with a leveling tolerance of + - 5mm. Optical sensors automatically re-level the car when people step out, minimizing the risk of passengers stumbling.

Function Covered List: - Standard

- Human Interface Security
- Passenger comfort Safety
- Energy efficiency
- Reliability

PERFORMANCE: -

1. Controller:- Supply and installation of Collective Selective Memory Control System.
2. (Latest state of the art, Microcomputer chip based Microcontroller with solid state relay for efficient and positive operation. The design is having self-diagnostic feature and very advance power saving feature).
3. Inverter (VVVF) Drive:- Supply and installation of Inverter (VVVF) Drive. Phase failure protection, Over Current Protection, Power Saving Approx Up to 35%, Better Leveling Accuracy.
4. Accessories for (VVVF) Drive:- Supply and installation of Resistance & Choke for Accessories for (VVVF) Drive.
5. Slow Down Fin for (VVVF) Drive:- Supply and installation of Slow Down Fin for (VVVF) Drive.
6. Hall Button: - New Hall Button fixtures with luminous buttons combined with Scrolling display Position Indicator and Up/Down directional arrows at all floors with SS face plate.
7. Car Operating Panel: - Supply and fixing of Car Operating panel with luminous buttons combined with Digital position indicators and direction arrows with SS face plate.

8. Magnetic Switches & Vanes: - New Final Limit switches at terminal landings including magnetic switches and vanes will be provided in hoist way to suit proposed control system.
9. Wiring: - Complete rewiring of hoist way, machine room and car in copper conductor, including travelling cables in new troughs to suit proposed control system.
10. Shaft Ducting:-Supply and installation of Shaft Ducting.
11. New Gearless Machine:-Supply and installation of New Gearless Machine.
12. New Landing Door: - Supply & fixing of new S.S. Hairline Finish door, header with panels and sill on all landing floor.
13. New Car Door: - Supply & fixing of new S.S. Hairline Finish Car door, header with panels and sill on Car Door.
14. New Lift Cabin: - Supply & fixing of new S.S. Hairline Finish Cabin.
15. New Buffer Spring: - Supply & fixing of New Buffer Spring.

TECHNICAL PARTICULARS**TENDERER SHOULD FILL UP THESE PARTICULARS TO BE SUBMITTED AS PART OF THE TENDER IN
COVER I**

(USE SEPARATE SHEET OF PAPER WITH SIGNATURE AND SEAL TO GIVE DETAILS , IF REQUIRED)

Sl. No.	Particulars of Details	
A.	General:	
1	Name of Manufacturer.	
2	Country of Manufacture.	
3	Capacities (Persons/ Weight).	
4	Service	
5	Speed of Travel	
6	Height of Travel	
7	No. of Floors served.	
8	No. of openings.	
9	Position of counterweight.	
10	Type of Leveling method.	
B.	Machine:	
1	Position of Machine	
2	Motor (Type and make)	
3	Electric supply particulars for which it is suitable for operation	
C	Brake	
1	Type	
D	Car and Doors:	
1	Outside dimensions of car.	
2	Inside clear dimensions.	
3	Construction of car	
4	Design/ type of enclosure of car.	
5	Details of flooring	
6	Attachment and fitting inside the car	
7	Car Doors:	
	(a) Size	
	(b) Operation	
	(c) Construction, design & finish	
8	Landing Doors:	
	(a) Size	
	(b) Operation	
	(c) Construction, design & finish	
E.	Safety Devices:	
1	Car safety-type	
2	Counter weight safety-type	
3	Door inter locks in car-type	
4	Door locks in landing-type	
F.	List of makes of various equipment , material offered	
G	List of deviations from technical specifications given in the tender document.	

(I) Schedule For Preventive Maintenance (applicable during DLP& AMC period)		
	<u>Nature of checks</u>	<u>Periodicity</u>
(A)	Machine	
(i)	Main switch contacts are firm and there is no loose contact anywhere in the supply line.	Monthly
(ii)	Commutator or slip rings and brushes are in good shape	Fortnightly
(iii)	Condition of ball bearings/ roller bearings/ plain bearings for greasing/ oiling as in the case may be	Six monthly
(iv)	Cleanliness of the entire machine room of rag/ oil waste and other foreign matters.	Fortnightly
(v)	Car platform structure	Yearly
(vi)	General upkeep of the machine room doors and windows and proper operation of ventilation system	Monthly
(vii)	Brake drum, brake liner, brake oil and other mechanical parts connected with the brake including stimulating condition for proper functioning of the brake on failure of supply.	Fortnightly
(viii)	Oil leak in the worm gear assembly and quality of oil	Six monthly
(ix)	Examine the condition of gear tooth by removing the gear box cover and also check for slippage in the gear by prescribed method.	Yearly
(x)	Check controller for loose, disconnected or short circuited wires, clean the contractors and replace, whenever necessary.	Monthly
(xi)	Ensure that all safety circuits are functional and not bypassed.	Monthly
(xii)	Lubricate and keep spread governor clean. Lift the weight by hand to ensure that control cut off switch operates and gripping jaws are released and grip the governor rope.	Monthly
(xiii)	Check the ropes for broken/frayed wires and excessive lubrication. Check the ropes for slippage. Have ropes replaced at once in case of any damage.	
	(a) Routine check	Monthly
	(b) Detailed check	Six monthly
(xiv)	Allow the car to over travel in the down/up direction and ensure that the terminal limit switches operate properly.	Fortnightly
(B)	Landings	
(i)	Check all interlocks, all landing locks for proper functioning and effective interlocking circuits.	Fortnightly
(ii)	Check the retiring cams by applying a constant pressure on the landing door, allowing the lift car to pass through landings and ensure that it is not possible to snatch open the landing door.	Monthly
(iii)	Check for smooth movement of car and doors on the sills	Fortnightly
(iv)	Operation of safety shoe in case of power operated doors.	Fortnightly
(v)	Physical condition of car and landing doors against any damage.	Yearly
(C)	Car and Car Top	
(i)	Ensure the car door switch operates and its interlock is	Monthly

	functional.	
(ii)	Inspect the wedge drum and safety rope, clean and oil it, if necessary.	Quarterly
(iii)	From the top of the car examine the car shoes and guide indicator	Quarterly
(iv)	Examine the condition of ropes	Six monthly
(v)	Examine emergency alarm, emergency stop, push buttons etc.	Fortnightly
(D)		
(i)	Examine the car bottom frame	Quarterly
(ii)	Condition of pit for water leaks, foreign materials etc.	Six monthly and weekly during monsoon
(iii)	Check buffer spring	Six monthly
(E)	General	
(i)	If safety jaws are stuck, trip the governor and lower the car by winding.	Whenever required
(ii)	Ensure that the car rests on the safety jaws – if wedge type, turn the drum or pull the safety cable by hand and ensure that the jaws touch the guides. Ensure that there is no excessive slack in the safety rope.	Quarterly
(iii)	Check condition of trailing cable and machine room wiring for mechanical and electrical damaging.	Six monthly
(iv)	Megger entire electrical installation in machine room	Yearly
(v)	Check effective numbers of earthing system	Yearly



BANK OF BARODA



**Replacement, Supply, Installation, Testing and Commissioning Of
A Passenger Lift
For
Bank of Baroda
At
Staff Quarters, Sindhur Court, Mogappair, Chennai**

PRICE BID – COVER -II

**Bank of Baroda
Zonal Office
3rd Floor, Baroda Pride
41, Luz Church Road, Mylapore, Chennai 600 004**

LAST DATE OF SUBMISSION OF TENDER

16.11.2011 UPTO 15:00 HRS.

PRICE BID**Replacement, Supply, Installation, Testing and Commissioning Of Passenger Lift, For Bank Of Baroda at Staff Quarters, Sindhur Court, Mogappair, Chennai**

S. No.	Item Description	Unit	Qty	Unit Rate (Both in figures and word)	Amount (Both in figures and word)
1.	<p><u>Sub Head I</u> Supplying, installation, testing & commissioning complete of automatic -6- passenger lift having contract speed of 1.0 meters per second with all door openings on one side and as per relevant clauses/details under the heads Technical Requirement, General Technical Specifications, Testing Of Lift Installation and Fire Safety Requirement in Part I of the tender document, to serve G+3 floors with V3F control, gearless drive motor etc.. full height door protection device, Automatic Rescue Device etc. Lift shall conform to relevant IS/BS standards to suit the building plans already constructed existing hoist way & machine room, setting the work and maintaining in full working condition, obtaining approval of electrical inspector/ lift inspector other statutory authorities as may be required, safety devices including all labour, supervision, all necessary civil works as required to complete the work in all respects as directed by the employer and as specified.</p>	Nos	1		
2	<p><u>Sub Head II</u> Removal, Buy Back of old existing - 6- passenger lift being replaced by the new passenger lift specified in item s. no. 1 above Item to include dismantling of all lift material in machine room, lift well and lift pit, its handling and transportation outside Bank premises (as per local rule of disposal) in a safe manner causing least</p>	Nos.	1	(-)	

	discomfort/disturbance in the office and in conformity to relevant clauses/details in Part I of the tender document making suitable the pit, duct, well etc for installation of new lift with all labours material, etc complete.				
3.	<u>Sub Head III (AMC after DLP)</u> Comprehensive annual maintenance contract charges for -6- passenger lift specified at S. No. 1 above including spares per annum which include routine, preventive & break down maintenance including repair/ replacement of worn out items with minimum downtime and warranty & guarantee of repaired/ replaced items after completion of one year defects liability period as per terms & conditions specified in Part I of the tender document including clause 38.0 of Special Conditions Of Contract. AMC RATES ARE TO BE QUOTED EXCLUSIVE OF GST WHICH WILL BE ADMITTED ADDITIONALLY, IF ADMISSIBLE, AT RATES PREVALENT AT TIME OF BILLING. FIRST YEAR CAMC CHARGES (AFTER COMPLETION OF ONE YEAR DLP).	No.	1		
4.	SECOND YEAR CAMC CHARGES (AFTER COMPLETION OF ONE YEAR DLP). Other details as per Sr. No.-3 above	No.	1		
5	THIRD YEAR CAMC CHARGES (AFTER COMPLETION OF ONE YEAR DLP). Other details as per Sr. No.-3 above	No.	1		
6	FOURTH YEAR CAMC CHARGES (AFTER COMPLETION OF ONE YEAR DLP). Other details as per Sr. No.-3 above	No.	1		
7	FIFTH YEAR CAMC CHARGES (AFTER COMPLETION OF ONE YEAR DLP). Other details as per Sr. No.-3 above	No.	1		
	Total				

BANK OF BARODA

TABLE FOR COMPARISION

S. No.	Description	Quoted Amount (Rs.)
A	<u>Sub Head I</u> (Sr. No.1 above)	
A 1	<u>Taxes Component</u> (Please quote where ever applicable)	
	(a) GST	
	(b) Any other	
	(c) Any other	
	Total of Sub Head -I	
B	<u>Sub Head II</u> (Sr. No.2 above)	
C	<u>Sub Head III</u> (Total of Sr. No.3 to 7 above)	
	<u>TOTAL</u> (A – B + C)	

Place:

Signature and Seal of Tenderer

Date: