

Roads & Building Department
Government of Gujarat

Ahmedabad Electrical Division No 1, Ahmedabad

Technical Specification

Name of Work

Construction of State Guest House Annexy Building at Shahibaug,
Ahmedabad. (Pro. E.I, HVAC, Lift etc)

<u>Invited by:</u> Executive Engineer, Ahmedabad Electrical R & B Division-1, A-4, Bahumali Bhavan-2, Vastrapur, Ahmedabad. Ph:<u>079-27480875</u>	<u>Opened by:</u> Executive Engineer, Ahmedabad Electrical R & B Division-1, A-4, Bahumali Bhavan-2, Vastrapur, Ahmedabad. Ph:<u>079-27480875</u>
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Name of Work: Construction of State Guest House Annexy Building at Shahibaug,
Ahmedabad.

INFORMATION & INSTRUCTIONS FOR TENDERERS

DECLARATION FORM

The tenderer will have to make declaration enlisted in the form attached herewith and shall affix his signature to the form in token of correctness of declaration made therein (G.R. R&B.D. No. TNC-IIB-22 (10)-C dated 24-5-90 should be referred to)

1. I/We hereby declare that I/we have visited the site and fully acquainted myself/ourselves with the local situations regarding materials, labor and other factors pertaining to the work before submitting this tender.
2. I/We hereby declare that I/We have carefully studied the conditions of contract, specifications and other documents of this work and agree for execute the same accordingly.
3. We agree to receive payments, if delay is due to late receipt of grant -in-aid from Government for panchayat works. (Applicable to panchayat works only)

DECLARATION CERTIFICATE (G. R. date 4-2-89 as revised by GR. No.TNC - 1083/6681/ 4/ C, dated 31-8-1994)

4. I/We hereby declare that my/our near relative are not working in this Division or in its sub-division as an Ex. Engineer, Deputy Executive Engineer, Assistant Engineer, Additional Assistant Engineer, overseer, Divisional Accountant, Store Keeper, Manager of Atithi / Vishram Gruha and in the circle as a Superintending Engineer in addition for Panchayat works not working nor having posting as chairman of P.W. committee or as incumbent in Jilla Panchayat at today.

Date :
.....

Place :
.....

(Digital Signature of the Contractor with Seal)

SPECIAL CONDITIONS OF CONTRACT

(A) Scope of Work:

To provide necessary scaffolding in each elevator hoist way required during the erection period and carry out minor builder's work comprising of cutting in walls, floors, partitions together with any repairs made necessary thereby including grouting of all bolts, steel members, indicator and button boxes in position of the elevator equipment.

The contractor shall also provide fascia plates between two landing doors, doors posts (as required) machine beams, bearing plates, buffer support channels, hitch beams, hitch plates and the stretcher angles (wherever hoist way dimensions are in excess of what is required) at their cost and also erect the same, where required.

Contractor shall also carry out necessary wiring work pertaining to elevator equipment so also provide the light outlet in the pit and hoist way from the main switches provided in the machine room.

Living accommodation for the erections shall also be provided by the lift contractor.

(B) General:

(1) Furnishing Technical Data:

The necessary data regarding the hoist way and machine room details and dimensions and such other technical information may be obtained by the successful tenderers from the Sub Division concerned to prepare detailed layout drawings and to shed with the performance of the contract.

(2) Submission of the Preliminary and final Layout Drawings:

The contractor shall submit to the department the final layout drawing within **1(One)Week** from the date of receipt of work order.

(3) Approval to Drawings:

The layout drawing will be returned to the contractor/s within **1 (One)Week** from the date of submission thereof.

(4) Free Maintenance:

The contractor shall provide free maintenance service for the period of **12 Months** from the issue of License from Lift inspector.

(5) Insurance:

The contractor shall take materials –cum – erection risk insurance policy under which the materials should be covered from the time they are dispatched from the factory till the elevator is installed and handed over. The contractor should also take the third-party compensation insurance policy to cover their employs working at the site.

(6) Prices:

The rates should be quoted inclusive of delivery of materials to the site, fabrication and installation of the lift equipment, and commissioning and testing, of the lift exclusive of GST.

(7) Completion:

The contractor/s shall undertake and complete the installation work of lift as specified in Time Schedule. The contractor is liable for acquiring the license from concerned authority.

(8) Deviations and Technical Information:

For all items offered against Schedule 'B' for each tender item separately.

The tenderers may give their offer based on their own design without effecting the maximum cage carrying capacity, **Speed of the lift shall be 1MPS**, type of machine, A.C.V.V.F control, rope/belt operated, type of car and hoist-way, door and door operations specified in Schedule 'B' of tender documents, however, the deviation in technical specifications shall be brought out clearly as to what respect the same defers from technical specifications shall be brought out clearly as to what respect the same defers from technical specifications appended with the tender documents, stating technical as well as financial / commercial implications thereof from the specified.

- (9) The contractor shall have entered in to 15 Years, all in maintenance service contract with the department. Scope of work under All in Comprehensive Maintenance and Service Contract is shown ahead separately. All in Comprehensive Maintenance and Service Contract will start from the date of expiry of free maintenance period of 12 Months. The tenderer shall have to quote year wise rate in amount.
- (10) No price escalation shall be given.

Signature of Contractor

Deputy Executive Engineer
Ahmedabad. Elect.Sub Division
R. & B. Department
Ahmedabad.

Executive Engineer
Ahmedabad. Elect. Division-1
R. & B. Department
Ahmedabad.

DETAILED TECHNICAL SPECIFICATION

Motor:

The A.C. Motor designed for elevator service will have high starting torque with low starting current, suitable for existing machine.

Micro Processor Based Controller:

It is technologically advanced system. The operational card file contains a logic board with microprocessor chip, random access memory (RAM) and erasable programmable read only memory (EPROM) chips to monitor and take over the command of the elevator.

The Motion controlled consist of high performance, fully digital control V.F. drive which the directly control the torque and speed of the elevator motor and thus provides constant speed control under all load's conditions.

Large numbers of user-friendly features are included in the microprocessor-based controller such as:

1. Detection stuck hall button
2. Motor over current protection (Built in inverter drive)
3. Fast speed / Deceleration protection
4. Passenger over load warning device/ optional

The system continuously monitors critical aspect of system health. Self-health diagnostic capabilities are built in to the control system to speed up trouble shutting and can be monitored from seven segments display provided in the logic board. This facilitates quick identification of fault and restoration to normal operation.

1.0 AUTOMATIC MICRO SELF LEVELLING:

For achieving accurate leveling at the floor, the Lift should be provided with the Micro Self Leveling Features. This Micro self-leveling should, within its zone, be entirely automatic and independent of the operating device and should correct for over travel, under travel and rope stretch automatically. The leveling in-accuracy should not exceed 12 mm irrespective of the load. Re-traveling of car should not be possible with open doors.

2.0 OPERATION: A.C. Variable voltage variable frequency:

2.1 GROUP OPERATION:

Both elevators should work as a group so that when a floor button is pressed for either up or down direction the nearest lift approaching that floor and traveling in the required direction should automatically stop irrespective of the sequence in which the floor buttons were pressed. Similarly, in response to car call the stops will be made automatically in succession as car reaches this floor irrespective of the sequence in which the car buttons were pressed.

2.2 MEMORY SYSTEM:

The system should have memory so that the calls once registered should not get cancelled until it is attended to.

2.3 ATTENDENT OPERATION: It should be possible to have with/without attendant operation.

2.4 FIREMAN SWITCH:

A key switch (or toggle switch in break glass) should be provided at ground floor for each lift so that in emergency, the fireman can assume the complete control of the required lift.

2.5 SEPARATE CAR AND HALL DOOR HOLD OPEN TIME:

Separate adjustable timers should be provided to establish minimum transfer time for car and floor stops, the floor stop time being longer than the car stop time to allow person waiting to leave and enter the car. It should be possible to adjust the transfer time of ground floor separately from the time for normal stop.

2.6 DIRECTION REVERSAL:

When a lift arrives at a floor where both the up and down floor calls have been registered and no calls is registered in the car, in the direction in which the lift is not to travel then the car door should close, floor lantern should reverse and then the car door should re-open again, so that passengers traveling in the opposite direction can make that lift. In other words, the lift should not travel for one more floor before reversing the travel direction.

2.7 ADVANCE INTIMATION:

At the main lobby, there should be advance illumination of the up signals for the lift which is going to be first dispatched. Similarly, for other floor when the lift reaches, a predetermined distance from the floor where it is going to stop the corresponding direction signals should be illuminated and going should sound. This will facilitate the passengers to enter the lift with watering time.

3.0 CONTROLLER:

- 3.1 The relays and switches to use should be suitably designed for lift control circuits.
- 3.2 The relays should be so mounted that they are visible for quick location of faults and easy maintenance.
- 3.3 The contacts should be self-wiping type.
- 3.4 Without dismantling the relay from controller body, it should be possible to adjust the air gap between the contacts.
- 3.5 When required, it should be possible to replace the contact alone.
- 3.6 Proper identification marking should be provided on contacts relays and switches.
- 3.7 In the event of spring failure, gravity switch should get released the relay.
- 3.8 The main power contact should be copper, to carbon type.
- 3.9 All the wiring of controller should be terminated in terminal block fitted on the controller body.
- 3.10 A controller disconnect switch should be provided on the controller.
- 3.11 Suitable arc blowers and arc deflectors should be provided for main power relays.
- 3.12 A reserve phase relay should be provided to protect the equipment against phase reversal, low voltage and phase failure.
- 3.13 For easy maintenance and fault finding the wiring shall be distributed in different zones with indicators.

4.0 SELECTOR:

The floor stop switches should not be installed in the shaft but the same should be mounted on a selector located in the machine room.

5.0 SAFETIES:

Equipment offered should conform and comply with Indian Standard Specification, Bombay Lift Act. As applicable to Gujarat State Indian Electricity Rules and their relevant specifications and standards.

6.0 TEST CERTIFICATE:

- 6.1 It will be necessary for the supplier to furnish the certificate in regard to the items such as Machine, Motor, Motor Generator Set, Ropes, Safeties, Controller, Selector, Governors and Buffers etc.
- 6.2 There should be minimum 6 ropes of ½” diameter with 8 x 9 seal construction as per IS: 2365 of 1962.
- 6.3 The hoist ropes should be attached to the car and counter weight by means of spring fastenings to reduce stopping jerks.
- 6.4 The ropes are to be fitted in forged steel thimble rod to give strong and reliable grip.

7.0 ELETRIC WIRING:

All necessary wiring in lift duct should be done in troughing for easy maintenance.

8.0 COMPENSATING ROPES: As per Technical Specification

9.0 SAFETIES:

Equipment offered should conform and comply with Indian Standard Specification, Bombay Lift Act as applicable to Gujarat State Indian Electricity Rules and their relevant specifications and standards.

10.0 Elevators having following facilities.

1. Luminous buttons at all door.
2. Digital car position and Direction in indicators in car
3. Car operation panel with luminous buttons.
4. Digital hall position at all floors.
5. Stop Button in Car operating Panel
6. Battery operated alarm bell and emergency light, Intercom system.
7. Over load warning indicator in car.
8. Battery operated Emergency Rescue Device.
9. Floor Announcing System.
10. Overload Alarm System.
11. Brail Lippi etc. (Other extra features as per Schedule: B)
12. Full Infra-red light curtain safety screen for automatic door.
13. System can be programmable for any type of travel/stop/call management.

11 Remote Monitoring System (RMS)

Controller must be compactable for Remote monitoring system. Having RS485 Port, and all the data available at the port. Agency should provide remote monitoring real time data on Desktop or/and on mobile app. Agency should manage for connectivity and recharge throughout the AMC period. User Id and Password for the Group of Lift will be provided us for regularly maintenance and operation. RMS indicate real time position of elevators, real time electrical and mechanical data like ampere, voltage, temperature, error message etc.

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Ahmedabad. Elect.Sub Division
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Ahmedabad.

Executive Engineer
Ahmedabad. Elect. Division-1
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I.S.I. FOR MATERIAL USED IN LIFT

1	Outline dimension	:	3534 : 1979 outline dimensions of electric lifts
2	Passenger & Goods Lifts	:	1860 : 1980 Code of Practice for installation, operation & maintenance of Passenger & Goods Lifts
3	Service Lifts	:	6620 : 1972 Code of Practice for Installation, operation & maintenance of Service Lifts.
4	Safety rules for passenger and Goods Lifts	:	4566:1980 Electric Passenger & Goods Lift. 6335 : 1971 Electric Service Lifts
5	Thimbles for Wire ropes	:	IS.2315 : 1978 Thimbles for wire ropes.
6	Grips for Wire	:	IS 2361 : 1994 Bulldog grips ropes
7	Steel Wire Ropes	:	IS 2365 : 1977 Steel Wire suspension ropes for lifts Elevators & Hoists.
8	Socket for wire ropes	:	IS 2485 : 1979 Prop. Purged Sockets for wire ropes for General Engineering purposes.
9	Worm gears	:	IS 3734 : 1983 Dimensions for Worm gearing.
10	Capping metal for wire ropes.	:	IS 3937 : 1974 Recommendations for Socketing of wire ropes.
11	Steel eyebolts	:	IS 4190 : 1984, Eyebolts with Collars
12	Lift Buffers	:	9803 : 1981 Buffers for Electric Passenger and Goods Lifts.
13	Lift Guide Rails and Guide Shoes	:	10191 : 1982 Car and Counter weight guide rails, guide rail supports and fastenings for lifts and 11615 : 1986 Car and counter weight guide shoes for electric passenger and goods lifts.

14	Lift Car Frame, Car Counter Weight and suspension.	:	11706 : 1986 General requirements for Car frame for electric passenger and goods lift.
15	Lift safety gears and Conveners	:	9878 : 1981 safety gears and Governors for electric passenger and goods lifts.
16	Lift retiring Cam	:	10448 : 1983 Retiring Cam for Passenger and Goods Lifts
17	Lift door & locking device and contacts	:	7759 : 1975 Lift door locking device & contacts IS 11633 : 1986 Lift Door
18	Lift Machine and breakers.	:	10913 : 1984 Breakers for Lift.
19	Electric traction Lifts.	:	
	a) Code of practice for installation, operation and maintenance	:	IS.14665 (Part.2 / Sec 1) 2000
	b)Electric traction safety rules	:	IS. 14665 (Part 3 / Sec. 1 & 2) 2000
	c)Components of lifts car frame, car counter weight and suspension	:	IS.14665 (Part.4/Sec.3) 2000
	d)Lift doors and locking devices and contacts.	:	IS.14665 (Part.4/Sec.5) 2000

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**Lift Act as applicable to Gujarat State & Indian Electricity Rules,
1956.**

All are as amended at the time of execution only.

TEST CERTIFICATES:

- Type of general and specific tests that will be provided by the manufacturer at his works and at site along with test certificate for the following items.
- Machine Motor, Ropes, Safety, Controller, Governors, Buffers, Selector, and other items.
- Make and Manufacturers is Name for all Major items and parts to be used on the work shall be started even though pacifically not asked for any items.

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Scope of Work covered under

All in Comprehensive Maintenance & Service Contract

- (1) Maintaining the Lift to keep the equipment properly adjusted and in proper safe operating condition by regular and systematically examining, adjusting, lubricating all parts / components, including warranted repairs or replacement of machine, motor generator, controller and parts as required including worm gears, thrust, bearings, break magnet coils or brake motors, brake shoes, brushes, winding, commutators, rotating elements contacts, coils, resistance for operating and motor circuits, magnet frames and other mechanical part due to wear and tear, using only genuine and original parts (Manufactures invoice / Mark on parts shall be the proof the party being genuine, use of in genuine parts with incorrect invoice, marks will be considered as breach of contract.) Mark of parts and components will be got approved, if the original figments of manufacturer's do not exit.
- (2) Renewing guide shoes ribs or guides rails when necessary to ensure smooth and quiet operation and to keep the guide rails properly lubricated.
- (3) Renewing all belt as often as necessary to maintain the adequate factor of safety to equalize the tension on all hoisting belts.
- (4) Maintenance of car enclosure, removable panels, door panels, plenum chambers, hung ceiling light diffusers, light tubes and bulbs, handrails, mirrors and carpet, if any, hoist way enclosure, hoist way gates, doors, frames, hand buttons, sills and batteries are included in this contract.
- (5) Maintenance of hanging ceiling light diffusers, light tubes, bulbs, mirrors and cabin fans as well as in machine room E. I. and Light Fixtures are also included in the scope of Agency.
- (6) Lubricating, servicing and checking of all components which should be done minimum once in a month. The Executive Engineer/ Deputy Executive Engineer/ Engineer-in-charge can call back the service of repairing crew any time during the month, during regular working hours as well as during overtime hours and it will be obligatory on the part of agency to respond within 24 hours after registration / intimation of call back.
- (7) Servicing, repairing and replacement of spare parts, etc. should be carried out with the knowledge of authorized representative/s of Electrical Division and his signature should be obtained in token of works carried out.
- (8) Preventive repairs shall be attended to in a phased program and the Section Officer In charge shall notify such maintenance closures to public.
- (9) The contractor shall as far as possible, attend the call of the Engineer In charge quickly for such of these items which are required to be done under the terms of contract. If no response to attend the call is for the coming from the contractor within 48 hours till the report undertaking the work, recovery calculated on hourly rate basis for the service contract would be recovered from him.
- (10) The lifts under contracts should function satisfactorily for the entire period of contract. The lift installation shall be inspected once in months by the Section Engineer of the firm jointly with the Dy. Executive Engineer, Ahmedabad Electrical Sub Division, Ahmedabad and suggestion and remedial measures to the bottle-neck, if any, and for better functioning be sorted out. The lift working days are considered as 365 days per year and stoppage on account

of maintenance and repairs are allowed at 15 days in a year. The liquidated damages for closure for any more periods, than stipulated above shall be recovered daily rated basis by dividing the annual contract price by 365 days. 50 % of yearly contract value will be paid every six months as down payment against performance of bank guarantee of the amount equal to down payment which will be settled against work done within six months. In event of failure of attending repairs at any time, the work will be got done departmentally or through another agency at his risk and cost, and the additional expenditure incurred so, will be payable by the defaulter agency while making the payment of remaining 50 % of contract value at the end of six months, the amount of work done at the risk and cost shall be adjusted against work done for which satisfactory maintenance is certified by the Deputy Executive Engineer In charge. The bank guarantee shall be renewed year after year for the above said amount till completion of the contract.

10. A log book will be maintained for each lift and the record of work done for servicing, maintenance and repairs, etc. will be recorded there in jointly by the contractor and Liftman In charge to keep track of periodical work done in each lift. This will be considered basic record for all purpose for all purposes including these specified in paras.
11. All Legal Liability in case of passenger trap in the elevator, insurance, fire shall be covered in the all-in-service contract and hence no subsequent claim in this regard shall be entertained.

The accepting authority or the Executive Engineer In-charge of the work reserves the right to terminate and/or suspend the contract at any time after giving 10 days prior notice of his intension to do so without assigning reasons thereof.

12. During AMC period Agency should arrange for Net connectivity/Re-charge. No extra Payment provided by Department for this Work.

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MAINTENANCE OF LIFT

The inspection and tests of the lifts should be performed by a qualified Engineer, who should be thoroughly acquainted with the mechanical and electrical details of the lifts. Inspection of lifts should be carried out such month during which time necessary oiling should be done and adjustment are made as per requirement. Agency should inform the authorized person of this department the condition of the lifts every month and thus given an opportunity of removing the defects before damage is done to the equipment or accidents occur to the passengers.

INSPECTION

1. Switches and Fuses:

Check the size of the motor fuses and the setting of any circuit – breaker should be checked against the nameplate rating of the motor.

2. Motors:

In motors if plain bearings with ring lubricator are fitted, it should be noted whether the oil is at the correct level and whether any leakage is occurring at the drain plug, tap or oil gauge. Ball or roller bearings are packed with grease by the makers, and replacement is only necessary about every six months, where a little pure petroleum jelly should be used. Excessive wear of the bearings can often be detected by a distinct knock and results in un-due strain being placed on the coupling and the worm gear bearings.

3. Brake:

The brake and the coupling upon which the brake is usually operated. The coupling should be examined to ensure that the bolts are tight and that the keys joining the shafts on each side are not loose. If the motor winding wheel is inserted, and turned in each direction, looseness of the key on the motor shaft can be detected. Similarly, the key on the worm shaft may be observed, but in this case the brake must be released. Particular attention should be given to the adjustment of the brake, as an incorrectly adjusted brake will cause faintly floor leveling. When the design permits, each half should be adjusted independently so that the clearances of both shoes are the same. The clearances between the brake lining should be as small as possible, and will be found in practice to be between 1/100" (0.25 mm & .4 mm), if correctly adjusted. Next adjust the solenoid plunger so that the maximum possible pull is obtained. This is the case when the maximum number of lines of force is present in the air gap. Under these, conditions the brake should just operate when the magnetic circuit closes. The spring pressure should then the adjusted until smooth and rapid stopping is obtained, the actual stopping distance will vary with the car speed. After the brake has set, the car travel should not exceed about 4" (100 mm) for each 100 ft/min. (0.5 m/s.) of running speed. The operation of any emergency brake

4. Sheaves and Pulleys:

The sheave or drum and any diverting pulleys should be examined to detect whether any looseness on the shafts is present due to the keys working loose. If looseness is present, the key should be driven in tightly, but it may be necessary to fit a new key. With a traction drive, the sheave grooves should be examined for wear and if-ridges are present in the grooves these may, in time cause rope slip which will result in rope wear. The sheave seat to the same depth in the grooves. The presence of a crack in

the sheave, drum or diverting pulleys may be detected by hammer testing. Test the bearing bolts for tightness.

5. Controller:

The contacts on the controller are copper-to-carbon or copper to copper, and in the latter case, if cleaning is necessary, care may be taken to ensure that any "roll" incorporated in the designs is not reduced or destroyed. If this is done, welding of the contactors may result. When an appreciable amount of cleaning or filling of contacts is necessary the profile of the contacts should be tested with a template having the same curvature as a new contact, before the contacts are replaced. The mechanical interlock, between the reversing contactors should be examined if such an interlock is fitted. The pins on which the various contactors operated should be perfectly free and should occasionally be given a drop of thin oil. Careful inspection of any controller dashpots is necessary to ensure that they provide the time lags intended. It is important to use only the type of dashpot oil recommended by the makers, or the settings will become inaccurate. An electrical insulation test should be taken on motor and control circuits at a voltage of 500 V D.C. and when taken from the main switch with all coils in circuit should be less than 1 M.Ohm.

6. Floor Selector:

After the brake has been correctly adjusted, an inspection may be made of the floor selector gear if the lift is automatically controlled, and any necessary adjustments made. The operation of each striker arm and its associated switch should be examined to see whether the best possible leveling is obtained at each floor. This adjustment will provide the best average leveling in the up direction for all loads if the counterweight is equal to the weight of the car plus 50% full load. Hence, with 50% full load, accurate leveling in the up direction should be obtained. If, however, the counterweight is said equal to car plus 40% full load, it will be necessary for the car load during the load leveling test to be equal to 80% full load instead of full load. This will ensure that correct leveling is obtained in the up direction with 40% full load in the car. The strikers operating the down direction switches must be adjusted in a similar manner to that for switches, but with the car traveling in the down direction. During these down direction tests it will be noted that the empty car will again level high and the loaded car low. When a two-speed motor is employed, the floor selector will have slowing switches fitted for each direction in addition to stopping switches. The slowing switch strikers should be adjusted so that the lift speed is reduced to the low-speed value before the stopping switches are operated and the brake applied. If stopping and leveling are performed by direction switches in the well and a cam is fitted on the car instead of a floor selector in the motor room, it will be necessary, in order to check the leveling to take measurements at the floors after stopping the lift at each, floors when traveling up empty. Adjustments should be made to the positions of the switches (except the ground floor switch) so that the stopping distances above each floor are equal. Similarly, the position of the ground floor switch should be adjusted until the stopping distances below each floor are equal when the car travels down loaded. When the switches and cam have been adjusted, the only reason for inaccurate floor leveling will be that the brake is out of adjustment. It will probably be found more convenient to test these direction switches, when fitted, after the motor room inspection has been completed.

7. Final Terminal Stopping Switch:

This should occasionally be tested by holding in the appropriate controller contactors and allowing the car to operate the switch after over traveling each terminal landing in turn. The final limit switch is usually operated by a striker on the car engaging with a stop on the limit switch operating rope. One stop being fitted for each terminal landing. The over-run, after passing the terminal floor and before the limit switch operated, may be adjusted by altering the position of the rope stop. Two paint marks on the operating rope or pieces of adhesive tape are after used to indicate that when the marks are opposite to each other, the rope stops are in their correct position in the well.

8. Governor:

The over speed governor must be lubricated where necessary and kept clean. During inspection the weights should be operated by hand to see that firstly, the control cut off switch operates and secondly, the governor gripping jaws are released and grip the governor rope.

9. Call Buttons:

Call the car to each landing by pressing the landing buttons in turn and if the lift is arranged for dual control and the inspector's mate rides in the car during these tests, the operation of the car call indicator and position indicator can be observed at the same time.

10. Landing Gates or Doors:

The lock of each landing gate or door should be tested by ascertaining that it is impossible to open any gate or door by pulling or lifting, or to stop the lift by breaking the electric interlock circuit, unless the car is at that landing.

It should also not be possible to move the car away from any landing with the gate or door at that landing open and if this is confirmed at each landing, then the landing door electric interlocks is breaking contact satisfactorily.

If gates are fitted, it is now a convenient time to note whether they can be opened or closed readily and if not a drop of oil on each picket pin and on the overhead supporting roller pins, unless the latter are of the ball breaking type, will ensure easy operation. See that door hangers and tracks are clear and adequately lubricated.

11. Car Floor Switch:

Check that the car door or gate electric switch shall prevent the lift from being started or kept in motion unless the car gates or doors are closed.

12. Car Door or Gate Electric Contact:

If this switch closes and opens satisfactorily the car may be moved by the car buttons or car switch if the door is open. The cover of the switch should be removed occasionally and if necessary, the spindles lightly oiled and the contacts cleaned. The position of this interlock may be such, however, that it may have to be inspected from the top of the car.

13. Car Push Buttons:

Test these by bringing the car to each floor in turn by pressing the appropriate button. It should be possible to stop the motion of the car at any position in the well by operating the stop-button. If any button is uncertain in its action, the cover plate should be removed and the contacts cleaned and if necessary a new spring fitted.

14. Emergency Signal:

The bell, buzzer or telephone fitted in the car should be operated and should be clearly audible outside the lift well when the car is midway between adjacent landings. In some buildings this signal is arranged to give warning in the maintenance engineer's room.

15. Lighting Fitting:

Examine to see that it is securely fastened that the illumination is adequate and that the switch operates satisfactorily.

16. Door operating gear:

Examine the motor and door operating levels clean and lubricate if necessary. Watch the operation of the gear when the doors open and close.

17. Retiring Cam Mechanism:

Operate the cam by pulling the connecting chain by hand and not if the cam advances and retires freely. Observe whether it clears the door lock striker arm or the sill trip level when in the retired position. The operating solenoid or motor and levers should be examined and lubricated.

18. Governor Rope Release Carrier:

Visually examine the rope grip and the springs to see that they are clean and not rusted. This release should be tested by engaging the governor jaws (usually in the machine room) with the governor rope by hand and then lowering the car either by the motor hand wheel or at the slow leveling speed. The Shackle should then pull out of its carrier and if the descent of the car is not checked the safety gear will operate.

19. Counterweight:

When the car is opposite the counterweight, the counterweight shoes and guide lubricators may be inspected in a similar manner to that adopted for the car fittings. Examine the counterweight sections to see that none is displaced in the frame and that the nuts and pins are in their proper positions at the ends of the tie rods. If 2 to 1 roping is employed see that the pulley at the top of the counterweight is adequately lubricated. In many lifts the counterweight oil buffers are fitted to the bottom of the counterweight and if this is the case examine the oil level in them. Make sure that the counterweight guard at the mid-well position is securely fixed. Inspect the counterweight safety gear as described later for the car gear.

20. Guides:

When moving the car slowly from the top to the bottom of the well, the guide surfaces, joints, clips and brackets should be inspected for wear or looseness and

when the car is at the bottom landing may noticeable bend in the guides can be detected by sighting along the face of each car and counterweight guide in turn.

21. Landing Gate or Door Locks:

These should be examined periodically and if necessary, the striker arms adjusted and worn rubbers renewed. The covers should be removed the inside of the box wiped free of cost, the mechanism lightly oiled and the contacts cleaned, with center opening swing doors and locks are mounted on the underside of the door top frame and these may be inspected from the landing or the inside of the car.

22. Slowing and Stopping Switches:

If slowing and stopping are performed by switches on the car and cams in the well or vice versa it should be noted whether the switches and cams are in proper alignment and are securely fastened. The slowing switches should operate sufficient in advance of the stopping switches to enable the motor to reach its slow leveling speed before the application of the brake. The normal terminal stopping switches are frequently fitted on the car and are operated by cams in the well, and these should receive careful attention. After inspection, all these switches should be tested by operating the car at normal speed between the extremes of travel.

23. Car Safety Gear:

IF of the wedge type, examine the jaws for freedom from contact with the guides and turn the drum by hand or pull the safety cable the jaws touch the guides. Note that there is sufficient cable left on the drum so that it will not be pulled from the drum when the safety operates. See that the levers are adequately lubricated and that there is no excessive slack in the safety rope.

24. Car and counterweight Buffers:

If these are of the special or volute spring pattern, examine to see that they fit vertically and securely in their bases and the spring are not distorted.

With oil buffers ascertain that they have a sufficient supply of oil by inspection of gauge provided on each and whether there is any side play in the position. If the counterweight buffers as well as the car buffers are mounted in the pit, they will all be the spring return type and may be partly depressed by standing on the top of the plunger. After release, the piston should return to its top position.

25. Governor Rope Pulley:

Inspect during operation to make sure that the pulley frame is free to slide in its guides and that the parts are adequately lubricated.

Deputy Executive Engineer
Ahmedabad. Elect.Sub Division
R. & B. Department
Ahmedabad.

Executive Engineer
Ahmedabad. Elect. Division-1
R. & B. Department
Ahmedabad

GENERALCONDITION

Name of Work: - Construction of State Guest House Annexy Building at Shahibaug, Ahmedabad. (Pro. E.I, HVAC, Lift etc).

The work shall be taken upon hand as per availability of funds with the Govt. and completed as per prescribed schedule attached with the D.T.P.

- 1) Agency shall have to get their factory/ workshop visited by the competent authority after inspection of material only the work shall have to be commenced.
- 2) Agency while quoting the rates for this work shall have to quote the rates for 15 years maintenance contract as well and shall have to work according to the same. Moreover, the Agency shall guarantee the supply of spare parts to be used during maintenance for 15 years.
- 3) As the work is to be carried out at the places like NRG Bhavan, Ahmedabad the agency shall have to certify that the staff working for them are not involved in any criminal episode and shall have to obtain entry pass from the Manager and the staff working at site shall have to follow all the rules and regulations laid down by the NRG Bhavan Manager.

Deputy Executive Engineer
Ahmedabad. Elect.Sub Division
R. & B. Department
Ahmedabad.

Executive Engineer
Ahmedabad. Elect. Division-1
R. & B. Department
Ahmedabad