

INDIAN NATIONAL SCIENCE ACADEMY
(BAHADUR SHAH ZAFAR MARG, NEW DELH)

TENDER DOCUMENT
FOR
LIFT WORKS

MEP CONSULTANTS :
ABID HUSAIN CONSULTANTS
LG1 & LG2, JEEVAN PRAKASH APTS.
16 - A, OKHLA
NEW DELHI - 110025
PH. : 26322935, 26835976
FAX : 26319642
E-MAIL : info@ahcon.in

SPECIFICATION NO. 1757

APRIL - 2018

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**PROPOSED CONSTRUCTION OF INDIAN NATIONAL SCIENCE
ACADEMY AT NEW DELHI**

LIFT WORKS

INDEX

S. No.	Description	Page No.
1.	Commercial & Additional Conditions	TS - 1 to TS - 08
2.	Technical Specifications	TS - 1 to TS - 08
3.	Maintenance of Lifts	TS - 09 to TS -13
4.	List of Approved Makes	TS - 14
5.	Technical Parameters	TP - 01
6.	Bill of Quantity	Boq - 1 to 1

Commercial and Additional Conditions

1.0 General

1.1 SPECIFICATION :

The work shall be executed as per CPWD's general specification for Electrical Works Part - I (Internal) - 2005, Part - II (External) - 1994, Part-III (Lifts & Escalators)-2003, IE Rules, Bombay Lift Act, Indian Standards amended upto date and as per direction of Engineer-in-Charge. The additional specifications are to be read with above and in case of any variations, specifications given along with the tender shall apply.

1.2 LOCATION :

The work is to be executed at **INDIAN NATIONAL SCIENCE ACADEMY AT NEW DELHI.** The contractor is advised to visit the site before submission of their tender and ensure that equipment being offered by them shall be accommodated in the spaces available.

1.2.1 The Firm should in his own interest visit the site and familiarize himself with the site conditions before tendering.

1.2.2 The Department shall not issue any T & P and nothing extra shall be paid on account of this.

1.2.3 The work to be awarded by this Work Order shall be treated as indivisible works contract.

2 Terms of payment :

The payment for the various items in the tender shall be graduated in the following manner based on the assessment of the Engineer-in-Charge.

2.1 **75 %** of tendered rates based on pro-rata basis per lift as a unit after delivery of materials at the site in good condition.

2.2 **15 %** after completion of installation on pro-rata basis per lift as a unit in all respects.

2.3 Balance **10 %** shall be paid after testing, commissioning, trial run, necessary approval from lift inspector and handing over to the department for beneficial use.

2.4 No foreign exchange shall be made available by the Department for importing (purchase) of equipments, plants, machinery, materials of any kind or any other items required to be carried out during execution of the work. No delay and no claim of any kind shall be entertained from the Contractor, on account of variation in the foreign exchange rate.

3.0 Rates:

3.1 The rates quoted by the firm, shall be firm and inclusive of GST & any other cess, duties and levies and all charges for packing forwarding, insurance, freight and delivery, installation, testing, commissioning etc at site i/c temporary constructional storage, risks, over head charges, general liabilities/obligations and clearance from local authorities. Whereas the fee for the inspection shall be reimbursed by the department, however, initially the payment has to be made by the Contractor.

4.0 Completeness of tender:

All sundry equipment, fittings, unit assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections, and all other items which are useful and necessary for efficient assembly and installation of equipment and components of the work shall be deemed to have been included in the tender irrespective of the fact whether such items are specifically mentioned in the tender documents or not.

5.0 Inspection and Testing

5.1 Refer Clause Nos 1.10 of Technical Specifications for the tests to be carried out at Manufacturer's Works and those after completion of work.

6.0 Storage and custody of materials:

The Lift machine room may be used for storage of sundry materials and erection equipments if available or else the agency has to make his own arrangement. Watch and ward of the stores and their safe custody shall be the responsibility of the contractor till the final taking over of the installation by the department.

7.0 Care of the Building :

Care shall be taken by the contractor while handling and installing the various equipments and components of the work to avoid damage to the building. He shall be responsible for repairing all damages and restoring the same to their original finish at his cost. He shall also remove at his cost all unwanted and waste materials arising out of the installation from the site of work.

8.0 Completion period :

8.1 The completion period is **five months** which shall be for the entire work of planning, designing, approval of General arrangement drawings, supplying, installation, testing, commissioning and handing over of the entire installation to the satisfaction of the Engineer-in-charge.

9.0 Performance Guarantee:

9.1 The firm shall guarantee among other things, the following vis-à-vis specifications.

(a) Quality, strength and performance of the materials used.

(b) Safe mechanical and electrical stress on all parts under all specified conditions of operation.

(c) Satisfactory operation during the maintenance period.

10.0 Defect Liability Period:

10.1 All the equipments shall be guaranteed for a period of **12 months** from the date of taking over the installation by the department against unsatisfactory performance and/or break down due to defective design, workmanship of material. The equipments or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer-in-Charge. In case it is felt by the department that undue delay is being caused by the contractor in doing this, the same will be got done by the department at the risk and cost of the contractor. The decision of the Engineer-in-Charge in this regard shall be final.

11.0 Power Supply:

Power Supply for the purpose of Installation of Lifts shall be arranged by the contractor from the Main Building contractor at mutually agreed location and cost shall be reimbursed by the elevator contractor to the Main Contractor. However, Electric service connection of 415 V, 3 phase, 4 wire, 50 Hz, AC supply shall be provided by the Department free of charge only for testing and commissioning of the elevators.

12.0 Water Supply:

Water supply shall be arranged by the department free of Cost for installation of Elevators.

13.0 The successful Firm should furnish well in advance three copies of detailed instructions and manuals of manufacturers for all items of equipments regarding installation, adjustments, operation and maintenance i/c preventive maintenance & trouble shooting together with all the relevant data sheets, spare parts catalogue and workshop procedure for repairs, assembly and adjustment etc all in triplicate.

14.0 Extent of work :

14.1 The work shall comprise of entire labour including supervision and all materials necessary to make a complete installation and such tests and adjustments and commissioning as may be required by the department. The term complete installation shall not only mean major items of the plant and equipments covered by Technical Specifications but all incidental sundry components necessary for complete execution and satisfactory performance of installation with all layout charts whether or not those have been mentioned in details in the tender documents in connection with this contract.

14.2 Minor building works necessary for installation of equipment, foundation, making of opening in walls or in floors and restoring to their original condition, finish and necessary grouting etc as required to be undertaken.

15.0 Compliance with Regulations and Indian standards

15.1 All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian Standards related to this work. In particular, the equipment and installation shall comply with the following:

- (i) Factories Act
- (ii) Indian Electricity Rules
- (iii) I.S. & BS Standards as applicable
- (iv) Workmen's compensation Act
- (v) Statutory norms prescribed by local bodies

15.2 Nothing in this work order shall be construed to relieve the successful firm of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with currently applicable statutory regulations and safety codes.

15.3 Successful firm shall arrange for compliance with statutory provisions of safety regulations and departmental requirements of safety codes in respect of labour employed on the work by the firm. Failure to provide such safety requirement would make the firm liable for penalty of Rs.200/- for each default. In addition, the department will be at liberty to make arrangement for the safety requirements at the cost of firm and recover the cost thereof from him.

16 Indemnity :

The successful firm shall at all times indemnify the department, consequent on this works contract. The successful firm shall be liable, in accordance with the Indian Law and Regulations for any accident occurring due to any cause and the department shall not be responsible for any accident or damage incurred or claims arising there from during the period of erection, construction and putting into operation the equipments and ancillary equipment under the supervision of the successful firm in so far as the latter is responsible. The successful firm shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the successful firm due to the above.

17 Erection Tools :

No tools and tackles either for unloading for shifting the equipments for erection purposes would be made available by the department. The successful firm shall make his own arrangement for all these facilities.

18 Cooperation with other agencies :

The successful firm shall cooperate with Client department.

Water proofing of pits shall not be damaged under any circumstances.

19 Mobilization Advance :

No mobilization advance shall be paid for this work.

20 Verification of correctness of Equipment at Destination :

The contractor shall have to produce all the relevant records to certify that the genuine equipment from the manufacturers has been supplied and erected.

21 Painting :

This shall include cost of painting of entire exposed iron work complete in the installation. All equipments works shall be painted at the works before dispatch to the site.

22 Order of Preference:

Should there be any difference or discrepancy between the description of items as given in the Schedule of Quantities, technical specifications for individual items of work (including additional and commercial conditions) and IS Codes etc., the following order of preference shall be followed:

- a. Schedule of quantities
- b. Additional and Commercial Conditions
- c. Technical specifications specified in the tender
- d. General Conditions of Contract for CPWD Works
- e. Drawings

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TECHNICAL SPECIFICATIONS

LIFT WORKS

1.0 LIFT WORKS TECHNICAL SPECIFICATIONS

1.1 SCOPE OF WORK

These specifications cover the details of Electrical Elevator equipment to be supplied, inspection as may be necessary before dispatch, delivery at site, installation, testing, commissioning, handing over in working condition and **defects liability for a period of 1 year after completion of all works.**

These specifications shall be read in conjunction with the General Conditions of Contract with all correction slips as well as schedules and drawings.

1.2 GENERAL

The equipment and installation covered by these specifications and drawings shall conform to codes of practice and highest standards of workmanship and materials. This work shall be done in accordance with the provisions of the Lifts Act, and subsequent provisions, as also any state or local Act in force and latest Indian Standard 14665, 15330 and CPWD General Specification for Electrical works (Part-III Lift & Escalators.

The Electrical wiring shall strictly comply with IS:732 and the entire installation shall be in accordance with the Indian Electricity Act 2003 and Indian Electricity Rules 1956 as amended to-date. The electrical works shall also conform to CPWD General Specifications for Electrical works Part - I (Internal) 2013 and Part – II (External) 1994 as amended up to date wherever relevant.

The Contractor shall follow all statutory requirements as well as best trade practices in the manufacture & installation of elevators. The Contractor shall arrange to obtain the approval of the Inspectorate of Lifts for commissioning of the Elevators and handover for operation after satisfactory tests.

1.3 DRAWINGS

Before commencing work, the Contractor shall prepare and submit all drawings necessary to show the general arrangement and details of elevator installation. These drawings must be approved by the Engineer-In-Charge before installation and shall become part of the contract.

The Contractor shall submit 3 copies of all working drawings showing hoistway and machine room layouts clearly indicating and specifying all connected structural, electrical and architectural works including imposed structural static / dynamic loads and electrical ratings. Within 10 days of receipt of letter of Commencement of Works the Contractor shall obtain from the Engineer-In-Charge all the information he needs to prepare his drawings and shall have any interaction with the Engineer-In-Charge to finalise all parameters and data for design. The Contractor shall be held responsible for any discrepancies, errors and omissions in the drawings or particulars submitted by him even if these have been approved by the Engineer-In-Charge. On approval of these drawings by the Engineer-In-Charge (within 2 weeks of submission of full documentation), the Contractor shall submit five copies of approved working drawings incorporating corrections / comments, if any made by the Engineer-In-Charge, and shall immediately commence work.

On completion of work the Contractor shall supply four sets of CD's and four copies of the detailed wiring diagram, as fitted drawings and equipment maintenance manuals. Further, a copy of such detailed diagram shall be framed and installed in the respective machine rooms by the Contractor.

The Contractor shall carry out all the work strictly in accordance with drawings, details and instructions of the Engineer-in-Charge.

1.4 CONTRACTOR'S RESPONSIBILITIES: Lift Works

- i. All cabling and wiring from the main switches in machine room to Elevator equipment and from battery supply to car lights, fans, alarm and intercom system i/c supplying of backup battery and switchgear.

- ii. All machine bases, pedestals, and structural steel supports and brackets for the installation, to suit the sizes of the hoistways.
- iii. Sill tracks including supports if required.
- iv. Screen guards and other protection for installation.
- v. All chasing and cutting of pockets and making good. (All cutting and chasing shall be as approved by Engineer-in-Charge).
- vi. Ensuring safety against accidents including barricading all openings and caution signs.
- vii. Scaffolding for installation.
- viii. All other items necessary for satisfactory execution & completion of works, whether specified or not.
- ix. Provision of suitable storage space to be arranged by Contractor.

All works relating to installation of lift at site till final handing over to client shall be the responsibility of lift contractor.

This includes all kinds of Civil works, electrical works, liasioning for lift license etc. Nothing extra shall be payable to the contractor.

1.5 SOUND REDUCTION

The Elevator Contractor shall provide necessary sound reduction materials, such as rubber pads of suitable density to effectively isolate the machine from the machine beams and/or flooring.

Noise level inside cars shall be maintained at minimum levels and in any case not more than specified under PERFORMANCE PARAMETERS.

1.6 TRACTION MACHINE AND DRIVE

The traction machine shall be with Machine room less type and Gearless type. The motor shall be controlled by a variable voltage variable frequency (V.V.V.F.) micro-processor control system which shall control and monitor every aspect of elevator operation at all stages of the car motion cycle on real time basis.

The A.C. V.V.V.F. drive system shall control A.C. voltage and frequency concurrently with the hoist motor to regulate the elevator's actual performance to match closely the ideal speed pattern to obtain maximum efficiency of operation and provide a very smooth ride.

Frequency shall range fully between zero and rated value.

The Controller shall be provided with a self diagnostic programme to keep downtime to a minimum possible.

The controller shall intelligently adjust door times in response to car calls, hall calls and "Door Open" button operation.

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 elevator to be operated 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.

1.7 SAFETY

In the addition to other specifications the Elevator shall be provided with safety devices as follows:-

- i. Safety gear on car so that in the event of rope breaking or loosening the car will be brought to rest immediately by means of grips on the guides.
- ii. The over speeding car shall be automatically brought to a gradual stop on guide rails and power supply to the hoist motor shall be switched off.
- iii. Car gate lock so that in the event of car gate gets opened when passengers are in the car, the elevator shall be brought to rest.

1.8 CAR

i. Cabin Size

The internal **clear** dimensions of the cabin shall not be less than those specified in IS 14665-Part I and as per CPWD specifications.

ii. Car Display Panel

The Car Display panel shall be of LED. This shall indicate the Car capacity, floor indication, direction of travel, current time and date at the minimum.

iii. Frame and Safety Device

The car frame shall consist of steel channel top and bottom securely riveted or bolted and substantially reinforced and braced so as to relieve the car enclosure of all strains when the safety device comes into action due to overspeed or when the capacity loaded car is run on the buffer springs at normal speed.

The safety device mounted on the bottom members of the frame operated by a centrifugal speed governor shall be arranged to bring the car to a gradual stop on the guide rails in the event of excessive descending speed; and provision shall be made to shut off the power supply to the motor.

iv. Doors

Provision shall be made for vertical and horizontal fine adjustment of doors.

v. Door Operators

The door operators shall be VVVF inverter controlled heavy duty A. C. motor, allowing variable opening and closing speeds, and with full synchronization of car and landing doors.

vi. Emergency Lighting

Emergency lighting with battery backup shall be provided.

vii. Evacuation

An emergency key shall be provided on each landing to unlock the doors for evacuation and maintenance.

The doors shall be capable of being opened manually during power failure from inside the car when the car is within a landing zone.

viii. Intercom

The intercom system in the lifts shall be capable of two way communication between the lifts and the reception / control room.

Necessary arrangements shall be provided for communication between the lift cars, respective machine room, Fire Control Room, Reception and the room of the Facility Manager.

The main control for the EPBX / Intercom shall be placed at Fire control room.

The intercom system shall be provided with a power backup of at least 30 minutes.

ix. Manual Cranking Facility

Manual cranking facility shall be provided in the machine room to facilitate evacuation of passengers in case of power failure. The manual mode shall be in addition to automatic car failure operation specified elsewhere.

x. Emergency Stop Switch

A stop switch in the machine room / top of car shall be provided for use by maintenance crew to cancel all car and landing calls for a particular elevator.

xi. Maintenance Switch

On operation of the maintenance switch located on top of the car by the maintenance crew, the car shall travel at slow speed not exceeding 0.85 m / sec by continuous operation of a button

xii. Overload Indicator

An overload indicator with buzzer shall be provided in the cabin to indicate to the passengers that the car will not start as it is overloaded.

xiii. Operating Panels, Buttons & Switches

Car operating panels, buttons and switches shall be located on the front wall panel next to the car door and as specified.

All buttons and switches shall be clearly legible with fade-proof text and figures, and shall be easily accessible, in all Lifts.

xiv. Other Features

All features specified in the Schedule shall be provided.

1.9 PAINTING

All exposed metal work furnished in these specification, except as otherwise specified shall be given one shop coat of anti-corrosive primer after approved surface treatment of metal surfaces and two coats of approved enamel paint of approved shade.

1.10 TESTS AT SITE

The following tests, in addition to those mentioned in the CPWD specifications, shall be carried out to the satisfaction of the Engineer-In-Charge.

- i. The car shall be loaded until the weight on the rope is twice the combined weight of the car and the specified load. The load must be carried on for about 30 minutes, without any sign of weakness, temporary set or permanent elongation of the suspension rope strands.
- ii. The following items shall be tested :
 - a. No load current and voltage readings both on 'Up' and 'Down' Circuits.
 - b. Full load current and voltage readings both on 'Up' and 'Down' Circuits.
 - c. One and quarter load current and voltage readings both on 'Up and 'Down' Circuits.
 - d. Stalling current and voltage and time taken to operate overload.
 - e. Overload protection.
 - f. Car and counterweight buffers with contract load and contract speed.
 - g. Manual operation of elevator at mid-way travel.
 - h. Emergency operation.
- iii. Tests on completion shall also be performed to the satisfaction of Inspector of Lifts.

1.11 STATUTORY APPROVALS

All statutory approvals from commencement to commissioning of elevators shall be obtained by the Contractor from the Inspector of Lifts, Chief Fire Officer and other authorities. However the Department shall provide all necessary assistance for providing documents, drawings and certificates pertaining to other contractors, as may be required. The Department shall reimburse the statutory fees paid in connection with the approval of installation of elevators.

1.12 ADDITIONAL FEATURES REQUIRED

i. Fireman's Switch

A fireman's toggle switch shall be provided in a break glass for the specified elevator at ground floor to enable firemen to bring the elevator non-stop to ground floor from any location and to cancel hall calls until the car is operated on attendant control.

ii. Emergency Power Operation

The power supplies to lifts are provided from essential panel (with standby Genset).

In addition to the standby generator power, a backup UPS system shall be provided to supply power to light fixtures, fan, alarm and intercom.

iii. Anti - Nuisance

If number of calls registered is in excess of corresponding car load, all car calls shall be cancelled.

iv. Home Landing Facility

A car shall return to a pre-determined landing after the last call is answered.

v. Load Non stop

When the car load exceeds a predetermined limit the elevator shall not respond to hall calls.

vi. Separate door times

When a car responds only to hall calls or only to car calls, the door shall open for a shorter time than when responding to both car and hall calls.

vii. Door Failure Operation

When an obstruction prevents a door from opening, the controller shall attempt its removal by repeated opening and closing, failing which the car shall travel to the next floor.

viii. Nudging Door Operation

When the doors remain open for more than a predetermined period a buzzer shall sound and the door shall close automatically. The door sensing device shall be rendered inoperative but the Door Open button and the safety shoe shall remain operative

ix. Self - Diagnostic Facility

The Controller shall perform self - diagnostic tests and report the health of the system. The system shall take care of minor faults like door operation and motor overheating.

x. Car Failure Operation

In case of car mal-function, the system shall make a self - diagnostic check and then allow the car to travel to the nearest floor at slow speed, if safe.

xi. Selective floor Service

Programming for selective floors services shall be software driven.

xii. Auto Fan Off

In case no calls are registered for pre-set time, the cabin fan shall be automatically switched off.

xiii. Automatic Rescue Device

The ARD shall have the following specifications.

- a) ARD should move the elevator to the nearest landing in case of power failure during normal operation of elevator.
- b) 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 will detect the zone and stop. After the elevator has stopped, it automatically opens the doors and parks 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.
- c) 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.

- d) All the lift safeties shall remain active during the ARD mode of operation
- e) 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.

1.13 PERFORMANCE PARAMETERS

The following parameters shall be achieved in the installation:

Levelling Accuracy : ± 3 mm

All other parameters as per CPWD Specifications and IS shall be achieved.

11.14 SUBMITTALS WITH TENDERS

The following items are required to be submitted in duplicate along with the tender.

- i. Catalogues with offered items highlighted’.
- ii. **Filled Technical Data Sheet (Annexure I)**

11.15 Provision of CCTV

Lift manufacture shall make suitable provision for installation of 1 No. ceiling mounted dome camera.

11.16 PROVISION FOR DIFFERENTLY ABLED PERSONS (DISABLED AND HANDICAPPED)

- 1. The Elevator shall be provided with following features:
 - a) Elevator control buttons at locations and height specified in IS 15330 - 2003
 - b) Hall call buttons at locations and height specified in IS 15330 - 2003
 - c) Hand rails shall be provided on the side walls of the Elevator at height & locations specified in IS:15330 - 2003. An international symbol of access of the disabled shall be permanently and conspicuously displayed at Elevator landing next to the Elevator entrance. Braille notations indicating the floor levels shall be incorporated next to each button at the handicap COP and handicap hall call buttons.
- d) A digital voice system for announcing the car position, opening/closing of doors, direction of travel and messages shall be provided as per IS:15330 - 2003

A laminated safety glass type mirror of at least half of the size shall be installed on rear panel at appropriate position as per IS: 15330 - 2003

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Technical Data Sheet

(Annexure – I)

S.	Data to be filled in by tenderers	Passenger Lift 6 PAX Car Lift	
A	Equipment details		
1	Machine type		
2	Reduction gear unit ratio		
3	Drive motor data		
i)	kW		
ii)	Starting current (Amp)		
iii)	F.L. Rated current (Amp)		
iv)	Max. no. of starts per hour.		
v)	Insulation class		
4	Hoist/Governor ropes (no. and size)		
5	Max. temperature tolerance during peak summer months		
6	Heat release data for machine room equipment		
B	Special features		
	Tenders to confirm Included /Not included in respect of the following	<u>Included/</u> <u>Not Included</u>	
1	Auto fan off switch		
2	Fan inside the Car should be at same speed at opening and closing of lift's door.		
3	Provision of CCTV in lift car		
4	BMS interface		
(a)	Potential free contacts for linking with BMS for		
(b)	Lift position		
(c)	Lift direction		
(d)	Lift not working/lift under breakdown		
(e)	Parking of Lift at desired floor		
	Note: Contractor to provide diagrammatical representation of interface provision for BMS and the provisions made in the controller.		
5	Intercom facility with control room		
6	Automatic rescue device		

S.	Data to be filled in by tenderers		
7	Provision for differently able persons		
8	Over load warning indicator		
9	Ni-Cd batteries with charging circuit.		
10	Pits switch		
11	Doors safety		
12	Additional weight permitted inside the car for interiors.		
C	Performance parameters		
1	Leveling accuracy		
2	Governor tripping speed.		

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Maintenance of Lifts – Terms & Conditions

1. The contractor will observe safety measures as per prevailing local lift acts and rules regarding safety of passenger and staff.
2. The contract will employ trained & qualified staff to maintain the lift equipment in proper and safe operating conditions.
3. The contractor will carry out servicing for adjustment, lubricating, repairing and if required replacement of machine, motor and controller parts i/c worms, gears, thrusts, bearing, brake magnet coil or brake motors, contacts, coils resistances & control card for operation and motor circuits magnet frames and all parts connected with door operating mechanism and other mechanical parts using only genuine parts for this purpose.
4. Replacement, renewal of guide shoes gibs or guide rollers, all wire ropes, conductor cable etc., as and when required for smooth and safe operations of lifts.
5. The contractor will also replace indicator lamps provided inside the car and on each landing.
6. The agency will carry out following service maintenance operations as per enclosed Annexures to the entire satisfaction of concerned Assistant Engineer (E).
 - a) Annexure-I - Fortnightly Maintenance Operations
 - b) Annexure-II - Monthly Maintenance Operations
 - c) Annexure-III - Quarterly Maintenance Operations
7. The firm's Engineer will submit inspection-cum-maintenance report after above each maintenance operation to the concerned Assistant Engineer (E)/ Junior Engineer (E) for their remarks & satisfaction.
8. The inspection-cum-maintenance reports as detailed in Annexure-I, II and III will have to be submitted with each bill.
9. Concerned Junior Engineer (E) will maintain all the comprehensive maintenance record.
10. The firm will promptly attend call back when notified and in no case, the call back be left pending for the next day unless it has approval from the department.
11. All dismantled parts on account of replacement/ repair shall be the property of contractor.
12. The firm has to make arrangement for receiving the complaints and to attend to the breakdowns within 48 hours, incase lift remain out of order for more than 48 hours continuously, recovery at the double of the quoted rate shall be made.

Annexure-II

Fortnightly Maintenance Operations

S.No.	Items to be checked	Checked By
1.	Check that lift stops in downward direction properly with 25% over load with operation of the "Emergency" stop when lift is moving at full speed.	
2.	Check that leveling is within limits 75mm for single speed lifts and 10mm for other lifts.	
3.	Check and lubricate by grease cup or top up oil on slave type bearing on. <ol style="list-style-type: none">a) Motor shaftb) Defector Sleeve shaftc) Governor pulley	
4.	Check and lubricate sleeve bearing of governor tensioning pulley at the pit.	

Remarks and Signature of Firm's Representative by whom above job carried out: -

Remarks and signature of concerned client Engineer (E): -

Annexure-III

Monthly Maintenance Operation

S.No.	Items to be checked	Checked By
1.	Check that lift stops in downward direction properly with 25% over load with operation of the “Emergency” stop when lift is moving at full speed.	
2.	Check that leveling is within limits 75mm for single speed lifts and 10mm for other lifts.	
3.	Check and lubricate by grease cup or top up oil on slave type bearing on.	
	a) Motor shaft	
	b) Defector Sleeve shaft	
	c) Governor pulley	
4.	Check and lubricate sleeve bearing of governor tensioning pulley at the pit.	
5.	Controller	
i)	Cleaning of contacts and shielding with carbon tetrachloridese (CCLA)	
ii)	Move relay armature by hand for free movement and see that contacts are properly aligned.	
iii)	Replace carbon contacts if worn out.	
iv)	Check flexible leads to relays	
v)	Check fuses of controller and mains.	
vi)	Check oil level in dash pots.	
6.	Motor generator and/ or D.C. motor	
i)	Check and adjust carbon brushes, spring pressure commutator, reseal brushes S.S.	
ii)	Greasing of bearing	
7.	A.C. Motor	
i)	Lubricate bearings	
ii)	Clean ventilation passages	
8.	Gear Box	
i)	Inspect for stray noises and oil leaks	
ii)	Check Axial play of worn shaft	
iii)	Lubricate bearing and top up in gearbox.	
9.	Brake	
i)	Clean if oily and trace source of oil leakage	
ii)	Adjust clearance between shoes and drum.	
10.	Selector	
i)	Clean contacts	
ii)	Adjust for improper leveling	
iii)	Check tape safety switch	
iv)	Lubricate shaft bearings	
v)	Check performance without load with full load	
11.	Governor	
i)	Lubricate Bearings Check that the leaders works smoothly.	
ii)	Check that electrical contact opens before the rope sets locked	
12.	Ropes	
i)	Check condition of hoist ropes and governor rope	
ii)	Check slack rope safety switch	
iii)	Lubricate rope if too dry.	
iv)	Lubricate guides and guide shoe.	
v)	Check that the buffers are in proper position and measure and record counter weight buffer clearance with car at the top.	
13.	Retiring CAM and locks	
i)	Check operation of cam and lock from the top of the car at each	

	landing. Check that retiring cam solenoid is not getting over heated and that movement of the cam is smooth.	
ii)	Check that all locks are functioning properly both mechanically and electrically after opening the cover. Check all sets screws and springs and replace if necessary the lever should lock the beak properly.	
iii)	Check that the retiring cam does not touch the lock roller at the landing which is being passes.	
iv)	Check that car gate switch operates properly.	
v)	Check door closer safety, clean and read just if necessary.	
vi)	Lubricate top track and door, motor and leakage	
vii)	Check the landing doors can be opened by emergency keys.	

Remarks and Signature of Firm's Representative by whom above job carried out: -

Remarks and signature of concerned client Engineer (E): -

Annexure-IV

Quarterly Maintenance Operation

S.No.	Items to be checked	Checked By
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1.	Check that lift stops in downward direction properly with 25% over load with operation of the “Emergency” stop when lift is moving at full speed.	
2.	Check that leveling is within limits 75mm for single speed lifts and 10mm for other lifts.	
3.	Check and lubricate by grease cup or top up oil on slave type bearing on.	
	a) Motor shaft	
	b) Defector Sleeve shaft	
	c) Governor pulley	
4.	Check and lubricate sleeve bearing of governor tensioning pulley at the pit.	
5.	Controller	
i)	Cleaning of contacts and shielding with carbon tetrachloridese (CCLA)	
ii)	Move relay armature by hand for free movement and see that contacts are properly aligned.	
iii)	Replace carbon contacts if worn out.	
iv)	Check flexible leads to relays	
v)	Check fuses of controller and mains.	
vi)	Check oil level in dash pots.	
6.	Motor generator and/ or D.C. motor	
i)	Check and adjust carbon brushes, spring pressure commutator, reseal brushes S.S.	
ii)	Greasing of bearing	
7.	A.C. Motor	
i)	Lubricate bearings	
ii)	Clean ventilation passages	
8.	Gear Box	
i)	Inspect for stray noises and oil leaks	
ii)	Check Axial play of worn shaft	
iii)	Lubricate bearing and top up in gearbox.	
9.	Brake	
i)	Clean if oily and trace source of oil leakage	
ii)	Adjust clearance between shoes and drum.	
10.	Selector	
i)	Clean contacts	
ii)	Adjust for improper leveling	
iii)	Check tape safety switch	
iv)	Lubricate shaft bearings	
v)	Check performance without load with full load	
11.	Governor	
i)	Lubricate Bearings Check that the leaders works smoothly.	
ii)	Check that electrical contact opens before the rope sets locked	
12.	Ropes	
i)	Check condition of hoist ropes and governor rope	
ii)	Check slack rope safety switch	
iii)	Lubricate rope if too dry.	
iv)	Lubricate guides and guide shoe.	
v)	Check that the buffers are in proper position and measure and record counter weight buffer clearance with car at the top.	
13.	Retiring CAM and locks	
i)	Check operation of cam and lock from the top of the car at each landing. Check that retiring cam solenoid is not getting over heated and that movement of the cam is smooth.	

ii)	Check that all locks are functioning properly both mechanically and electrically after opening the cover. Check all sets screws and springs and replace if necessary the lever should lock the beak properly.	
iii)	Check that the retiring cam does not touch the lock roller at the landing which is being passes.	
iv)	Check that car gate switch operates properly.	
v)	Check door closer safety, clean and read just if necessary.	
vi)	Lubricate top track and door, motor and leakage	
vii)	Check the landing doors can be opened by emergency keys.	
14.	Machine Room	
i)	Check and adjust overload relay and phase failure relay.	
ii)	Check power wiring terminations in switch motor, controller and power switching relays	
iii)	Check Commutator.	
iv)	Check lubrication of all equipments	
15.	Hoist way	
i)	Check Rope fastening at the car and counter weight.	
ii)	Check Guide clamps	
iii)	Check upper and lower limit switches for proper connections after physical inspections to get the lift to over travel by holding from controller and see that the switches operate properly.	
iv)	Check Guide clearance and adjust	
v)	Check condition of trailing cable and terminations at junction boxes.	

Remarks and Signature of Firm's Representative by whom above job carried out: -

Remarks and signature of concerned client Engineer (E): -

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LIST OF APPROVED MAKES

1. LIFT
 - KONE
 - JOHNSON
 - SCHINDLER
 - OTIS
 - MITSUBISHI ELECTRIC

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Summary

PROPOSED CONSTRUCTION OF INDIAN NATIONAL SCIENCE ACADEMY AT NEW DELHI

BILL OF QUANTITY FOR LIFT WORKS

SUMMARY SHEET

S. No.	DESCRIPTION	AMOUNT (RS.)
I.	SUBHEAD - I : Supply Installation, Testing & Commissioning of Lifts	
	TOTAL AMOUNT In figures (In Rs.)	

PROPOSED CONSTRUCTION OF INDIAN NATIONAL SCIENCE ACADEMY AT NEW DELHI**BILL OF QUANTITY FOR LIFT WORKS**

Item No.	Description	Qty.	Unit	Rate	Amount
I.	SUBHEAD - I : Supply Installation, Testing & Commissioning of Lifts				
1.0	Supplying, Installation, Testing & Commissioning of 6 passenger (408 kg) lifts Machine room less type & gearless having contract speed of 0.7 Metres per second serving different floor in the lift shaft as per detailed specifications enclosed and as under. Lift car and doors shall be of stainless steel finish grade 304.	1	Nos.		
	Location of Lifts: INSA				
i).	Speed - 0.7 MPS				
ii).	Floors - 2				
iii).	Travel 4 Metres (approx).				
iv).	Stops & opening - 2 Stops & 2 opening on same side.				
v).	Controller; A.C. Variable voltage & variable frequency.				
vi).	Automatic rescue device complete with dry maintenance free batteries as required.				
vii).	Operation: Microprocessor based single automatic push button duplex collective selective with / without attendant.				
viii).	Power - 415 V, 3 phase , 50 Hz, 4 wires system				
ix).	Type of doors.				
a).	Car: Power operated, 2 speed Telescopic Door				
b).	Landing doors: Power operated, 2 speed Telescopic Door				
(x)	Stainless steel mirror finish handraul on near car passed				
(xi)	Voice announcement system in the car to announce the position of the elevator in the hoistway as the car stops at a floor served by the elevator.				
(xii)	Defects liability for a period of 1 year after completion of all works including comprehensive Annual Maintenance of 3 Years				

Item No.	Description	Qty.	Unit	Rate	Amount
2.0	<u>BUY BACK ITEM</u>				
2.1	Tenderer shall quote for credit to Client (Owner) for the existing following Equipments / Items which shall be Tenderer property after dismentally & removal the existing Equipment to make space for proposed New Equipment to be installed. Tenders shall be permitted for inspection of existing Equipment prior to submitting their quote.				
1)	Existing Lift	1	Nos		
	TOTAL SUB-HEAD-I : CARRIED OVER TO SUMMARY Rs.				

PROPOSED CONSTRUCTION OF INDIAN NATIONAL SCIENCE ACADEMY AT NEW DELHI

TECHNICAL PARAMETERS OF LIFTS

S. NO.	BUILDING NAME	GENERAL							MACHINE, HOISTWAY AND PIT						LIFT CAR							
		No. of Lifts	Capacity	Speed	No. of Landings	No. of car Entrance	No. of Openings	Travel	Machine room location	Machine Details		Hoistway Dimensions		Head room above last landing	Pit depth	Car Enclosure & Doors	Car ceiling	Car floor	Car & Landing Doors	Car size	Door Height of Lifts	Car Height of Lifts
										Control	Operation	Width (along door)	Deep (90° to door)									
1	Office Building	1Nos	6 Passengers (408 Kgs.)	0.7 MPS	2 Stop	1	2 Opening on the same side	4 M	Machine Room less type	LVA	Simplex	1600 mm	1650mm	4300 mm	1600mm	Stainless steel hairline finish with grade 304 and with scratch resistant texture approved by architect.	SS finish metal false ceiling with pressure fan and sufficient no. of LED light fittings for min. 150 Lux.	Granite Floor	Automatic power operated, 2 Speed Telescopic Door	To be furnished by tenderer (shall not be less than as specified in ISI).	2000 mm	2200
TOTAL LIFTS		1																				