



Telephone: +91-40-20203009	Date: 27-06-2022
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PUBLIC TENDER

(TWO-PART TENDER) for the following works:

Design, manufacture, supply, erection, testing and commissioning of Passenger lift of capacity 408 kgs (6 persons) for (G+1) Building at TIFR, Plot-B, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.	
Tender No.	TIFR/PD/CA22-61/220492
Type of Tender	Two-Part Tender (Part-I: Technical Bid and Part- II: Price Bid)
Estimated Cost	Rs.11,00,000/-
Cost of EMD	Rs.22,000/- (Demand Draft to be drawn in favor of "TIFR Center for Interdisciplinary Sciences "Payable at Hyderabad (To be enclosed with the Technical Bid Part -I)). However, contractors who have a valid MSME/NSIC certificate are exempted from the EMD.
Pre-bidding meeting & Time	04-07-2022 at 11:00 Hrs
Last Date for Submission of Tender	11-07-2022 Upto 13:00 Hrs
Date of Opening Bids(Only Part-I: Technical Bid)	11-07-2022 at 16:00 Hrs
Tender Fee	Rs. 500/- (Demand Draft to be drawn in favor of "TIFR Center for Interdisciplinary Sciences "Payable at Hyderabad (To be enclosed with the Technical Bid Part -I)). However, contractors who have a valid MSME/NSIC certificate are exempted from the tender fee.

- In case the Part "I" and Part "II" bids are not sealed in separate envelopes the tender will be rejected.
- The technical bid should not contain any indication of the price.
- The Technical Bid received without payment of tender fees and EMD shall be summarily rejected.
- Contacts: Mr. Krishna, Tel: 040- 20203009 for any technical or commercial terms clarifications mentioned in the tender.



TATA INSTITUTE OF FUNDAMENTAL RESEARCH
(Autonomous Institution of the Department of Atomic Energy, Government of India)
Survey No.36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy District,
Hyderabad-500046, Telangana

Sealed tenders are invited for the aforesaid works from contractors having similar work experience in reputed Research Institutions, Universities, Central Government/Public Sector Undertaking, Private Laboratories, Multinational Companies, etc. Interested contractors who are satisfying prequalification criteria stipulated by TIFR-Hyderabad shall only submit their bids. For further details and any clarification on the tender, you may please contact Head-Technical Services, Survey No.36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy District, Hyderabad-500046.

The last date for submission of the tender is 11-07-2022 by 13:00 Hrs.

A handwritten signature in black ink, appearing to read 'Rajasekhar. R.', is centered on the page.

(Rajasekhar. R)

Head-Technical Services



TENDER DOCUMENT

Design, manufacture, supply, erection, testing and commissioning of Passenger lift of capacity 408 kgs (6 persons) for (G+1) Building at TIFR, Plot-B, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.

NAME OF THE TENDERER:

Address:

.....

.....

.....

Last date of submission of the tender: On or before 11-07-2022 by 13:00 Hrs.



TECHNICAL BID

VOLUME-I

Design, manufacture, supply, erection, testing and commissioning of Passenger lifts of capacity 408 kgs (6 persons) for (G+1) Building at TIFR, Plot-B, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.



Tender Notice	:	TIFR/PD/CA22-61/220492
Name of Work	:	Design, manufacture, supply, erection, testing and commissioning of Passenger lift of capacity 408 kgs (6 persons) for (G+1) Building at TIFR, Plot-B, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.
Location	:	Tata Institute of Fundamental Research Survey No. 36/P, Gopanpally village, Serilingampally Mandal, Ranga Reddy District, Hyderabad – 500046.
Estimated Cost	:	Rs.11,00,000/-
EMD	:	Rs.22,000/- (Demand Draft to be drawn in favor of “TIFR Center for Interdisciplinary Sciences ”Payable at Hyderabad (To be enclosed with the Technical Bid Part –I)). However, contractors who have a valid MSME/NSIC certificate are exempted from the EMD.
Delivery Period	:	60 Days (Completion Period)
Validity	:	Seventy Five (75) days after the opening of Part-I, Technical Bid



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SECTION-I

IMPORTANT INFORMATION

INTRODUCTION

The Tata Institute of Fundamental Research is a National Centre of the Government of India, under the umbrella of the Department of Atomic Energy, as well as a deemed University awarding degrees for master's and doctoral programs. Tata Institute of Fundamental Research Center for Interdisciplinary Sciences, Hyderabad invites bids for the following work:

Design, manufacture, supply, erection, testing and commissioning of Passenger lift of capacity 408 kgs (6 persons) for (G+1) Building at TIFR, Plot-B, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.

1. PARTICULARS

a)	Location	TIFR, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.
b)	Pre-Bid Meeting Date & Time	04-07-2022 at 11:00 Hrs
c)	Closing date & time of receipt of bids	11-07-2022 Upto 13:00 Hrs
d)	Date & time of opening of Sealed Cover-I containing Technical Bid	11-07-2022 at 16:00 Hrs
e)	Date of opening of Sealed cover-II containing Financial Bid of eligible bidders	To be intimated to eligible bidders within 7 days after opening of Technical Bids

2. GENERAL INSTRUCTIONS

- 2.1. TIFR shall award the contract for the project through the two Bid systems.
- 2.2. The Contractor is advised to visit and examine the site of work and its surroundings and obtain any information that may be necessary, in addition to those provided in this document. The Contractor shall be deemed to have fully acquainted himself about the site condition, whether he inspects it or not.
- 2.3. The Contractor should adhere to the building bye-laws applicable for the area.
- 2.4. All clarifications shall be sought before the date of the pre-bid meeting. The bidders may make suggestions which shall be considered during the Pre-Bid Meeting. No further clarifications shall be issued after the issue of noteworthy replies to the pre-bid queries.
- 2.5. The submission of the bid by the Contractor would imply that they have carefully read and agreed to the terms and conditions contained in this bid document.
- 2.6. The bid for the work shall remain open for acceptance for a period of 75 (Seventy Five) days from the date of submission of the bids, which period may be extended by mutual agreement and the Contractor shall not cancel or withdraw the offer during this period.



2.7. This bid document shall form a part of the contract agreement.

3. SUBMISSION OF BIDS

Bids shall be submitted to Head- Technical Services, **TIFR, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist, Hyderabad-500046** in a sealed Master envelope superscribed "Bid for **Design, manufacture, supply, erection, testing and commissioning of Passenger lift of capacity 408 kgs (6 persons) for (G+1) Building at TIFR** with our enquiry no. and due date, containing two separate sealed covers clearly superscribed as "**Technical Bid**" and "**Financial Bid**" before the closing date and time of submission in the following manner:

- a) "**Technical Bid**": This will contain the Technical part, Eligibility Documents along with testimonials. Earnest Money Deposit (EMD).
- b) "**Financial Bid**": This will contain the complete bidding document with duly filled in Schedule of Financial Quote of Financial Bid & Tender Drawings.

The Bids without the signature of the authorized person of bidder and seal, without EMD with conditions or conditional rebates shall be summarily rejected.

4. EVALUATION OF BID

4.1. **EVALUATION OF TECHNICAL BID**: The bids received will first be first opened and will be examined for EMD, Eligibility Criteria, Conditions, etc. Conditional Tenders and Tenders without EMD shall be summarily rejected.

4.2. **EVALUATION OF FINANCIAL BID**: The Financial Bid should contain the complete bid document with duly filled in Schedule of Financial Quote of Financial Bid and signed Tender drawings. Financial Bids of Technically qualified Bidders will only be opened. Work will be awarded to the lowest bidder (L1) based on their quotes after making necessary arithmetical checks.

5. SCOPE & OBJECTIVE

The Objective of the tender is to **Design, manufacture, supply, erection, testing and commissioning of Passenger lift of capacity 408 kgs (6 persons) for (G+1) Building at TIFR, Plot-B, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046** as per the specifications and Bill of quantities mentioned in the Financial Bid.

Period of Completion of Work: 60 days from the date of issue of work order

Defect Liability Period: 12 Months from date of commissioning

6. PAYMENT SCHEDULE:



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Final Bill along with all relevant documents will be settled within **30** days from the date of submission with the certification of TIFR Engineer.



SECTION-II

ELIGIBILITY CRITERIA FOR TENDER QUALIFICATION

Design, manufacture, supply, erection, testing and commissioning of Passenger lifts of capacity 408 kgs (6 persons) for (G+1) Building at TIFR, Plot-B, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.

• **Eligibility criteria:**

1. Lift's OEMs only are eligible to submit the offer.
2. IT Returns for the last three consecutive financial years ended on March 31, 2022 audited by CA.
3. The Agencies/Contractors should have an average annual turnover of Rs.4.4 lakhs during three previous financial years ending March 31, 2022.
4. The Agencies/Contractors shall be in profit for the last three financial years and should have valid PAN from Income Tax Authority, GST registration No. etc., and any other registration applicable/mandatory for the contract.
5. Quoted lift model shall meet all the technical specifications and compliance with the technical data sheet (Annexure-IV)
6. The Agencies/Contractors should have executed similar installations for data centers or IT works or other facilities successfully at least
 - 6.1. One similar work costing Rs. 8.8 Lakhs or
 - 6.2. Two similar works costing Rs. 6.6 Lakhs or
 - 6.3. Three similar works costing Rs. 4.4 Lakhs during the last 7 financial years ended on the end date of receiving tender for Research Institutes, Universities, Private Laboratories, R & D institutes, etc. in any Government /PSU/Private organizations of repute.

The Agencies/Contractors should furnish copies of work orders and completion certificates from the clients in support of the above.

Note:

- ❖ Agencies/Contractors should have a full-fledged in-house project management team to undertake the jobs.
- ❖ The Agencies/Contractors shall **strictly furnish** aforesaid information in the formats/schedules given. **Non-adherence to the furnishing information in the given format/schedules given will lead to disqualification of tender.**
- ❖ Instructions to Agencies/Contractors for furnishing the information is given as under:



- Each page of the application shall be signed by a person having the necessary authority to do so.
- If the space in the proforma is insufficient for furnishing full details, such information may be given in separate sheets.
- Applicants are required to furnish information against each item of the application. In case a certain item is not applicable, please write NA. The application containing incorrect and or inadequate information is liable to be rejected.



SCHEDULE – A
BASIC INFORMATION

1. Name of the firm :
2. a) Address :
- b) Telephone / Fax No. :
- c) Mobile No. Contact Person :
- d) PAN No. :
- e) GST Registration No. :
- f) Labour License Details :
- Branch Office if any in Hyderabad :
3. Type of Organization :
(Proprietorships / Partnership) Ltd. Co. /
Co-Operative) (Copy of relevant document
to be enclosed)
4. Date of Incorporation :
5. Nature of Business :
6. Experience as prime Agencies/
Contractors (in Yrs.) :
7. Name and address of Bankers :
8. Organization chart of the Company :
including names and positions of directors
/ key personnel

Signature of the Applicant (s)



SCHEDULE – B

Major Lifts installation works (Copies of the completion certificate to be enclosed)

A. Similar work costing Rs 8.8 lakhs or two similar works costing Rs 6.6 lakhs or 3 similar works costing Rs. 4.4 Lakhs during last 7 financial years ended on the end date of receiving tender for Research Institutes, Universities, Private Laboratories, R & D institutes, etc

S r. N o	Name of the project & Address	Description of work in brief	Name of the Engineer	Name of the client also indicate whether Govt or semi Govt or Pvt body with full postal address	Contract Amount in Rs.	Year of commencement	Date of Completion		Whether work was left /uncompleted or the contract was terminated from either side? Give Details.	Any other relevant information
							Stipulated	Actual		
1.										
2.										

B. List of works in progress above Rs. 4.4 lakhs.

S r. N o	Name of the project & Address	Description of work in brief	Name of the Engineer with a full postal address.	Name of the Client. Also indicate whether Govt. or semi Govt. or Pvt. Body with full postal address	Contract Amount in (Rs.)	Date of Completion	Present stage of work with reasons if the work is getting delayed	Any other relevant information
1.								
2.								

Signature of the Applicant (s)



SCHEDULE – C

TECHNICAL PERSONNEL & SPECIAL EXPERIENCE

List of technical personnel in your establishment giving details about their technical qualification and experience

S r N o	Name	Age	Qualifications	Project Experience	Nature of works handled	Name of the project Handled	Date from which employed in your organization	Indicate special experience in lifts installation & Testing projects in which were employed
1								
2								

2. Indicate other points if any to show your technical and managerial competency to indicate any important point in your favour.

Signature of the Applicant (s)



SCHEDULE – D

FINANCIAL POSITION AND WORKING RESULTS

		2019-20	2020-21	2021-22
1	Annual turnover	:	Rs.	
2.	Net Profit	:	Rs.	
3.	Credit Facilities from the Bank	:	Rs.	
	a) Cash Credit	:	Rs.	
	b) Overdraft Limit	:	Rs.	
	c) Guarantee	:	Rs.	
	d) Others	:	Rs.	
4.	Certificate from the Bankers regarding financial soundness of the applicant	:	Enclosed (Yes / No)	
5.	Solvency Certificate from the Bankers	:	Enclosed (Yes / No)	

Signature of the Application (s)



SCHEDULE – E

MISCELLANEOUS INFORMATION

- 1 Whether it would be possible to process Bank :
Guarantee for various advances
during the execution of the work.
- 2 Details of Civil Suits / Litigations arised during :
the execution of the contracts in the last 5
years.
- 3 Latest Income Tax Clearance Certificate :
- 4 Name of the two senior officials of :
Organizations preferably Govt./Semi Govt/
Autonomous/ Public Sector Organization for
whom you have executed important and
major works, who may be directly
contracted by TIFR to gather information
about your ability, competence and capacity
of your work/organization/etc.
- 5 Number of Supplementary sheets attached. :

Signature of the Applicant (s)



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SECTION-III

NOTICE & INSTRUCTIONS

1. **Sealed item rate tenders** in the prescribed form are invited from Head-Technical Services, Tata Institute of Fundamental Research, Center for Interdisciplinary Services, Hyderabad, for the following:

Tender Notice No.	TIFR/PD/CA22-61/220492
Name of Work	Design, manufacture, supply, erection, testing and commissioning of Passenger lifts of capacity 408 kgs (6 persons) for (G+1) Building at TIFR, Plot-B, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.
Estimated Cost	Rs.11,00,000/-
Time Limit	60 days (Completion Period)
Earnest Money Deposit	Rs.22,000/- (Demand Draft to be drawn in favor of “TIFR Centre for Interdisciplinary Sciences ”Payable at Hyderabad (To be enclosed with the Technical Bid Part –I)). However, contractors who have a valid MSME/NSIC certificate are exempted from the EMD.
Tender Fee	Rs.500 (Rupees Five Hundred only) However, contractors who have a valid MSME/NSIC certificate are exempted from the Tender Fee
Last Date & Time of Submission of Tender	11-07-2022 Upto 13:00 Hrs
Date & Time of Opening of Technical Bid	11-07-2022 at 16:00 Hrs

2. **Submission of Tender & Opening:**

Tenders shall be submitted in a sealed envelope super scribed with Tender enquiry No., Due Date and with the heading as “**Design, manufacture, supply, erection, testing and commissioning of Passenger lifts of capacity 408 kgs (6 persons) for (G+1) Building at TIFR, Plot-B, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.**” containing two separate sealed covers clearly



super scribed as “TECHNICAL BID” and “FINANCIAL BID” on or before the closing date and time of submission in the following manner:

“TECHNICAL BID”: This will contain the following:

- a) Proof of Tender Cost paid already
- b) Earnest Money Deposit as stipulated
- c) Schedules giving information on Eligibility Criteria with supporting documents specified for tender qualification.

“FINANCIAL BID”: Signed copy of the Financial Bid quoting amount in the stipulated format and signed copies of the tender drawings.

3. Earnest Money Deposit (EMD): EMD shall be submitted in the form of Demand Draft / Pay Order / Banker’s cheque issued by a Scheduled Bank, drawn in favor of **“TIFR Center for Interdisciplinary Sciences”**, (To be enclosed with the Technical Bid (Part-I))

Earnest Money Deposit (EMD): Every Bidder has to pay EMD of amount as specified elsewhere in this tender by Demand Draft in favor of **“TIFR Center for Interdisciplinary Sciences”** along with the offer or submit valid MSME certificate & declaration for exemption if any. Quotation received without EMD shall be rejected and no correspondence whatsoever will be entertained. For successful bidder the EMD will be adjusted against Performance Guarantee and will be refunded after completion of work /supply of material at site and for unsuccessful bidders EMD will be refunded after placing the order to successful bidder.

4. Performance guarantee/Security Deposit:

The tenderer, whose tender is accepted, will be required to furnish a performance guarantee/security deposit of 3% of the tendered amount within 7 (seven) working days from the date of intimation. This guarantee shall be in the form Demand Draft / Pay Order / Banker’s cheque / Deposit or Government Securities / Fixed Deposit Receipt (FDR) or Guarantee Bonds (BG) of any Scheduled Bank in accordance with the form as Annexure – II hereto. In case a fixed deposit receipt of any Bank is furnished by the contractor to TIFR as part of the performance guarantee and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to TIFR to make good the deficit.

The Performance Guarantee/Security Deposit shall be initially valid up to 12 months from date of commissioning. The performance guarantee shall be returned to the contractor, without any interest, after recording of the completion certificate for the work by the competent authority.



The Engineer-in-charge shall make a claim under the Performance guarantee for amounts to which TIFR entitled under the contract (notwithstanding and / or without prejudice to any other provisions in the contract agreement) in the event of:

- a) Failure to attend and rectify the problems in the guarantee period, in which event the Engineer- in-charge may claim the full amount of the Performance guarantee.
- b) Failure by the contractor to pay TIFR, Hyderabad any amount due, either as agreed by the contractor or determined under any of the Clauses / Conditions of the agreement, within 30 days of the service of notice to this effect by Engineer-in-charge.

In the event of the contract being determined under provisions of any of the relevant clauses of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of TIFR, Hyderabad.

5. Acceptance of Tender: The competent authority, on behalf of TIFR, Hyderabad does not bind itself to accept the lowest or any other tender, and reserves to himself the authority to reject any or all the tenders received, without assignment of any reason. All tenders, in which any of the prescribed conditions is not fulfilled or any condition, including that of conditional rebates, is put forth by the tenderer, shall be summarily rejected.

The Competent Authority, on behalf of TIFR, Hyderabad reserves to itself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rates quoted. The officer inviting tenders shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest tender or any other tender.

6. Validity of Tender: The tender for the work shall remain open for acceptance for a period of 75 days from the last date of submission of tenders. If any tenderer withdraws his tender before the said period, or before issue of Letter of Intent, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the Department, then TIFR, Hyderabad shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money absolutely. Further the tenderer shall not be allowed to participate in the retendering process of the work.

7. Levy / Taxes payable by contractor:

- i. GST or any other tax on materials and services in respect of this contract shall be payable by the contractor and TIFR shall not entertain any claim whatsoever in this respect.



ii. The contractor shall deposit royalty and obtain necessary permit as required for supply of the sand, aggregate, stone etc. from local authorities.

8. Deduction of Income Tax : As per Section 194-C of Income tax Act 1961, as amended by letter No. 275/9/72/9-TJ (Circular No. 86) dated 19.5.72 and No. 275/14/91-IT (B) (Circular No. 593) dated 5.2.91, received from Ministry of Finance, Department of Revenue, Central Board of Direct Taxes, New Delhi, the Income tax @ 2% and Surcharge thereon @12% (or any other amended rate by Ministry of Finance from time to time), of the gross value of the work done will be recovered from the bills. A certificate for the amount so recovered will be issued by the Department.

9. Site visit by the tenderer before tendering: Tenderers are advised to inspect and examine the site and its surroundings during working hours and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed.

10. Signing of Tender and receipts for payments: In the event of the tender being submitted by a firm, it must be signed separately by each partner thereof or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power-of-attorney authorizing him to do so, such power of attorney to be produced with the tender, and it must disclose that the firm is duly registered under the Indian Partnership Act-1952. Receipts for payments made on account of work, when executed by a firm, must also be signed by all the partners, except where contractors are described in their tender as a firm, in which case the receipts must be signed in the name of the firm by one of the partners, or by some other person having due authority to give effectual receipts for the firm.

11. Tenderer's responsibilities: The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that they have read this notice & all other contract documents, and has made himself aware of the scope & specifications of the work to be done and local conditions and factors having a bearing on the execution of the work.



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12. **Signing of contract:** The Notice Inviting Tender shall form a part of the contract document. The successful tenderer / contractor, on acceptance of his tender by the Accepting Authority, shall, within 15 days from the stipulated date of start of the work, sign the contract consisting of: the Notice Inviting Tender, all the documents including all conditions, specifications and drawings, if any, forms the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.

13. **Canvassing,** either directly or indirectly, in connection with the tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection and may be barred from future participation in TIFR works.

Head-Technical Services
For and on behalf of TIFR, Hyderabad



SECTION-IV

GENERAL CONDITIONS OF CONTRACT

1. Definition of Terms:

1.1. In constructing these general conditions and the specifications the following works shall have the meanings herein assigned to them unless there is something in the subject or context inconsistent with such construction.

1.2. The 'Purchaser' shall mean Tata Institute of Fundamental Research- -Hyderabad, Tata Institute of Fundamental Research, 36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy District, Hyderabad 500046 and shall include the Purchaser's heirs, successors and assigns.

1.3. The term 'Engineer In-Charge' and 'Engineer' shall mean Engineer In-Charge, TIFR-Hyderabad or some other person for the time being or from time to time duly appointed in writing by the Purchaser to act as Engineer In-Charge for the purpose of the Contract or in default of such appointment the Purchaser.

1.4. The term 'Contractor'/'Supplier'/'Bidder'/'Vender' shall mean the Bidder whose tender has been accepted by the Owner and shall include the Bidder's heirs, successors and assigns approved by the Purchaser:

1.5. The term 'Sub-Contractor' shall mean the firm or persons named in the contract for any art of the work or any person to whom any part of the work has been sublet with the consent in writing of the Engineer In-Charge and shall include his heirs, successors and assigns approved by the Purchaser.

1.6. The Term 'Inspector' shall mean any person appointed by or on behalf of the Purchaser to inspect supplies, stores or work under the contract or any person deputed by the Inspector for the purpose.

1.7. The term 'Particulars' shall mean, the following :

1.7.1. Specifications

1.7.2. Sealed Pattern denoting a pattern sealed and signed by the Inspector.

1.7.3. Proprietary make denoting the product of an individual firm.

1.7.4. Any other details governing the construction, manufacture and/or supply as existing for the contract.

1.8. The term 'Specification' shall mean the specifications annexed to or issued with these Conditions of Contract.

1.9. The term 'Site' shall mean the place or places at which the Equipment is to be delivered or work done by the Contractor; and shall include, where applicable, the lands and buildings upon or in which the works are to be executed and shall also include the place or places at which fabrication and other work is being carried out by the Contractor.

1.10. 'Electrical Equipment', 'Stores', 'Work' or 'Works' shall mean and include equipment and materials to be provided and work to be done by the Contractor under the Contract.



1.11. The 'Contract' shall mean acceptance of the work order placed on contractor/supplier under section (2) of these conditions and shall include these conditions of Contract, Specifications, Schedule, Drawing, Letter of Intent of the Purchaser and any subsequent amendments mutually agreed upon.

1.12. 'Tests on Completion' shall mean such tests which are prescribed by the specifications or have been mutually agreed to between the Contractor/Supplier and the Purchaser to be made before the equipment is taken over by the Purchaser.

1.13. Writing' shall include any manuscript, typewritten or printed statement under or over signature or seal as the case may be. Words importing 'person' shall include firms, companies, corporations and association of individuals whether incorporated or not.

1.14. Words importing singular shall also include plural and vice versa where context requires.

1.15. Bidders are advised to visit and inspect the work-site to make themselves fully conversant with the site conditions and nature of work. Any claim by them after the opening of bids on account of themselves being unaware of any site condition shall not be entertained.

2. Contract

Contractor/Supplier/Manufacturer should send their acceptance letter on receipt of 'Letter of Intent' or 'Work Order' or 'Purchase Order' within the stipulated period. On expiry of said period or exorbitant delay in commencing or executing the work, the Purchaser shall not be liable to any claim from the Contractor/ Supplier for work entrusted to and may revoke the contract.

3. Work at Site

3.1. Access to the works shall be allowed only to the Contractor/Supplier, Sub-Contractors or his duly appointed representatives. The Contractor/ Supplier shall not object to the execution of other works by other contractors or tradesmen and shall afford them every facility for execution of their several works simultaneously with his own.

3.2. Work at the Purchaser's premises shall be carried out at such time as the Purchaser may approve but the Purchaser shall give the Contractor/ Supplier all reasonable facilities for the same. The Contractor/Supplier shall provide sufficient fencing, notice boards etc. to guard the works and warn the public.

3.3. The Contractor shall obey Central, Local and State regulations and enactments pertaining to workmen and labour and the Engineer In-Charge shall have the right to enquire into and decide all complaints on such matters. The Contractor should comply with the Minimum Wages Act and should also ensure that safe practices are followed by his people at site.

4. Delays

The Contractor/Supplier shall not be entitled to any compensation for any loss suffered by him on account of delays in commencing or executing the work, whatever the cause for such delays may be, including delays in procuring Government controlled or other materials and delay in obtaining instructions and decisions from the Engineer In-Charge.



5. Taking Over

The equipment when erected at site shall be deemed to have been taken over by the Purchaser when the Engineer In-Charge will have certified in writing that the equipment has fulfilled the contract conditions.

6. Extension of Time

If the Contractor/Supplier is delayed in the progress of work by changes ordered in the work, or by any cause, which the Engineer In-Charge shall decide to justify the delay, then the time of completion shall be extended by a reasonable time. In this regard, Contractor shall maintain proper hindrance register and record all such events with due signature of E-I-C on occurrence of such instants for seeking extension of time. However, no such extension shall be allowed unless requested for extension is made in writing by the Contractor/Supplier to the Engineer In-Charge within 15 days from the date of occurrence of the delay.

7. Liquidated Damages

7.1. For all delays, which do not merit any extension of time, the Contractor/ Supplier shall attract 1% penalty per week for the first 4 weeks of delay and 2% penalty per week for the next 4 weeks of the total contract value. The amount of liquidated damages shall be recoverable from the payment due to the Contractor/Supplier up to maximum of 10% of value of contract.

7.2. The deduction of liquidated damages shall not, however, absolve the Contractor/Supplier of his responsibility and obligations under the contract to complete the work in its entirety and shall also be without prejudice to action by the Purchaser under clause:

‘Termination of Contract by the Purchaser’. After that the same shall be completed by the Purchaser at the Contractor’s/Supplier’s risk and cost.

8. Other Damages:

8.1. The Contractor/Supplier/Manufacturer shall be responsible for all injury to persons, animals or things and for all damage to the works, structure of, and decorative work in the property which may arise from operation or neglect of himself or any of his Subcontractor or of his or Sub-Contractor’s employees, whether such injury or damage may arise from carelessness, accident or any other cause whatever in any way connected with the carrying out of this contract. This clause shall be held to include any damage to buildings, whether immediately adjacent or otherwise, any damage to roads, streets, foot paths, as well as all damage caused to the works forming the subject of this contract by frost or other inclemency of weather. The Contractor/Supplier shall indemnify the Purchaser and hold him harmless in respect of all and any expenses on property as aforesaid and also in respect of any claim made in respect of injury or damage under any acts of Government or otherwise and also in respect of any award of compensation or



damages consequent upon such claim. Contractor shall furnish necessary insurance documents (Contractor All Risk Policy) taken for the site before commencement of work.

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

8.3. The Contractor/Supplier/Manufacturer shall indemnify the Purchaser against all claims which may be made against the Purchaser, by any member of the public or other party, in respect of anything which may arise in respect of the works or in consequence thereof and shall, at his own expense, effect and maintain, until the work has been 'Taken Over' under clause 5.

8.4. The Contractor/Supplier/Manufacturer shall also indemnify the Purchaser against all claims which may be made upon the Purchaser whether under the Workmen's Compensation Act or any other statute in force during the currency of this contract or at common law in respect of any employee of the Contractor/Supplier or of any of his sub-contractor and shall at his own expense effect and maintain until the work has been 'Taken Over', with an approved office. Contractor shall furnish a copy of the labour licence before commencement of work. If the aforesaid are not applicable contractor should furnish declaration to this effect and shall indemnify TIFR-Hyderabad, Hyderabad for violation of any such compliances.

8.5. The Purchaser, with the concurrence of the Engineer In-Charge, shall be at liberty and is hereby empowered to deduct the amount of any damages compensation costs, charges and expenses arising or accruing from or in respect of any such claims or damages from any sums due to or become due to the Contractor/Supplier.

9. Guarantee and Defects Liability Period:

9.1. The Contractor/Supplier/Manufacturer shall guarantee that all equipment shall be free from any defect due to the defective materials and bad workmanship and that the equipment shall operate satisfactorily and that the performance and efficiencies of the equipment shall be not less than the guaranteed values. The guarantee shall be valid for a period of **1 year** after the date of commissioning as certified by the Engineer In-Charge. Any parts found defective shall be replaced free of all costs by the Contractor/Supplier. The services of the Contractor's/Supplier's personnel if requisitioned during this period for such work shall be made available free of any cost to the Purchaser.

9.2. If the defects are not remedied within a reasonable time, the Purchaser may proceed to do so at the Contractor's/Supplier's risk and expense without prejudice to any other rights.

10. Terms of Payment

Payments of Final bill shall be made after deduction of Security Deposit / Performance guarantee as specified. The Security Deposit / Performance guarantee, shall be refunded on expiry of the Defects Liability Period after rectifying all defects to the satisfaction of the TIFR-Hyderabad/E.I.C. The



acceptance of payment of the final bill by the Contractor would indicate that he would have no further claim in respect of the work executed.

Final Bill along with all relevant documents will be settled within **30** days from the date of submission with the certification of TIFR Engineer.

11. Special conditions of Contract governing supplies of the Equipment of this Tender:

11.1. Scope:

- 11.1.1. This specification covers the supply of material as per the enclosed details and quantities and supervision of erection/installation, testing and commissioning of the material.
- 11.1.2. The Contractor/Manufacturer/Supplier shall quote for all the materials along with accessories as mentioned in the enquiry.
- 11.1.3. All the supply shall be in accordance with relevant I.S. Specifications and recognized standards.

11.2. Inspection & Testing of Material:

- 11.2.1. Contractor/Manufacturer/Supplier shall submit the lists of Type Tests and Routine Tests to be conducted on the material in the Technical Data Sheet.

11.2.2. Factory Test-

(a) The lift's components shall be tested at the factory before delivery to check all the technical parameters as mentioned in technical specifications by the TIFR's Officer-in-charge or his representative. The boarding, loading and travel etc. of TIFR's Officer-in-charge or his representative will be arranged and borne by the TIFR.

Testing at Site:

(b) After completion of installation work in all respect, the tenderer shall make necessary arrangement for testing of individual Lift on full load /part load at various conditions and mentioned in technical specifications. All equipment and weights required for testing shall be arranged by the tenderer within quoted rates and nothing extra shall be paid.

(c) The installation will be accepted by TIFR only after complying with observations of inspection team (if any) for the work executed by the tenderer under the agreement

- 11.2.3. All the materials shall be tested at factory as per IS Specifications of material by Purchaser's Engineer In-Charge/Engineers before dispatch at the cost of Contractor/Manufacturer/Supplier.



11.2.4. Contractor/Manufacturer/Supplier shall inform the concerned Engineer In-Charge for inspection and testing in accordance and fix up a suitable date for the same.

11.3. **Test Certificates:**

Contractor/Manufacturer/Supplier shall submit the Test Certificates of all materials.

11.4. **Taxes & Duty:**

11.4.1. Contractor/Manufacturer/Supplier shall quote the basic price of material. Excise Duty, Custom Duty, Sales Tax, GST, Octroi, Delivery Charges, Transit Insurance and/or any other charges, if any, must be indicated separately.

11.4.2. TIFR being a research institute of Govt. of India, is eligible for Excise Duty Exemption on equipment supplies. Necessary exemption certificate will be provided by TIFR.

11.4.3. Transit Insurance: The Transit Insurance from the point of dispatch to the site of erection shall be in the scope of Supplier and the cost shall be indicated separately.

11.5. **Delivery of Material:**

11.5.1. The Contractor/Manufacturer/Supplier shall be held responsible for loading of all equipment and for the stores being sufficiently and properly packed for transport by rail, road, sea or air so as to ensure their being free from any loss or damage on arrival at destination. The packing and marking of packages shall be done by and at the expense of the Manufacturer/Supplier. Each package shall contain a packing note quoting the purchase order number and detail of the contents.

11.5.2. All the materials must be delivered at site i.e. Hyderabad - TIFR at 36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy District, Hyderabad-500046. The unloading and positioning of all equipment at the designated locations specified by the Engineer In-Charge shall be in the scope of the Supplier. The Supplier shall arrange for handling equipment, labour for rigging, etc. as required.

11.5.3. Material must be delivered at site in all respects as mentioned in the Purchase Order.

11.6. **Guarantee:**

If during the period of guarantee any fault or defect arises, the material shall be replaced/repaired immediately free of cost, as well as any replacement of accessories required shall be done free of cost.



- 11.7. **Mistake in Drawing:**
The Contractor/Supplier shall be responsible for and shall pay for any alterations in works due to any discrepancies, errors or omissions the drawings or other particulars supplied by him whether such drawings or particulars have been approved by the Purchaser or not.
- 11.8. **Responsibility for Completeness:**
Any fittings or accessories which may not be specifically mentioned in the specifications but which are usual or necessary are to be provided by the Contractor/Supplier without extra charge and the equipment must be complete in all details.
- 11.9. **Extra/Deviation items & Variations in quantity**
TIFR-Hyderabad has the right to omit/delete any of the items and also increase/decrease the quantities mentioned in the tender. No claim or any compensation in this regard will be accepted or paid to the contractor. However, if any new /additional items/deviated items are to be executed, the contractor is bound to execute such items with prior approval from TIFR-Hyderabad after furnishing the proper rate analysis for such extra/deviated items
- 11.10. **Rejection of Defective Equipment:**
- 11.10.1. If the equipment after the acceptance thereof is discovered to be defective, notwithstanding that such defects could have been discovered at the time of inspection or found to have failed to fulfill the requirements of the contract or developed defects after the erection within a period of 12 months from the date of erection, even if such erection is done by the Purchaser, he shall be entitled to give a notice on the Contractor/Supplier setting forth details of such defects or failure and the Contractor/Supplier shall, provided such notice is given within a period of 14 months from the date of such erection or acceptance, forthwith make the defective equipment good or alter the same to make it comply with the requirements of the contract at his own cost and further if in the opinion of the Purchaser, the defects are of such a nature that the defects cannot be made good or required without impairing the efficiency or workability of the equipment or if in the opinion of the Purchaser the Equipment cannot be repaired or altered to make it comply with the requirements of the Contract, the Contractor/Supplier shall, provided a notice given by the Purchaser in this behalf within a period of 14 months from the date of erection or acceptance thereof, remove and replace the same with the equipment conforming to the stipulated particulars, in all respects at the Contractor's/Supplier's own cost. Should he fail to do so within a



reasonable time, the Purchaser may reject and replace, at the cost of the Contractor/Supplier, with equipment of the same particulars or if equipment conforming to the stipulated particulars are not in the opinion of the Purchaser readily procurable, such opinion being final, then with the nearest substitutes.

11.10.2. In the event of such rejection the Purchaser shall be entitled to use the Equipment in a reasonable and proper manner for a time reasonably sufficient to enable him to obtain replacement equipment as herein before provided.

11.11. Inspection and Final Tests:

All tests necessary to ensure that the Equipment complies with the particulars and guarantee shall be carried out at such place or places as may be determined by the Inspector. Should, however, it be necessary for the final test as to performance or guarantee to be held over until the Equipment is erected at site they shall be carried out within one month of completion of erection.

11.12. Intimation about Delivery:

If the Purchaser shall have notified the Contractor/Supplier in writing that the former is not ready to take delivery, no equipment or materials shall be forwarded until an intimation in writing shall have been given to the Contractor/Supplier by the Purchaser that he is ready to take delivery.

11.13. Delay in erection:

Wherever erection of an equipment or machinery is the responsibility of the Contractor/Supplier as a term of the contract and in case the Contractor fails to carry out the erection as and when called upon as to do within the period specified by the Purchaser, the Purchaser shall have right to get the erection done through any source of his choice. In such an event, the Contractor/Supplier shall be liable to bear any additional expenditure that the Purchaser may incur towards erection. The Contractor/Supplier shall, however not be entitled to any gain due to such an action by the Purchaser.

11.14. Definition of Equipment:

The work 'Equipment' wherever, it appears in these 'Special Conditions of Contract' governing supplier of Equipment in this Tender shall mean all switchgears, panels, etc. or parts thereof or what the Contractor/Supplier agrees to supply under Contract as specified in the work order.



11.15. Force Majeure:

Normally Force Majeure shall cover only acts of God, fire, wars, strike, riots and civil commotion, floods, epidemic, quarantine related strikes, freight embargoes, etc. The contractor shall not be liable for any liquidated damages for delay or any failure to perform the contract arising out of Force Majeure conditions, provided that the contractor shall within ten days from the beginning of such delay notify the department in writing the cause of delay along with convincing supporting evidence. The department once convinced and accepted the reason may extend the supply completion period by a suitable / reasonable margin.

11.16. Termination of Contract by the Purchaser:

11.16.1. If the Contractor/Supplier commits any 'Act of Insolvency' or shall be adjudged an Insolvent or shall have an order for compulsory winding up made against him or pass effective resolution for winding up voluntarily, or if the Contractor/Supplier shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the Contractor/ Supplier, or shall assign the Contract without the prior consent in writing of the Engineer In-Charge, or shall charge or encumber this Contract or any payments due or which may become due to the Contractor/Supplier there under, or if the Engineer In-Charge shall certify in writing to the Purchaser that the Contractor/Supplier –

11.16.1.1. has abandoned the Contract, or

11.16.1.2. has failed to commence the works, or has without any lawful excuse these conditions suspended the progress of the works for seven days after receiving from the Engineer In-Charge written notice to proceed, or

11.16.1.3. has failed to proceed with the work with such due diligence and failed to make such due progress as would enable the works to be completed in accordance with the approved programme of work,, or

11.16.1.4. has failed to remove materials from the site or to pull down and replace work for seven days after receiving from the Engineer In-Charge written notice that the said materials or work were condemned and rejected by the Engineer In-Charge under these conditions, or

11.16.1.5. 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/ Supplier requiring the Contractor/Supplier to observe or perform the same, or

11.16.1.6. has to the detriment of good workmanship or in defiance of the Engineer In-Charge's instructions to the contrary sub-let any part of the contract,



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then and in any of the above said causes, the Purchaser with the written consent of the Engineer In-Charge may, notwithstanding any previous waiver, after giving seven days' notice in writing under the provisions of this clause to the Contractor/Supplier, determine the contract but without prejudice to the powers of the Engineer In-Charge or the obligations and liabilities of the Contract, the whole of which shall continue to be in force as if the contract has not been so determined and as if the work subsequently executed has been executed by and on behalf of the Contractor/ Supplier.

- 11.16.2. After the issue of such notice, the Contractor/Supplier shall not be at liberty to remove from site any equipment, tools and materials belonging to him which shall have been placed thereon for the purpose of the works and the Purchaser shall have lien upon such equipment, tools or materials to subsist from the date of such notice and until the notice shall have been complied with.
- 11.16.3. If the Contractor/Supplier shall fail to comply with the requirements of said notice for seven days after such notice has been given, the Purchaser shall have the power to enter upon and take possession of the works and site and all equipment, tools and materials thereon, and to engage any other person, firm or agency to complete the works, utilizing the equipment, tools and materials to the extent possible. The Purchaser shall not in any way be responsible for damage or loss of the tools, equipment and materials and the Contractor/Supplier shall not have any compensation therefore.
- 11.16.4. Upon completion of the works, the Engineer In-Charge shall certify the amount of expenditure properly incurred consequent on and incidental to the default of the Contractor/Supplier as aforesaid and such amount shall be deducted from the payments due to the Contractor/Supplier, including the Security Deposit. If the said amount exceeds the payment due to the Contractor/Supplier, the Purchaser shall be at liberty to dispose off any of the Contractor's/Supplier's materials, tools or equipment and apply the proceeds for the payments due from the Contractor/Supplier and recover the balance by process of law.
- 11.16.5. After the works have been completed after the amounts due to the Contractor/Supplier, the Engineer In-Charge shall give notice in writing to the Contractor/Supplier to remove the surplus equipment and material from site. If such equipment and materials are not removed within a period of 14 days after such notice, the Purchaser shall have the power to remove and sell the same holding the proceed less the cost of removal and sale, to the credit of the Contractor/Supplier. The Purchaser shall not be responsible for any loss sustained by the Contractor/Supplier from the sale of the equipment and material.



13. Contractor's Representative:

- 13.1. The Contractor/Supplier shall employ at least one qualified representative (ie. Electrical supervisory License with minimum 3 years of experience of similar works as stipulated by TIFR- Hyderabad in the work order) whose name shall have previously been communicated in writing to the Engineer In-Charge and approved by him to supervise the erection. Any written order or instructions given to the representative shall be deemed to have been given to the Contractor/Supplier. The Engineer In-Charge shall be at liberty to object to any particular representative/or any persons employed by the Contractor/Supplier on the work and the Contractor/Supplier shall remove the person objected to, on the receipt of the Engineer In-Charge, in writing, a request requiring him to do so and shall provide in his place another competent representative acceptable to the Engineer In-Charge.
- 13.2. The Contractor's/Supplier's representative shall be a qualified electrical/ mechanical engineer possessing adequate site experience in similar nature of works.

14. Completion Time:

Unless otherwise agreed in writing between the Purchaser and the Contractor/Supplier, the work contract shall be completed within the stipulated period mentioned elsewhere in this tender document from the date of Work/Purchase Order issued to Contractor/Supplier by the Purchaser.

15. Delivery of Material at Site:

The Contractor/Supplier/Manufacturer shall arrange for safe transit and delivery of material at site and unloading the material at site.

16. Validity of Tender:

The quotation should be valid for 75 days after the opening of the Part—I: Technical Bids.

17. Measurements:

All joint measurements of quantities shall be done by the Contractor at his own cost in the presence of the Engineer In-Charge or any authorized person deputed by him who will certify the routes, length and quantities etc. for the purpose of determination of the amount payable.

18. Spare Parts & Manuals:

Manufacturer/Contractor/Supplier should submit operation, maintenance and spare part list and manuals for all equipment.



- 19. Training:**
Manufacturer/Contractor/Supplier should provide training for operation and maintenance-free of cost for equipment supplied.
- 20. Special Instruction for bidding process**
This tender is a two part tender. The Part-I: Technical Bid and Part-II: Financial Bid. Bidders shall seal each bid separately with a clear label on the envelope about its content. Both the bids should be submitted in a single drop two cover method. Any pricing details must not appear in the Part-I: Technical Bid.
- 21. Drawings and Documentation:**
As-built drawings as specified in these technical specifications shall be submitted by the Contractor.
- 22. Permissions and Approvals:**
All statutory permissions and approvals from the lift inspector or GHMC or local body as may be required for commissioning of the entire system shall be carried out by the contractor. All necessary documentation for obtaining such permissions and approvals shall be done by the contractor. Purchaser shall assist in providing required declarations. Statutory fees shall be paid by the purchaser.
- 23. Guarantee:**
The equipment shall be guaranteed against all design and manufacturing defects, poor workmanship etc. for a period of 1 year from the date of commissioning. Any defects discovered during this period shall be rectified by the vendor free of cost to the purchaser. However, quarterly preventive maintenance shall be done during the warranty period.



SECTION-V

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATION FOR LIFT WORKS

1. SCOPE OF SUPPLY

- This specification defines the requirements for the design, manufacture, assembly, inspection, packing, supply and delivery at site, installation, testing, commissioning and handing over of following Passenger lift, complete with all accessories for efficient and trouble free operation and control panels as per relevant Indian & International Standards.
- The lifts offered by the tenderer shall be complete in all respects and any equipment or auxiliary not covered by this specification, but essential for proper design, co-ordination, operation and maintenance shall be included by the tenderer without any extra cost to the Purchaser.
- All materials and consumables required for satisfactory completion of the job shall be supplied by contractor. Contractor's scope shall also include arranging of all tools, tackles, equipment, machinery and labour required for satisfactory completion of the job.
- Obtaining local statutory approval/ license to commence work, installation & commissioning and operation of lift from lift inspectorate shall be in the scope of contractor.
- Coordinating with civil contractor for construction of Lift pit and lift well as per the lift manufacturer's requirements.

2. APPLICABLE CODES AND STANDARDS

The design, manufacturing, assembly, installation, testing and performance of various equipment covered by this specification shall comply with all currently applicable statutory act, regulations and safety codes in the locality where the equipment will be installed. Nothing in this specification shall be construed to relieve the vendor of his responsibility.

IS: 2365 –1977	Specification for Steel wire suspension ropes for lifts, elevators and hoists.
IS: 1173 – 1978	Specification for Hot rolled and slit steel tee bars.
IS: 4289 -1984/ 2000	Flexible cables for Lifts and Other Flexible Connections -Specification.



IS-15999-1-2016/ IEC60034-1 –2010	Rotating Electrical Machines – Rating and Performance.
IS: 4029 –2010	Guide for testing of three-phase induction motor.
IS: 732 - 1989	Code of practice for electric wiring installation (System voltage not exceeding 650 volts).
IS: 14665 (Part-5) - 1999	Electric Traction Lifts - Part 5: Inspection Manual.
IS: 14665 (Part-4) - 2001.	Electrical Traction Lifts – Part 4: Components
IS: 14665 (Part-3) - 2000.	Electrical Traction Lifts – Part 3: Safety rules
IS: 14665 (Part-2) - 2000	Electrical Traction Lifts – Part 2: Code of practice for installation, operation & maintenance.
IS: 14665 (Part-1) - 2000	Electric Traction Lifts - Part 1: Guidelines for Outline Dimensions of Passenger, Goods, Service & Hospital Lifts.
IS-4591– 1968	Code of practice for installation and maintenance of escalators.
IS – 3043 –1987	Code of practice for earthing.
IEEE - 519	Recommended Practices and Requirements for Harmonic Control in Electrical Power System.
IEC - 61800	Adjustable speed electrical power drive systems.
IS:8623 -1993	Specification for Low Voltage Switchgear and Controlgear Assemblies.
IS: 5 - 2007.	Colours for Ready Mixed Paints and Enamels
IS: 817 - 1966	Code of practice for training and testing of metal arc welders.
IS: 816 - 1969	Code of practice for the use of metal arc welding for general construction in



	mild steel.
IS: 814 - 2004	Covered Electrodes for Manual Metal Arc Welding of Carbon and Carbon Manganese Steel - Specification.
IS: 800 - 2007	General Construction in Steel - Code of practice.
IS-3136 -1965.	Specification for Polycrystalline Semiconductor Rectifier Equipment
IS/IEC 60034-8-2000	Rotating Electrical Machines – Terminal markings and direction of rotation.
IS/IEC 60034-5-2000	Degrees of protection provided by the integral design of rotating electrical machines (IP Code) – Classification

- The equipment shall also conform to the provisions of Indian Electricity rules, Lift acts & rules and other statutory regulations currently in force in the country.
- In case Indian standards are not available for any equipment, standards issued by IEC/ BS/ VDE/ IEEE/ NEMA or equivalent agency shall be applicable.
- In case of any contradiction between various referred standards/ specifications/ data sheet and statutory regulations, following order of priority shall govern:
 - Data sheets.
 - Job specifications.
 - This specification.
 - Codes and standards.
 - Statutory regulations.

3. TECHNICAL REQUIREMENTS

- The Passenger Lift covered by this specification is for man & movement. The passenger lifts shall be designed for man movement, safe operation, comfort and service.
- Input power supply available at site:
Voltage: 415 V $\pm 10\%$, 3 phase, 4-wire, AC, Neutral solidly grounded.
Frequency: 50Hz $\pm 5\%$.
Combined variation (Voltage and frequency): $\pm 10\%$.



- Testing of elevator motor and controller at manufacturer works and after installation at site including obtaining clearance from local lift inspector is included in the scope of contractor.
- Complete set of special tools and tackles required shall be supplied along with Lift. Each tool and tackle shall be stamped so as to be identified easily for its use and size. Tools shall be supplied in a steel tool box. (The list of tools and tackles shall be furnished along with the offer).

3.1 Drive Machinery

3.1.1 Geared or Gearless machine

- Both geared or gearless machines for lift are acceptable. It shall consist of motor, traction sheave and brake completely aligned on a single shaft. The machine shall be driven by A.C. geared or gearless motor with VVVF drive.
- The Lift machine shall be based on Variable Voltage Variable Frequency (VVVF) controller (with feedback loop) with AC motor, its associated machinery like main sheave & deflector sheave (if any), electromagnetic brakes, suitable for passenger lift, infrared door sensor, car belt/ rope, governor belts/ ropes, car enclosure, car platform, traveling communication cable, landing doors, limit switches, wiring etc. suitable for hoist way and machine room.
- Variable-voltage control: The control shall be a variable or multi-voltage system. The system shall provide smooth and practically constant acceleration and retardation under all operating conditions. During the acceleration and retardation periods, the voltage applied to the elevator motor shall be gradually changed by the drive without interruption of power to the motor. The motor shall be wound for 415 V a.c. power supply. Overload relays shall be provided to protect the driving motors against overloads.

3.1.2 Electric Motor

Motors shall be suitable for frequent starting with S4 duty class as per IS/IEC-60034-1 with CDF of 60% and 150 starts per hour at 50 deg. C ambient. Motor shall be suitable for traction duty and shall have high starting torque. Motor pull-out torque shall be 250% of rated torque. Motor shall be of TEFC type. Motor insulation shall be class F with temperature rise limited to class B.

3.1.3 Sheaves

Sheaves and pulleys shall be of hard alloy, cast iron, spheroidal graphite iron or steel and free from cracks, sand holes and others defects. They shall have machined belt/ rope grooves. The traction sheave shall be grooved to produce proper traction and shall be of sufficient dimension to provide for wear in the groove. The deflector sheave shall be grooved so as to provide a smooth bed for the belt/ 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 belt width/



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 – Sec 3): 2000. Wherever required, suitable protection guards shall be provided.

3.1.4 Brake

The lift drive machinery shall be provided with an electro-magnetic fail-safe brake. The brake shall be designed to be of sufficient size and strength to stop/ hold the car at rated load with desired factor of safety as per relevant code. The brake should be capable of operation automatically by the various safety devices, power failure and by the normal stopping of the car. The brake shall be released electrically. It shall also have provision to release the brake manually in case of emergency.

At times of lift stopping 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 a 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.

3.1.5 Type of Controls

3.1.5.1.1 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.

3.1.6 Operating devices

- a) In the car: The cars shall be furnished with a flush type attractive finished metal panel which shall contain a series of push-buttons numbered to correspond to the landings served, an emergency-stop switch, door open button, fan switch and an emergency call button connected to bell which would serve as an emergency signal.
- b) Stainless steel car enclosure shall be provided with fixtures like LED lights, fan, emergency LED lighting fixture, battery operated alarm bell and intercom telephone facility.
- c) Cross flow fan shall be provided with heavy duty metal diffuser. Fan shall provide 12 air changes per hour in the car.
- d) Digital car position indicator shall be provided in the car with stainless steel faceplate.
- e) Provision shall be there in Lift car (such as speaker with light music), which can be hooked up with Public address system (Necessary cabling shall be provided up to Lift Machine Room).



- f) Car hangers and track locks shall be provided with mounting accessories.
- g) Infrared curtain door protection shall be provided.
- h) Door operating system shall be provided with stainless steel door for car as well as for landing doors at all floors suitable for openings with all safety features and for jerk-free operations.
- i) Flush type panel consisting of car position and direction indicator shall be provided in the car.
- j) Car-Operating Panel (COP) shall be provided with luminous operating buttons, for reaching destination stops, in stainless steel faceplate.
- k) Car weight sensing device shall be provided with overload warning indication (audiovisual) in stainless steel faceplate.
- l) Magnet switches and limit-switches shall be provided with mounting accessories.
- m) Complete control wiring in the car, hoist way, machine room shall be provided including traveling cables, junction box, troughs with cover in machine room, hoistway and all other wiring of suitable capacity. Power supply to elevator controller, wiring between the power point outlets to the controller & the wiring for power supply to midway junction box in the controller shall be in the scope of the contractor. However, the purchaser will provide hoist way & pit lighting and receptacles in hoistway if required.
- n) At Hoistway landings: Up & Down call luminous hall buttons shall be provided at each intermediate landings with Up & Down arrows in stainless steel face plate including digital car position indicators at intermediate floors and Up/ Down call luminous hall buttons with Up/ Down arrows in stainless steel faceplate including digital car position indicators for terminal floors. The panel shall be an elegant flush mounting type located adjacent to the elevator entrance.
- o) Vanes & brackets in the hoist way shall be provided, as necessary.
- p) Operation with an attendant: The regular car operating panel which would include buttons, switches etc. for the collective-automatic control, shall also include the following:
 - i) A two position key operated switch market to indicate 'ATT' (Attendant operation).
 - ii) A buzzer and a non-stop button.
 - iii) A service cabinet shall be provided for housing the above.

3.2 GUIDE RAILS

- Steel tee guides shall be furnished for the car and counterweight. Guide rails shall be in accordance with clause 3 of IS 14665 (Part 4 – Sec 2) 2000. Machined guide rails shall be permitted for cars for all lifts.
- The guide rails shall be throughout the entire travel and shall withstand, without any deformation, the loads from fully loaded car with desired factor of safety.
- The guide rails shall be supported by brackets secured to the hoistway frame at each floor.



- The rails shall be securely fastened to the brackets or other supports by approved heavy rail clamps. All necessary guide rail packing or additional supports shall be provided to prevent guide rail deflection and stresses exceeding the prescribed limits.
- Guide rails shall extend from pit floor to the underside of concrete slabs or graphing at top of the lift well. They shall be erected in plumb and parallel with a maximum deviation as per the design standard. 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 at 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.

3.3 LIFT CAR

3.3.1 Car Frame

The car frame, which supports the car platform and enclosure, shall be in accordance with clause-4 of IS 14665 (Part 4 - Sec 3): 2001. It shall be made 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. It shall be equipped with suitable guides and car safety device mounted underneath the car platform.

3.3.2 Car Platform

- The car platform shall be structural steel 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 for Passenger cum Service lift shall be strong enough to take the rated load without any deformation or damage.
- 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. The details of the floor, ceiling and paneling shall be furnished by the tenderer.

3.3.3 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 35kg 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 (Part 4/ Sec 3) – 2001.

3.3.4 Car roof



The roof of the car shall be of sufficiently robust construction and designed to withstand, without deformation, weight of two persons with tools in addition to other stuff fixed on the top and as per IS 14665 (Part – 4 – Sec 3): 2001.

3.3.5 Car Thresholds

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

3.3.6 Toe Guard Aprons

The toe guard apron of gauge not less than 1.6 mm 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 700 mm 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.

3.3.7 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).

3.3.8 Car Apron, Landing Thresholds and Sills

An apron shall be fitted to the car platform such that no dangerous gap exists 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 the car platform shall not be more than 30mm.

3.3.9 Emergency Power Supply for lift car

This shall include a suitable secondary battery with trickle/ boost charge arrangement and inverter power pack with necessary contactors for supplying the LED light fixtures in the lift car. The same battery shall also feed the alarm bell and communication equipment. Battery shall be SMF type and capacity shall be as per IS.

3.3.10 Ratings and Instructions

Inside the lift car, the lift contractor 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.



3.3.11 Lift Car Interior Finish

The side, rear and fascia panel shall be of stainless steel (SS 304) with good finish. The flooring shall be with 3mm thick vinyl tiles for passenger lifts. The False ceiling in the lift car shall be crafted from Stainless steel in hairline finish with LED lamps and fan diffuser(s) in suitable colours.

3.3.12 Operating Panel inside the car

The car operating panel shall be of SS 304 hairline finish, flush mounted and duly finished to match the car interior decor and shall contain all the devices, as may be specified, depending upon the type of operation required. In addition, separate illuminated panel for indication & the floor and direction may be provided on the top of the doorway. All switches shall be fade proof, vandal resistant and the devices shall be of suitable quality. Each device and its operating position shall be legible, fade proof, vandal resistant and marked.

3.3.13 Car and Landing Entrances

The car and landing doors shall be of flush type, center opening stainless steel (hairline), only for power operation. 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. All the openings for passenger lifts shall be min 2000 mm clear in height. For Passenger as well as Passenger cum Service lift, power operated doors shall be used. However, attendant switch with key lock shall be provided for Passenger cum Service lift. 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.

3.3.14 Car doors

- The car door shall be hung from the top 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 provided for vertical and lateral adjustment of car door. The sheaves shall move on a fabricated track so shaped as to permit free movement of sheaves with regard to vertical adjustment of sheave bracket or hosting.
- The hoistway door as well as the car door for passenger and passenger cum service lift shall be centre opening, horizontal sliding, stainless steel, hairline finish.
- In order to ensure that the trapped passenger does not attempt opening the landing door, the electromechanical latch should be so designed that it is inaccessible or invisible to the passengers in the car.



- In order to avoid accidental closure of doors while boarding or alighting the car, a tamper proof infra-red curtain covering almost the entire height of the door should be provided in the lift doors.
- Selector switch shall be provided for locking the closure of automatic doors of Passenger lift.

3.3.15 Landing doors

- Stainless steel centrally opening landing doors shall be provided with door hangers at all floors, suitable for clear opening with stainless steel side guards and unlocking device bushing for passenger lifts and passenger cum service lifts.
- Each landing door shall be complete with locks, header, sills, frames, rims, hanger supports with cover plates, fascia plates etc. The finished work shall be strong, rigid, and neat in appearance. Plain surfaces shall be smooth and free from warp or buckle. Moulded surfaces shall be clean, straight and true. Fastenings shall be concealed from the face side of the material. Steel Sills shall be provided with a suitable nosing of approximately 25 mm depth on the shaft side.
- The opening for the landing gates or doors shall not be wider than that of the lift car. In the case of bi-parting type steel doors, the locking of the two leafs of the doors should be positive.

3.3.16 Car landing

- The entire lift car landing shall be well lit to an illumination level of 150 lux and shall be free from obstructions. The control for landing lights and the sign lights shall be tamper proof. Wherever standby power supply is available, these lights shall be connected to standby circuits also.
- For the purpose of identification, the lift number should be displayed outside the landing door, inside the car and in the machine room. The numbering may be used as reference for the purpose of routine/preventive maintenance, for operating from machine rooms and reporting of any incidents etc. Please note that floor designation will be G, 1, 2, 3.
- Instructions: Detailed instructions, as specified for guidance of passengers, shall be prominently displayed inside the car and outside the car at all landings by the contractor.
- It is seen generally, that though the instruction on Do's and Don'ts, as per provision of the relevant IS, are displayed in lift cars but the same are either displayed in inconspicuous location, or are very small in size or are in one language only. To make these instructions serve the intended purpose and not a mere compliance of relevant IS clause, these instructions should be displayed at a conspicuous location with larger and understandable script and should be written in Hindi, English and regional language (where official regional language is notified).

3.4 Leveling

- The elevator shall be provided with a micro-self-leveling feature that will automatically bring the car to the floor landings. This micro-leveling shall, within its zone, be entirely automatic and independent of the operating device and shall correct for over-travel or under travel and belt/ rope stretch.



- The Lift shall be provided with a two-way automatic leveling device. The leveling device shall take care of overrun and underrun of the car and belt/ rope stretch, such that car floor leveling accuracy is + 5 mm/ - 0.0 mm from the landing level at all floors while in operation.
- Aprons of sufficient depth shall be fitted to the car floor to ensure that no space is permitted between the threshold and the landing while the car is being leveled to floor.

3.5 Counter Weight

Suitable guided structural steel frame with appropriate filter weights shall be furnished to promote smooth and economical operation. The counter weight for lift car 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 of steel tie rods, having lock nuts/ split pins at each end passing through each section and housed in a rigid steel frame work. Cracked and broken sub weight shall not be accepted.

3.6 Guide Shoes

a) Types of shoes

For passenger lifts & passenger cum service lifts

- i) For speed up to 1.5 mps, sliding guide shoes shall be used. Sliding guide shoes for car shall be always flexible and for counterweight, solid guide shoes can be used up to 1.0 mps.
- ii) The roller guide shall be used for car and counter weight.

Flexible/ solid type sliding guide shoes

The car shall be provided with spring loaded guide shoes with renewable liners or the guide shoes shall be of roller type.

3.7 Lift Belts/ Ropes

The elevator shall be provided with traction steel hoist belts/ ropes. The hoist belts/ ropes shall include adjustable self-aligning hitches. Round strand steel wire ropes made from steel wires 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 an impregnated hemp core. The lift belts/ ropes shall conform to IS 14665 – (Part - 4/ Sec - 8): 2001 and the following factor of safety shall be adhered to. The minimum diameter of rope for cars and counter weight of Passenger and Passenger cum Service lift shall be 8 mm.

Main belts/ ropes shall be provided with accessories.



Belt/ Rope Speed of Passenger & Passenger cum Service Lifts (m/s)	Factor of Safeties
Speed < 0.5	8
$0.5 \leq \text{Speed} \leq 1.0$	8.6
$1.0 \leq \text{Speed} \leq 2.0$	10
$2.0 \leq \text{Speed} \leq 3.5$	11
$3.5 \leq \text{Speed}$	12

3.8 Belt/ Rope fastenings

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

3.9 Guards for lift belts/ ropes

Where lift belts/ ropes run around a sheave or sheaves on the car and/ or counter weight of geared or gearless machine, suitable guards shall be provided for preventing injury to maintenance personnel.

3.10 Number & Size of belts/ ropes

- The contractor must indicate the number and size of lift belts/ ropes and governor belts/ ropes proposed to be used, their origin, type, ultimate strength and factor of safety. The contractor should furnish a certificate of belts/ ropes from the belt/ rope manufacturers, issued by competent authority.
- In case of flexible coated steel belt, pulse belt monitoring system to check belt condition shall also be provided.

3.11 Safety Equipment

- The car safety shall be provided to stop the car whenever excessively descending speed is attained. Every lift installation shall necessarily be provided with the following safety features:
- The safety gear shall be provided in accordance with IS 14665 (Part - 4 - Sec - 4): 2001, to limit the car speed & protection for overspeed.
- Governor – The car safety shall be operated by speed governor located overhead and driven by governor belt/ rope suitably connected to the car and mounted on its own pulleys.

Governors shall be provided with tension free belts/ ropes and pit wheel. Suitable means shall be supplied to cut off power from the motor and apply the brake on application of safety. The belt/ 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 6 mm in dia. and shall be made of steel or phosphor bronze. These shall be in accordance with IS 14665 (part - 4 / sec – 4): 2001. Governor for car safety gears shall be adjusted to actuate the safety gear at the following speeds:-

- i) 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.
 - ii) For rated speed above 1 m/s, the maximum governor tripping speed shall be 115 per cent of the rated speed plus 0.25 m/s.
 - iii) Minimum governor tripping speed shall be 115 per cent of the rated speed.
- 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 travel without damaging the belt/ rope.
 - The governor, belt/ rope and sheave shall be so located as to minimize danger of accidental injury to the equipment.
 - The governor sheave & tension sheave and the sheave bearing shall be according to this technical specification.

3.12 Terminal switches

- Every electric lift shall be provided with upper and lower normal terminal limit switches arranged to stop the car automatically within the limits of top car clearance and bottom run by over travel from any speed attained in normal operation. Such limit switches shall act independently of the operating device, the ultimate or final limit switches and the buffers. They shall be in accordance with clause 8 of IS: 14665 (part 3 –Sec 1): 2000.
- 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 60 cm from the nearest obstruction above it, no projection on the car shall strike any part of overhead structure.
- 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.

Ultimate Terminal Switches

- Ultimate or final limit switches shall act to prevent movement of the lift car under power in both directions of travel and shall, after operating, remain open until the lift car has been moved by a hand winding to a position within the limits of normal travel.



- 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 buffers operative. These shall be in accordance with clause 8 of IS: 14665 (Part - 3 / Sec - 1) – 2000.

4.13 Buffers

- Buffers shall be installed as a means of stopping the car and counterweight at the bottom extreme limit of travel. Buffers in the pit shall be mounted on steel channels, which extend between both the car and counterweight guide rails.
- Buffers shall be oil resistant rubber pad type for speeds up to 0.25 mps and spring/ oil type for speed up to 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.
- Oil buffers of the car and counter weight shall be of the spring return type or of gravity type.
- 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 manufacturer's 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 60cm 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 manufacturer, buffer stroke & certified maximum loads.

3.14 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 4/ Sec 6) – 2001 and 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.



3.15 Other safeties

- Besides these safety devices mentioned above, motor operated electro-mechanical brake, counter-weight guards, alarm bell, emergency door lock release operating key and associated safety and other safety requirements shall also be included.
- A manually operated mains disconnecting switch shall be installed in the main circuit cables of each electric lift machines. This switch shall be placed close to and visible from the machine it controls.
- It shall not be possible to start the lift car under normal operation unless every landing door and car door is in the closed position.
- The landing push buttons shall remain inoperative until the person or persons, using the lift, have vacated the lift car and the landing door has been again closed, except that with the collective control, the push button may be utilized for this purpose provided they do not in any way interfere with the direction of current journey and that provision shall be made for a reasonable time lag between the stopping of the lift car and it being restarted.
- An emergency stop switch may also be fitted on top of every lift car for use by persons working thereon.
- Every lift car under automatic attendant control shall stop at landing with car sill fairly in level with the landing sill. The difference in levels shall not exceed the distances mentioned in IS: 14665 - 2000.

3.16 Lift Operations

The operation of the Lift shall be simplex, selective, collective and automatic, with or without operator. The Lift operation shall conform to the following requirements.

The operation of the Lift shall be through a push button station located inside the car.

The Lift shall not move unless the car door, landing door and all other protected openings connected with the control circuit are closed.

Two push buttons, one for upward and the other for downward movement at each intermediate landing and one push button at each terminal landing shall be provided in the landing floors in order to call the car.

The landing doors shall be interlocked so that the landing door at any floor shall not open when the Lift is not on that floor.

Push button/ knob shall be fixed in the car for holding the doors open for any length of time required.

3.17 Controlling Equipment

The movement of the car shall be electrically controlled by means of a controller located in the machine room. A Microprocessor based controller shall be provided to control starting, stopping and



the speed of the elevator motor and shall automatically apply the brake if any of the safety devices operates or the power fails due to any cause.

3.18 Control circuits

The control circuit shall be designed for 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 overloads 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 upon the completion of an electrical circuit to cut off power supply and apply the brakes. This requirement is not applicable to dynamic braking and speed control devices.

3.19 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.

3.20 Auxiliary Switches

3.20.1 Emergency stop switches

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

3.20.2 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:

- i) The car speed shall be less than the rated speed, not exceeding 0.85 meters/sec.
- ii) 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.

3.20.3 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 traveling upward. The doors will not open at this landing and the lifts will start traveling to ground floor. If these were already traveling down, they will go straight to ground floor without stopping enroute.



3.21 Inspection facility

An Inspector's changeover 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.

3.22 Safety line indicators

If specified, visual tell-tale 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.

3.23 Control wiring

3.23.1 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 principles 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 for different functions such as the signaling, locking, lamp indication and safeties.

Control cables for different voltages in the lift installation works should be laid as per IE 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 type, TP & N preferably interlocked with controller cabinet door. Isolator handle shall have provision for external locking in off position.
- d) All relays shall be suitable for lift service and shall incorporate adequate contact wipe for reliable operation. Relays shall operate satisfactorily between 80% to 110% of their voltage.



- e) Reverse phase relay: A reverse phase relay shall be provided on the controller, which is designed to protect the lift equipment against phase reversal and phase failure.
- f) 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 shall also be furnished by the successful Tenderer.
- g) All cables shall be with copper conductors and XLPE insulated & FRLS PVC sheathed 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. All power and control cables shall have adequate conductor size as per codal requirement. Ferrules shall be slipped at the ends of all cables as per standard control wiring practice. All terminal blocks shall be suitably marked. Wiring shall be done as required to interconnect all Elevator electrical equipment including all power wiring from the main supply source in the machine room. 1100 V grade Power cables shall be multi core, stranded Cu conductor with XLPE insulation, FRLS type. All fixed power cables shall be provided as armoured cable.

The trailing cables shall conform to IS 4289. All other cables shall conform to latest edition of IS: 7098, IS: 1554 & IS: 5831.

3.24 Trailing Cables

- a) A single trailing cable for lighting control and signal circuit is permitted, if all the conductors of this trailing cable 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.
- b) Trailing cables shall run from a junction box on the car to a junction box located in the shaft near mid-point of travel and from these junction boxes, conductors shall be run to the various locations.
- c) 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 counter-weight, shaft walls or other equipment.
- d) Trailing cables exceeding 30 meters in length shall have steel supporting fillers and shall be suspended directly by them without rubbing over other supports.
- e) 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.
- f) 5 percent of the total capacity subject to a minimum of 5 wires shall be available unutilized in the trailing cable everywhere, suitably distributed between various functions.
- g) Trailing cables shall be FRLS/ Zero Halogen type.



3.25 Earthing

a) Earthing shall be carried out as per IS 3043 and Indian Electricity Rules. The Lift structures, motor, frames, metal cases and all electrical equipment including conduit, cable armouring and guards shall be properly bonded and earthed by two separate and distinct connections. The earth bus conductor shall be selected as per codal requirement, preferably of copper flats.

3.26 Miscellaneous

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

3.27 Controller casing

a) The controller unit, comprising of the main circuit breaker, adjustable overload and phase reversal and phase failure protection, all the circuit elements viz. 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. Sheet steel thickness used for controller cabinet shall not be less than 16 SWG 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. The sheet steel enclosure shall conform to IP 42 protection.

b) All sheet steel work shall be painted with two coats of synthetic enamel paint of purchaser's approved shade, both inside and outside, over two coats of zinc primer.

3.28 Lift Belt/ Rope Compensation

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

3.29 Distribution Board

240V, 1-phase, 2 wire, double door, IP-54, 4-way MCB Distribution Board having 1 no. main incomer of 25A DP MCB and 4 nos. outgoing of 16A SPN MCB shall be supplied and installed in the Lift Machine Room for each lift by the Contractor.

DB shall be fabricated out of 2 mm thick CRCA sheet steel, duly epoxy painted/ powder coated, suitable for surface/ recessed mounting complete with appropriate rating aluminum busbar, earth bar, DIN bar for MCB mounting, 2 mm thick removable gland plate on both top and bottom side with required number of knock out holes, neoprene gasket etc. as required.

3.30 Automatic Rescue Devices (ARD)

Automatic Rescue Device (ARD) including batteries shall be provided.



Vendor shall provide a modern advanced electronic drive system of “RESCUING Passengers trapped in an ELEVATOR” in case of power failure. In addition to the above, bell and cranking device shall be provided with hand wheel connected with motor shaft for manual lowering of elevator to the nearest landing level.

The ARD shall have the following specifications:

- ARD should move the elevator to the nearest landing in case of power failure during normal operation of elevator.
- ARD should monitor the normal power supply in the main controller and shall activate rescue operation within 10 seconds 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 shall detect the zone and stop. After the elevator has stopped, it shall automatically open the doors and shall park with 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.
- An audio and visual indicator shall be provided inside the lift car to alert the passenger trapped inside that they are being rescued.
- 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.
- All the lift safeties shall remain active during the ARD mode of operation.
- 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.

4. DRAWINGS AND DOCUMENTS

Information required with the bid (1 copy each)

- a. Technical datasheet.
- b. Deviation list (If any).
- c. Bill of materials/ bought out components and their makes.
- d. Technical write-ups/ leaflets on various pieces of equipment offered viz. Motor, VVVF drive, infra-red detector, car operating panel etc.

Data/ drawings after the order (3 copy each) for purchaser’s approval prior to manufacturing:

- a. Guaranteed Technical Particulars/ datasheet.
- b. Quality assurance plan (QAP).



- c. Field quality plan.
- d. Detailed dimensional drawing of the lifts and sectional views clearly indicating the sizes of car well clearances, lift supports, construction details, details of accessories, embedment details etc.
- e. Car internal arrangement showing details of flooring, ceiling, paneling etc.
- f. GA drawing for machine room including foundation details & ventilation requirement.
- g. General arrangement, single line diagram, mounting arrangement etc. for panels.
- h. Design document consisting of calculations for selection of mechanical & electrical components.
- i. Descriptive literature and catalogues on various pieces of equipment offered.
- j. Detailed Bill of Materials/ Quantities.
- k. Installation, operation and maintenance manual with troubleshooting shooting.
- l. Certified Test Certificates and Type Test reports (not older than 5 years).
- m. Guarantee Certificates.

a. Recommended erection sequence in detail.

Data/ drawings after completion of job (3 copy each)

a. Field test report.

b. As-built drawings.

Bidder may note that the drawings, manuals listed herein are indicative. Bidder shall ensure that other necessary write-ups and information required to fully describe the equipment and its safety features shall be submitted along with QA documents during order execution. Bidder shall also give brief write-up specifying safety features, technical specifications of components and its make along with the bid. Bidder shall not start manufacturing unless manufacturing clearance is provided by Purchaser in writing.

Before starting manufacture of the lifts, the contractor must take approval of fabrication drawings from the purchaser. Any manufacturing done prior to the approval of drawings shall be rectified by the contractor at his own cost, if any discrepancy arises.

5. INSPECTION & TESTING

All works covered by this document shall be subject to quality surveillance by the purchaser or his authorized representative, for which purpose, the contractor shall allow access at all reasonable times during manufacture and assembly to:

- (a) the premises in which the work is being carried out.
- (b) the drawings and/or tooling involved.
- (c) gauges, instruments etc. required for inspecting the work.

Prints of drawings shall be made available for inspection and retention, if so desired. The tenderer shall give at least 15 days advance notice prior to the commencement of testing, so that the



purchaser's representative can plan to witness the test. Inspection and testing shall be carried out as per this tender document. Two hard copies and one soft copy of test reports shall be submitted after receiving the approval of a preliminary copy from the purchaser. Parts found unsatisfactory as to workmanship or materials, shall be removed by the contractor and replaced by parts, which are satisfactory, at no extra cost.

Waiving of quality surveillance or acceptance of materials or equipment by the quality surveyor shall not relieve the contractor from the responsibility of furnishing material and workmanship in accordance with this tender document. Two-stage inspection & testing will be carried out. This includes inspection & testing at manufacturer's works prior to delivery at site and inspection and testing after erection at site during commissioning. After assembly and erection at site, the lift shall be tested at site before it is put into normal service.

The following tests are recommended to be carried out at manufacturer's works as per mutual agreement between the contractor and the purchaser.

a) Testing of main AC drive (motor): As per IS/IEC: 60034-1

(i) High voltage & insulation resistance tests.

(ii) Winding resistance measurement.

(iii) No-load & locked rotor tests.

(v) Reduced voltage starting test.

(vi) Starting torque & Pull-out torque measurement.

(viii) Overspeed test.

(ix) Test reports shall be provided by the contractor for Load test & Efficiency measurement as well as Temperature rise test for review by the purchaser.

b) Variable voltage and variable speed controller

(i) I.R value between all the live parts and metallic panel.

(ii) HV test at 2 KV, AC for 1 minute.

(iii) Performance tests with the main drive motor.

c) Control panel

(i) I.R. test at 500 volt DC.

(ii) HV test at 2 KV for 1 minute.

(iii) Workmanship.

(iv) Continuity test.

(v) Functional test under simulated fault conditions.



- d) Hoist belt/ rope
 - (i) Visual inspection
 - (ii) Load test as per IS: 2365.

e) Physical inspection of other components.

The contractor shall be fully responsible for carrying out all the tests including following as prescribed by relevant Indian standards/ lift act at site after installation.

- a) Insulation resistance, earth resistance and polarity test of the electrical wiring carried out at site and of equipment after installation at site.
- b) Performance test including load test.
- c) Functional tests for motor, brake, control equipment and door locking devices.
- d) Leveling test.
- e) Safety gear test.
- f) Checking of Elevator speed.
- g) Overspeed test.
- h) Lift balance.
- i) Operation of Car and landing doors.
- j) Controller performance test.
- k) Functional check of Normal terminal stopping switches.
- l) Functional check of Final terminal stopping switches.
- m) Testing & checking of earthing.
- n) Checking of Belts/ ropes.
- o) Checking of Buffers.
- p) All other test required for safe operation of elevator.

The reports of these tests shall be submitted to the purchaser before issue of installation completion certificate.

The contractor shall have to obtain necessary clearance from the concerned statutory government authorities after the completion of installation. As already mentioned, it will be the responsibility of the lift contractor to get the installation inspected and passed by the government inspector for lifts. The lift contractor shall attend any modifications suggested by inspector of lift at no extra cost.

6. PACKING, MARKING & DESPATCH

The successful bidder shall note that packing for shipment shall be in accordance with the following instructions:

6.1 All the materials shall be suitably packed (in sea worthy packing) and protected, so as not to suffer deterioration, damage or breakage during transit from contractor's works to site. Contractor shall make good at his own expenses, any and all damage due to improper packing.



6.2 The equipment may be stored outdoors for long periods before installation. The packing shall be completely suitable for outdoor storage in areas with heavy rains and high ambient temperature, unless otherwise agreed.

6.3 All the equipment shall be divided into several sections for protection and ease of handling during transportation. The equipment shall be properly packed for transportation by ship/ rail or trailer. It shall be wrapped in polythene sheets before being placed in crates/ cases to prevent damage to finish. The crates/ cases shall have anti-skid bottoms for handling. Special notations such as 'Fragile', 'This side up', 'Center of gravity', 'Weight', 'Purchaser's particulars', 'PO no.' etc., shall be clearly and indelibly marked on the packages together with other details as per purchase order.

6.4 Each package shall be stenciled in bold character with indelible paint, protected with shellac to indicate shipping marks, package numbers, kind of packages, contents, dimensions, legal and gross weights in kg and purchase order no. and other necessary dates to identify the particular components shall be given.

6.5 If different items are in a package, the net weight for each item and all necessary information to identify the particular components shall be given.

6.6 The batteries shall be shipped to site in dry uncharged state and an appropriate quantity of acid of proper specific gravity shall be shipped separately. Initial charging of the battery, on completion of the installation, will be carried out using purchaser's equipment.

6.7 The contractor should, at his responsibility check and ascertain the existing rail/ road limitation for transport of the material to the site and indicate the route along which the material will be transported.

6.8 Each package shall be limited to size and weight that are permissible under the existing rail and road limitations. All lifting points shall be marked.

6.9 The contractor shall not ship the material without the prior approval of the Purchaser's inspector and subsequent written instruction to do so. Packing of the materials shall be done as per this tender document.

7. INSTALLATION, SITE COMMISSIONING & TRAINING

7.1 Scope

The scope of this specification includes delivery of material covered under the tender at site, transportation to warehouse, transportation to lift well's erection, commissioning and conducting acceptance tests on the lift's auxiliaries as per the specifications to the satisfaction of the purchaser.

The scope of installation shall include:

- a) Installation of Lift, lift machine and associated equipment in lift well and lift machine room.
- b) The arrangement of scaffolding required in the lift well for the installation of the equipment.
- c) Information on all structural openings, such as landing entrances (including structural dimensions), ventilation openings etc. shall be provided by contractor.



- d) All bases, plinths, channels, holes, grouting-in of fixings etc.
- e) Lifting beams or other facilities for supporting lifting tackle in the machine room and lift well shall be provided by purchaser. Location of the same shall be specified by Vendor.
- f) Installation of guard rails in the machine room;
- g) Arrangement of hoisting facilities and access required for delivery of equipment to the machine room etc., showing the loading and size of the largest single piece of equipment;
- h) Structural steel work for lift machinery in the lift machine room;
- i) Shaft dividing steel work for supporting guard brackets etc., and inter-well screens for multiple wells; and
- j) Fixing of guide rails.

7.2 Standards

Material/ equipment covered under the specification shall be erected, commissioned conforming to manufacturer's recommendations and best engineering practices. The layout of equipment shall be as per the approved layout drawings. Erection, commissioning programme shall conform to the recommendations of IS: 14665 (Part-II) - 2001.

7.3 Items included in the Scope of Work

The scope of work includes all works required from the receipt of material at site up to final handing over to purchaser of complete equipment after acceptance testing. However a few details of scope are as follows:

- i) Submission of civil drawings required for pit and foundation as per the lift design and co ordinating with Civil contractor to ensure the work as per lift manufacturer's requirement. Delivery at site of material/ equipment and transportation to the workplace or stores.
- ii) Installation, alignment etc. for lift machines and auxiliaries, power and control cabling, necessary anchoring as per approved drawings and manufacturer's recommendations for lift and auxiliaries. Grouting of base frames for machines, springs, foundation bolts, support structure etc. as required.
- iii) Conducting pre-commissioning and commissioning checks and tests on all systems of the lifts.
- iv) Conducting acceptance tests on the lifts and auxiliaries, proving the performance guaranteed in the offer, as per manufacturer's recommendations.
- v) Preparation of commissioning reports and submission of the same for purchaser's approval. Reports shall contain record of all activities, data, checks, tests carried out during installation and commissioning. Four copies of such reports shall be submitted in bound volumes before the completion of the job.
- vi) Supply of consumables like suitable welding electrodes, packing plates, hardware, grouting cement etc. wherever required, approved lubricants, cotton waste etc. as required for installation and commissioning.



vii) Final finish painting of all structural members which need painting.

7.4 Items not included in the Scope of Work

Following items are not included in the scope of erection and commissioning:-

- i) Construction of lift room, machine foundations, (however co ordinating with Civil contractor to make foundation and pit, alignment, levelling etc. of base frames is included in the scope of work), finish flooring of the lift rooms.
- ii) Power cabling up to the lift machine room. However, cabling from machine room to control panel, lift machine, lift and auxiliaries, is included in the scope of work.
- iii) Lighting and ventilation of lift machine room. However, lighting, ventilation inside the lift cars shall be done by the contractor.

7.5 Foundations

- a) The machine shall be placed directly above the hoistway upon the machine room slab / lift car (MRL)..

7.6 Safety

- i) Contractor shall be responsible for safety of the equipment at all times during the period of contract. Contractor shall replace/ repair all components or equipment which, in the purchaser's view, are damaged by the contractor during the contract period.
- ii) Contractor shall ensure safety of crew employed for erection/ commissioning of the lifts by providing workmen with adequate protective gears required, by employing skilled and trained labour for these kind of jobs, by enforcing safety norms to be followed by his workmen.
- iii) Purchaser reserves the right to enforce additional safety measures as required from time to time in the interest of equipment and work force.

7.7 Approval of Erection/ Commissioning procedures

- i) Contractor shall, before the commencement of work, submit detailed procedure for erection, commissioning of lifts, auxiliaries and control panels. Actual erection/ commissioning of equipment shall start only after the approval of the procedures/ methods submitted by the contractor.
- ii) Purchaser's site engineers shall have the access to inspect erection/ commissioning procedures being followed by contractor and contractor shall provide all necessary instruments required for inspection.
- iii) When informed by the purchaser's inspector about non-conformance of erection/ commissioning procedures, standards, tolerances etc. as the case may be, contractor shall rectify the error and damage to the equipment if any, due to contractor's mistakes during erection/ commissioning to the full satisfaction of purchaser.



7.8 Inspection of site

The contractor or his representative shall be deemed to have inspected the site and surroundings before taking up manufacturing and installation of the lifts.

7.9 Superintendence and Labour

i) The contractor shall provide supervision and work force for erection which shall include, but not limited to the following:

a) The employment of a competent erection superintendent, who shall be constantly at the site and shall give his whole time to the superintendence of the erection of the equipment and whose duties shall include the supervision of the unloading, assembly and installation, repair, replacement of any damaged components and any operating adjustments.

b) The employment of a sufficient number of assistants to the erection superintendent for supervision and work force for the number of working shifts per day and days per week to complete the work within the time specified.

c) The contractor shall employ only such persons, who are careful, skilled and experienced in their specific trades.

7.10 Notices

Any notice, order, direction or other communication to be given to the contractor under any of the provision of the contract shall, without limitation be conclusively deemed to have been received by the contractor, if delivered or mailed to the contractor at the address mentioned in the contract or to the contractor's last known place of business or residence or to his superintendent or foreman.

7.11 Sub-contracts

a) The contractor shall not sublet any part of the erection work without the written consent of the purchaser. The contractor shall be responsible to the purchaser for all the work of the subcontractor. Any sub-contractor shall be bound to the contractor by the terms of drawings and specification and shall assume towards the contractor all the obligations and responsibilities that the contractor assumes towards the purchaser.

7.12 Co-ordination Work

a) The contractor shall plan his operations so as to avoid interference with the operation of the purchaser's other contractors or subcontractors at the site. The contractor shall organize his work to suit the timings shown on the construction schedule or revisions thereto, issued by the purchaser. The work shall also be coordinated with other running units.



7.13 Planning

Before commencement of the job, contractor shall provide detailed schedule for the completion of job indicating target for the completion of major events, manpower requirement during various stages of erection and commissioning.

7.14 Layout and Measurements

The purchaser will layout basic building lines and establish datum but such layout shall not relieve the contractor of his responsibility for the proper performance of the works. The contractor shall provide equipment for and he shall carry out and check all precision and detailed layout including setting and alignment of the equipment and machinery. The contractor shall protect all survey reference points established by the purchaser and he shall provide sufficient, safe and proper facilities at all times for layout and measurement of the Work.

7.15 Clean-up

The contractor shall at all times keep the site free from the accumulation of waste materials and debris and upon completion of the job, shall clean and dispose of all surplus materials, rubbish and temporary works of whatsoever nature and kind as directed by the purchaser and shall leave the works and site clean and tidy.

7.16 Services to be provided by the Purchaser

During the execution of the works, the purchaser shall provide for the contractor 'temporary electric power' at 415 volts, 3 phase, 50 Hz. and 230 volt, single phase, 50 Hz, subject to the following conditions:

- i) The electric power will not be used for heating purposes.
- ii) The contractor shall make his own arrangements for the supply, erection and dismantling on completion of the works of his temporary distribution system, distribution panels and other equipment he may require to take the power from the purchaser's supply points.
- iii) The purchaser will supply his power to the contractor at a point which will be within 100 metres of the location of the works.
- iv) The contractor's temporary distribution system including metering shall be subject in every respect to the approval of the purchaser and shall be so arranged as to avoid any interference with the operations of the other contractors on the site.
- v) The contractor will not hold the purchaser responsible for the consequences of any unintentional interruptions to the continuity of the power supply or power system voltage and frequency fluctuations.
- vi) Water and electrical power supply will be provided free of cost to the contractor.



7.17 Transportation of Erection Equipment and Material to the Site:

- a) The contractor shall be responsible for all transportation of erection equipment and materials to and from the site.
- b) Access Roads and Temporary Buildings: The contractor shall have the reasonable use of existing roads at the site. The contractor may use the main roads into the plant for vehicle storage provided that it does not interfere with access by other contractors to the plant. The purchaser will regulate the entry of vehicles into the plant.
- c) Access to Site: Parts, which cannot be moved directly and stored inside the plant building, will have to be placed temporarily in the site storage yards and uplifted at the time of installation. Storage areas will be located within 1000 ft. of the lift rooms.

7.18 Site Welding

- a). All welding shall be carried out in accordance with relevant standards/ codes (listed under clause 3) by qualified and experienced welders.
- b) Faulty welds caused by poor workmanship or lack of supervision on the part of contractor shall be cut out and rewelded at the contractor's expenses. The procedure for the repair of defective welds shall be approved by the purchaser prior to any repair being made.

7.19 Security Rules

The contractor shall follow at site all security rules as may be framed by the purchaser from time to time regarding removal of material from site, issue of identity cards, control of entry of personnel and all similar matters. The contractor and his personnel shall abide by all security measures imposed by the purchaser or his duly authorized representative from time to time.

7.20 Commissioning Checks

- a. On completion of installation work, the Contractor shall request the Engineer-in-charge for inspection and test with minimum of fourteen (14) days advance notice.
- b. The Engineer-in-charge shall arrange for joint inspection of the installation for completeness and correctness of the work. Any defect pointed out during such inspection shall be promptly rectified by the Contractor.
- c. The installation shall be then tested and commissioned in presence of the Engineer- incharge.
- d. The contractor shall provide all, men, material and equipment required to carry out the tests.
- e. All rectifications/ repair or adjustment work found necessary during inspection, testing and commissioning shall be carried out by the Contractor without any extra cost. The handing over of Passenger/ Passenger cum Service Lift system installation shall be affected only after the receipt of written instruction from the purchaser/ his authorized representative.



- f. The testing shall be done in accordance with the applicable Indian Standards and codes of practices.
- g. All the required commissioning checks mentioned below, but not limited to following, should be carried out
 - i. Visual workmanship check.
 - ii. Lift earthing continuity.
 - iii. Insulation resistance test.
 - iv. Functional and interlock test by simulation.
 - v. Open circuit test for 24 hours.

7.21 Training

The scope of tender shall include training of purchaser's engineers and technicians for operation and maintenance of all the equipment included in the tender.

7.22 Statutory Approvals

The Contractor shall submit the required applications, drawings, etc., to the corporation/lift inspector/ electrical inspector/ factory inspector and/ or any other statutory authority and obtain their approval, licenses and/ or sanctions if required. Completion certificate shall be submitted by the Contractor to statutory authorities to enable the elevators to be commissioned for utilization. The Contractor shall be responsible for Liaisoning. All the forms/ letters to be submitted to lift inspector will be issued by the department & all the admissible fees to be paid to the various authorities in this respect will be paid by the department. The following permissions shall be obtained by the contractor from lift inspector:

- i) Obtaining all necessary permits/ approvals to commence work at site from concerned authorities.
- ii) Obtaining all statutory and mandatory permission/ clearances/ approvals from concerned authorities for erection & commissioning of elevators.
- iii) Obtaining approval & license from Lift Inspector for working of the elevators.

The work shall not be deemed to have been completed until the above approvals, lift license for working of lifts etc. have been issued by the lift inspector if required.

8. MAINTENANCE, DELIVERY & GUARANTEE

a) Maintenance: 12 months free maintenance shall be provided. The period of maintenance should start from the date of completion of installation and acceptance testing and inspection. Maintenance shall consist of regular examination and any necessary adjustment and lubrication of the equipment by the contractor. The required supplies and parts shall be furnished except such parts as needed due to negligence, misuse or accidents not caused by the contractor. Special examination shall also be made. All work shall be made in working hours on working days, except for emergency.



b) Dispatch & Delivery:

i) Materials shall be dispatched only after obtaining a shipping release from the purchaser or his authorized representative. No material shall be dispatched without prior written consent of the purchaser or his representative.

ii) The contractor shall be fully responsible for protective measures to ensure the safe delivery of the materials. The contractor shall insure the item at his own cost for its damage/ loss during transportation.

c) Guarantee: The vendor shall warrant the equipment and installation shall satisfy the requirements of the intended use and is free from latent defects. Vendor shall assume responsibility for obtaining manufacturer's performance guarantee for all equipment purchased by him. Vendor shall then assume this warranty is his guarantee to the purchaser.

All the equipment supplied under this contract shall be guaranteed for satisfactory performance and against manufacturing and material defects for a period of 12 months after being put in operation, after obtaining clearance for lift operation. Material damaged in transit or during guarantee period shall be replaced immediately and such replacement shall also be governed by similar guarantee.



SECTION-VI

ANNEXURES

ANNEXURE-I

FORM OF PERFORMANCE GUARANTEE (BY BANK GUARANTEE)

1. In consideration of the TIFR-Hyderabad, Hyderabad having agreed under the terms and conditions of Letter of Intent / Agreement No..... dated..... made between and..... (Here in after..... called " the said Contractor{s}") for the work (Here in after called "the said Letter of Intent / Agreement") having agreed to production of a irrevocable bank Guarantee for Rs..... (Rupees only), as a security / guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement, we(Indicate the name of the Bank) (hereinafter referred to as "the Bank") Here by undertake to pay to TIFR an amount not exceeding Rs..... (Rs only) on demand by TIFR.

2. We..... (indicate the name of Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from TIFR stating that the amount claimed is required to meet the recoveries due or likely to be due from the said Contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs..... (Rupees..... only).

3. We, the said bank, further undertake to pay to TIFR any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any Court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.

4. We (indicate the name of Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of TIFR under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till Engineer-in-charge on behalf of the TIFR certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.

5. We (indicate the name of Bank) further agree with TIFR that TIFR shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by TIFR against the said Contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of TIFR or any indulgence by TIFR to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

7. We..... (indicate the name of Bank) lastly undertake not to revoke this guarantee except with the previous consent of TIFR in writing.

8. This guarantee shall be valid up to, unless extended on demand. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs..... (Rupees only) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

Signed and sealed

Dated the day of..... for..... (indicate the name of Bank)

*(Note: The Letter of Intent shall form part of the Agreement)



ANNEXURE II

UNDERTAKING BY THE TENDERER

I / We have read and examined the Tender document including terms & conditions, specifications, Schedule of quantities, drawings and designs, general rules & directions, General Conditions of Contract, Special Conditions of Contract and all relevant other documents, publications and rules referred to in the Conditions of Contract and all other contents in the tender documents for the work.

I / We, hereby tender for execution of the work specified for the TIFR-Hyderabad, Hyderabad within the time specified and in accordance in all respects with the specifications, designs, drawings and instructions in writing.

We agree to keep the tender open for seventy five (75) days from the last date of its submission and not to make any modifications in its terms and conditions. A sum of Rs.....has been deposited in cash / receipt treasury challan / deposit at call receipt of scheduled bank / fixed deposit receipt of scheduled bank / demand draft of a scheduled bank / Bank Guarantee issued by a Scheduled Bank as earnest money. If I/we, fail to furnish the prescribed performance guarantee within the prescribed period, I/we agree that the said TIFR-Hyderabad, Hyderabad or its authorized officer shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I/we fail to commence work as specified, I/we agree that the TIFR-Hyderabad, Hyderabad shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise, the said earnest money shall be retained by TIFR- Hyderabad, Hyderabad towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein.

Further, I / We agree that in case of forfeiture of earnest money or both Earnest Money & Performance Guarantee as aforesaid, I / We shall be debarred for participation in the re-tendering process of the work.

I / We hereby declare that I / We shall treat the tender documents, drawings, and other records connected with the work as secret / confidential documents and shall not communicate information derived there-from to any person other than a person to whom I / We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

Seal & Signature of Contractor Postal Address

Dated

Witness

Address Occupation



ANNEXURE-III

CERTIFICATE OF LOCAL CONTENT

***We [name of manufacturer] hereby confirm in respect of the quoted item(s) that local Content is equal to or more than 50% and come under 'Class-I Local Supplier' Category. As being 'Class-I Local Supplier', we are eligible for Purchase Preference under 'Make in India' Policy vide GoI Order No.P-45021/2/2017-PP (B.E.-II) dated 15.06.2017 (subsequently revised vide orders dated 28.05.2018, 29.05.2019 and 04.06.2020)**

OR

***We [name of manufacturer] hereby confirm in respect of quoted items(s) that Local Content is more than 20% but less than 50% and come under 'Class-II Local Supplier' Category.**

The details of the location (s) at which the local value addition made is/are under:

- 1.**
- 2.**

Date:

Seal & Signature of the Bidder

NOTE:

Self-certification that the item offered meets the minimum local content (as above) giving details of the location(s) at which the local value addition is made in case the bidder wishes to avail the benefits under the make in India policy, if applicable.

In cases of procurement for a value in excess of Rs.10 crores, the local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content to avail the benefits under the make in India policy, if applicable.



TATA INSTITUTE OF FUNDAMENTAL RESEARCH
(Autonomous Institution of the Department of Atomic Energy, Government of India)
Survey No.36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy District,
Hyderabad-500046, Telangana

ANNEXURE-IV

SI.No.	PARTICULAR	UNIT	REQUIRED	Compliance Statement
1.0	General			
1.1	Whether bidder is manufacturer or authorized dealer of lifts		Vendor to furnish certificate that they are original manufacturer or authorization certificate from OEM.	
1.2	Country of origin		Vendor to furnish	
1.3	Branch office at Hyderabad		Vendor to furnish	
1.4	Standards followed		As per specification	
2.0	Input power supply			
2.1	Voltage	V	415 ± 10%, 3 phase, 4 wire	
2.2	Frequency	Hz	50 ± 5%	
2.3	Combined variation (voltage and frequency)		± 10%	
3.0	Technical Requirement			
3.1	Type of Lift		MRL	
3.2	Type of Service		Passenger Type	
3.3	Type of Machine		Geared or Gearless machine	
3.4	Rated Load on Lift	Persons	6	
3.5	Rated Speed of Lift	Mtr/ Sec	Upto 0.7	
3.6	Total Travel	Mtr	4.5 (approximately)	



3.7	No. of floors to be served (Including Ground Floor)		2 (GF+FF)	
3.8	Method of Control		AC VVVF control with Automatic Level Adjustment	
3.9	Car Enclosure Construction Design and Finish		As per specification.	
3.10	Design, Construction & Installation Codes including Car Size, Door Size, Shaft Size, Size of Platform, Car Entrance etc.		As per Standards listed in Technical Specification	
3.11	Car & landing Doors		Bi-Parting horizontal center opening door	

3.12	Flooring		Vinyl flooring	
3.13	Operation		Automatic Simplex with & without attendant with Provision for locking control in "Auto" or "Attendant" Position. Selector switch shall be provided for locking the closure of automatic door.	
3.14	Method of Operation of Car & Landing Doors		Power operated with Automatic Door opening and Closing Devices	
3.15			a. Car position indicator in car b. Car position indicator at all floors c. Call registered Tell-tale lights in COP (under attendant mode)	



	Other Requirements		d. Battery operated alarm bell e. Emergency light with suitable battery and battery charger f. Remote alarm g. One blower h. Two Recessed Mounted LED lamp fittings for min 100 Lux illumination level. i. Internal Telephone wiring with Telephone Hand Set j. Automatic Rescue Device k. Interface for CCTV	
3.16	Order of guaranteed accuracy for the 'self leveling'		As per specification.	
4.0	Additional Requirements			
4.1	Isolating Cushion between Car & Car Frame		PU/ Rubber pad/ Spring	
4.2	Three Pin Plug Socket on Car Top		5/ 15A, 3 Pin Plug Socket with MCB on Top of Lift car	
4.3	Car Frame material and type of construction		MS Construction	
4.4	Landing Door		Fire rated Minimum 1 Hour	
4.5	Door Hanger Tracks along with accessories		Required	
4.6	Safety Shoes complete with Accessories		Required	



4.7	Safety Device for Door Operation		Required	
4.8	False Ceiling		Required	
4.9	Emergency Stop Switch		Required	
5.0	Control & Operation			
5.1	Type of Control		Simplex	
5.2	Type of Drive		Variable Voltage Variable Frequency Drive	
6.0	Car Operating Panel (COP)			
6.1	Type of Construction		Partial Height COP, Removable type from Car with SS Face Plate	
6.2	Push Buttons		Luminous Push Buttons	
7.0	Car Position Indicator			
7.1	Type of Construction		With stainless steel faceplate	
7.2	Type of Display		LED Display	
8.0	Push Button Station and Call registered tell- tale light at each landing			
8.1	Type of Construction		With stainless steel faceplate	
8.2	Push Buttons		Luminous Push Buttons	
9.0	Apron/ Facia Plate provided		As per IS 14665	
10.0	Buffers			



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10.1	Type		Spring buffer as per IS 14665	
10.2	Number of buffers		As per IS 14665	
11.0	Load Plate			
12.0	Counter weight frame		Fabricated Steel Construction	
13.0	Counter weight Fillers		To be furnished by vendor	
14.0	No. of Limit Switch/ Sensor			
14.1	Location		Bottom & Top Terminal	
14.2	Type		As per technical specifications.	
14.3	Operation		Cam operated	
15.0	Controller & Type		Selective Controller with VVVF drive and Microprocessor Based Software Controlled Logic system	
16.0	Reverse Phase Relay and other protective device		Required	
17.0	Car Safety & Governor			
17.1	Stopping Distance		As per IS 14665	

17.2	Type & Mode of Operation of Over Speed Governor Device		Centrifugal Action	
17.3	Tripping Speed & Design Code Conforming to		IS 14665	



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18.0	Motor Details			
18.1	Make		To be furnished by vendor	
18.2	Type		3 Phase, AC Squirrel Cage Induction Motor/ Permanent Magnet Synchronous Motor (PMSM)	
18.3	Type of Duty		Lift Duty	
18.4	Motor Duty		S4	
18.5	Rated kW		To be furnished by vendor	
18.6	Duty Cycle of Motor		As per specification.	
18.7	Applicable Standard		IS/ IEC 60034-1	
18.8	No of Starts Per Hour		Minimum of 150 Starts per Hour	
18.9	Direction of Rotation		Both Clockwise & Anticlockwise	
18.10	Class of Insulation		Class F with Temp Rise limited to Class B	
18.11	Method of Starting		AC Variable Voltage Variable Frequency Drive	
19.0	Door Motor			
19.1	Equipment Driven by Motor		Door	
19.2	Direction of Rotation		Both Clockwise & Anticlockwise	
19.3	Type of Enclosures		IP 44 or higher	



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20.0	Metallic Wire Mesh between Car & Counter Weight		Required	
21.0	Fireman Switch		Required	
22.0	Sound Reducing Material		Required - Isolation Rubber/ Other arrangement in Machine	
23.0	Automatic Rescue Device		Required	
24.0	Trailing Cables		FRLS/ Zero Halogen type	



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SECTION-VII

FINANCIAL BID

INVITATION OF BIDS FOR

Design, manufacture, supply, erection, testing and commissioning of Passenger lift of capacity 408 kgs (6 persons) for (G+1) Building at TIFR, Plot-B, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.

PART II

FINANCIAL BID



SCHEDULE OF QUANTITIES

S..No.	Item Description	Qty	Unit	Rate	Amount
1	Design, manufacture, supply, erection, testing and commissioning of Passenger lifts of capacity 408 kg(6 persons) for (G+1) Building with the following specifications and technical specifications mentioned: Location of Lifts : Outside the building i) Load Speed : 408 Kgs upto 0.7 MPS ii) Type: Passenger Auto Lift , Gearless Machine room less iii) Floors : 2 floors (GF+FF) iv) Travel : 4.50 Mtrs (approx.) v) Stops & opening : 2 stops & 2 openings vi) Car Size: A per manufacturer design vii) Controller: A.C. variable voltage variable frequency viii) Automatic rescue device complete with dry maintenance free batteries as required. ix) Operation: Microprocessor based single automatic push button x) Power : 415 V, 3 phase, 50 Hz, 4 wires system xi) Type of doors a) Car : Power operated center opening horizontal sliding stainless steel scratch proof. Stainless steel Round Handrail b) Landing doors: Stainless Steel scratch proof. c) Flooring: Vinyl Flooring. Approved Make: 1) Thyssen Krupp 2) Bharat Elevator Co. Ltd. 3) Engineers Vertical Services 4) Electromec 5) United Elevator 6) Escon 7) Johnson 8) Omega 9) LT Elevator	1	No.		
				Sub total (A)	
				GST@18% (B = A X 0.18)	
				Total Amount (C = A+B)	
	Amount in words Rs...../-				



Note:	
1.	Rates are all-inclusive of profit, Transport, Loading & Unloading, Taxes, Etc.
2.	TIFR, Hyderabad has the right to delete any of the above items from the scope of work or may increase/reduce quantities as per its requirement during the execution of work. No claim or compensation for such deletion/increase/decrease will be accepted/paid to the contractor. Payment will be made as per actual quantities executed at tender rates
3.	If vendor feels any line item is missing for successful completion of the entire scope, vendor should highlight the same before submitting the offer. It will be responsibility of vendor to complete entire scope successfully. No NT items will be entertained subsequently.
4.	For any above item quantity exceeding more than 10% of projected qty, the contractor shall take prior approval from TIFR Engineer in writing.
5.	For any deviating items, the contractor shall take prior approval from TIFR Engineer In charge of proper rate analysis.