

SPECIAL CONDITIONS FOR LIFT INSTALLATION

The bidders shall thoroughly familiarize themselves with the site and its surroundings, They can inspect/visit the site before submitting their bids.

1. General Requirement

The installation shall generally be carried out in conformity with the requirements of the Indian Electricity Act, 1910 as amended upto date, Delhi Lift Rules and the Indian Electricity Rules, 1956 framed there under, the relevant regulations of the Electric Supply Authority concerned, and also with the specifications laid down in the Indian Standards (I.S. 860-1061) Code of practice for Electric Lift and I.S. 732- 1963 Code of Practice (revised) for Electrical Wiring Installations (System voltage not Exceeding 650 volts). The wiring shall also be according to the specifications of Local Authority and as per N.E.C.

Electrical Installation work shall be carried out only by Contractor/Contractors holding valid contractors' license issued by the concerned State Government as applicable to the voltage grade and nature of electrical installation work in accordance with Rule 45 of Indian Electricity Rules, 1956 with its latest amendments. The work shall also be carried out under the direct supervision of a person holding a certificate of competency and by a person holding permit issued or recognized by the concerned State Government.

2. Materials

All materials, fittings, appliances, used in electrical installations, shall conform to Indian Standard Specifications wherever these exist. Materials to be used shall be got approved by Owner/Architects/Engineer-in-Charge prior to actual use.

3. Eligibility, License, Supervision

Only Contractor having valid contractors' license, issued by the concerned State Government, for doing the category of work as per tender shall be eligible for award of contract. A Photo copy of such license shall be enclosed with the contract offer.

All work shall be carried out under direct supervision of Licensed Electrical Supervisor and Tradesman, certified by Electrical Authority for the requisite part.

The Contractor shall ensure that all the above statutory licenses are renewed before they lapse, during tenure of this work.

Owner shall have the right to call for verification of all licenses as and when felt necessary by them or their authorized representative.





The licensed supervisor shall be available at site at all reasonable hours to receive instruction from the Owner/ Architects/Engineer.

4. Shut down

The contractors should take the shut down of installations for bare minimum period, thus minimizing the inconvenience to the owner.

5. Wires & Cables

All wires and cables to be used in electrical wiring shall have ISI marking on it.

6. Conduits

M.S. conduits to be used in wiring shall conform to IS 9537 (Part-II)-1981 or latest in all respects and shall be ISI marked

7. Testing, Test Certificate

- 7.1 The contractor shall have to submit G A and Schematic Control/Circuit drawing(s) in triplicate and have these approved by the Owner/Architects before undertaking the work.
 - 7.2 The Contractor shall have to furnish manufacturer's test certificate, if asked by the Architect for particular material/materials brought at site for incorporation in work.
 - 7.3 The Contractor shall have to carry out insulation tests, conductivity tests, and any other tests required as per specification and furnish test certificates for the same in quadruplicate.
 - 7.4 The contractor will have to submit manufacturer's test certificate/ISI certificate for conduits, cables, copper wires, etc if required by Engineer/Architects.
- #### 8. Installation, Testing & Commissioning, Electrical Inspection Turnkey Basiss Project etc
- 8.1 The Owner will apply for provisional and final clearance of this installation. However, all necessary forms required by Inspecting Authority are to be collected/arranged and to be properly filled up by the Contractor and submitted to Authority after due endorsement by the Owner along with necessary fees, if required. Owner will reimburse the statutory/necessary fees paid by the Contractor on his behalf, on production of the money receipt of the Inspecting Authority/Authority.
 - 8.2 The Contractor has to take all initiative/responsibility towards provisional and final approval of the lift installation and permission for regular use of the lifts and get the installation passed by the Lift Inspector/Local Authority in all respects including any





variations, alterations, and modifications after inspection of Inspector/Authority, if any for permanent and use of the lift. All the above jobs are in the Contractor's scope of work.

- 8.3 The Contractor shall submit to the Lift Inspector/Authority, the necessary Test Forms. G.A. Elevation and Control Schematic Drawings, Single Line Diagram, etc. as required for approval and regular use of lift without delay

9. Handing Over/Taking over

The assets will be taken over from the contractor within about one month after the issue of License by the Lift Inspector and after rectification of all defects pointed out by the Lift Inspector and Owner/Architect. The contractor shall be responsible for the installation and its maintenance in all its aspect and respects until the installation is taken over by the Owner or his authorized representative.

10. Drawing

The successful tenderer shall be required to submit within 10 days from the Letter of Intent/Work Order the following drawings for approval of the Architect/Owner: -

- General Layout Arrangement drawing in plan and elevation.
- Plan, Cross-sectional Elevation and End View of the installation with details of machinery including their weight and various activity on the floors/walls/ceiling.
- Drawings showing details of location of fixtures for guide in the lift shaft.
- Foundation Drawing of all plants including weight of the foundation.

On completion of work, the contractor shall submit "As Made" copies of all the above drawings along with one set of reproducible transparency in triplicate for each lift along with their final bill. The contractor shall have to submit the operation and maintenance check list/maintenance manual in triplicate for each lift along with the final bill. One set of the "As Made" drawings are to be properly framed and displayed in the Machine room for each lift.

11. Rules & Regulations

All electrical installation shall comply with in all respect with the requirements of Indian Electricity Act 1910, Indian Electricity Rules 1956 and also with the provision of I.S. 732-1963 code of Practice for electrical wiring installation. All codes referred to herein mean the latest in force. It



is the sole responsibility of the lift supplier to obtain the necessary approval and licenses from the appropriate authority required for the installation as well as operation of the lifts.

12. Power Supply

- a) Necessary electric wiring required till the completion of erection of the equipment will have to be arranged for by the Client
- b) Adequate no. of light points and power outlet points with necessary local control switches shall be provided for the lift well(s) and pit(s) by the lift contractor including making necessary wirings and earthings from the control switch already provided by the owner in the lift machine room.

13. Abbreviation

B.S.S : British Standard Specification

I.S.S : Indian Standard Specification

I.E.E.Regulations : Regulation for the Electrical Equipments of Building issued by the Institution of Electrical Engineers, London

I.E Rules : Indian Electricity Rules in force at the time of installation

A.C : Alternating Current 3 Phase

K.W : Kilowatts 3.7

B.H.P : Brake Horse Power"

M.P.S : Meter Per Second 1 MPS

F. P. M : Foot Per Minute 3.28

K.G : Kilogram 408





Lbs : Pounds

14. Ambient Temperature and Humidity Condition

All lifts with associated equipments shall be suitable for continuous use in an ambient temperature of 45 degree centigrade and relative humidity of 100%, both not occurring simultaneously.

15. Contract Drawings

The successful tenderer shall be required to submit within 30 days from the date of receipt of the letter of intent the following drawings for the approval of the Architects/Owner.

- i) General layout arrangement drawing in plan and elevation.
- ii) Plan, Cross sectional elevation and end view of the machinery wherever applicable including their weight, and various force, reactions acting on the floors, walls, foundations.
- iii) Drawing showing details of locations of fixtures for guides in the lift shaft.
- iv) Schematic control Circuit Drawings.

On completion of the work, a complete set of "As Made" drawings in triplicate shall be handed over to the Owner/Employer for their record. Schematic wiring diagrams are also to be handed over to the Owner/Employer in triplicate at the time of handing over. Further, a copy of the detailed wiring diagram shall be framed and installed in the machine room by the contractor.

16. Technical Particulars.

Tenderer shall furnish Technical particulars of the equipments offered in the proforma as attached so as to enable a critical technical analysis of their offer.

Completion Tests

A. Load Test

A contract load test under the supervision of the local authorities and in presence of the Architects' representative shall be carried out before the lift is put into commission. During the test, the brakes, limit switches, buffers and car safety devices shall be caused to function with the contract load in the lift. The lift shall be tested, for accuracy of levels at all loads in either direction and for smooth vibration less travel. The lift shall be accepted upon satisfactory





completion of the contract load test and after the same are certified by the appropriate local authorities/Lift Inspector etc.

B. Other Completion Tests

- i) Insulation resistance tests to earth of the entire electrical equipment and wiring installation are to be carried out by means of a constant pressure 500 volts testing megger set and the test result shall not be less than 1 mega ohm.
- ii) Result of continuity test of the conduit installation and any other metal work to earth shall not be more than one ohm.
- iii) The temperature of motors and associated control equipments shall be checked after a continuous run of at least one hour duration to ensure that temperature rises are within the limit.
- iv) Test for speed shall be carried out and the speed shall not vary more than 10% of the specified speed under any conditions of load either on ascending or descending.

18. Fees & Licenses

The Lift Contractor shall submit requisite application forms with necessary fees to the State Lift Inspector/ Authority for permission to erect and for operation after getting the requisite forms (to be furnished by him) duly filled in and signed by the Owner. He will also liaison with the lift inspector and arrange for the provisional approval, inspection and issue of the license by the Lift Inspector.

The lift suppliers will bring all his tools and tackles, testing apparatus at the time inspection of Government Inspector/Authority and he will be solely responsible for getting the lift installation approved/passed by the lift inspector/Authori

Statutory fees paid by the Supplier will be reimbursed by the Owner/Employer on submission of authentic documents/receipt in the name of the Owner/Employer. Other statutory fees will also be paid by the Owner/Employer.

19. Maintenance

The contractor shall undertake inspection and maintenance of the equipments installed under this contract for a minimum period of 12 months from the date of acceptance and handing over of the complete installation. The Maintenance during the above period shall be free of cost to the Employer and shall cover monthly inspection of the equipment, carrying on necessary adjustment, oiling, and greasing and replacement of parts, if necessary.





20. Guarantee

The lift installation shall be guaranteed for a period of 12 months from the date of handing over against defective materials and workmanship. During the guarantee period the contractor shall rectify, repair or replace defective parts and components free of cost to the Employer.

TECHNICAL SPECIFICATIONS

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1. General:

These specifications are intended to cover the complete installation of the lift plant in a first class workmanlike manner and to include all work and materials. This work shall be done in accordance with the provisions of Delhi Lift Rules and subsequent provisions, as also any State or Local Act. in force and latest Indian Standard as applicable. The electrical wiring shall strictly comply to IS:732 and the entire installation shall be in accordance with the Indian Electricity Act. 1910 and Indian Electricity Rules 1956.

2. Drawings

Before commencing work, the Lift Contractor shall prepare and submit all drawings necessary to show the general arrangement of the lift equipment. These drawings must be properly approved by the Architects before installation of the lift.

3. Painting:

All exposed metal work furnished in these specifications, except as otherwise specified, shall be properly spray painted with good quality nitro-cellular paint one coat at the Lift Contractors' works over an anti-corrosive primer coat, and another two coats after installations.

4. Guarantee:

The lift contractor shall guarantee that the materials and workmanship of the equipments installed by him under these specifications shall be first class in every respect. He will make good at his own cost any defects which may develop within one



year from the date of commissioning of the installation, ordinary wear and tear and improper use excepted.

5. Works not included :

A lift well properly constructed and enclosed with suitable pit and head room, proper shaft enclosure, machine room properly lighted and ventilated with access door with R.S.J./for lifting of equipments etc. already exist. Also exist a main switch in the machine room and door openings.

6. Works to be included :

Scaffolding necessary, for erection, and all builder's work for all cutting away and making good the walls and those required to make the wall size match with the lift size including repairs to plaster, and all chases and openings as required by the Lift Contractor as shown on his drawings, will be done by the Lift Contractor.

Machine R.S. beams and/or M.S. channels for support of Lift machinery/fascia plates if required and Buffers shall be supplied and erected by the Lift Contractor. Price for the builder's work and scaffolding mentioned herein are to be included in the quoted cost and should also be separately indicated while quoting Liaison work with lift inspector. Cost of Liaison charges for submission of necessary forms to lift inspectorate for obtaining the licence to install the lift and to work the lift after commissioning, if any, are to be borne by the contractor and to be included in their quoted price.

7. Size and capacity :

408 Kg 6 Passengers

cabin Size 1100x1000 mm Its should suitable for wheelchair

Separate schedule of details of Lift attached.

8. Machine location and foundations:

The lift machine shall be placed directly over the lift well, mounted on structural beams, if required, to be provided by the Lift Contractor. These beams will be securely fastened to support, which will also be provided by the contractor.





9. Sound reduction :

The Lift Contractor shall provide necessary sound reducing materials, preferably rubber pads of proper density, to effectively isolate the machine from the machine beams or flooring.

10. Guides and fastenings :

Guides shall be arranged to withstand the action of safety gear when stopping a counterweight or fully loaded car. Guides shall be of such length that it shall not be possible for any of the cars or counterweight shoes to run off the guides.

11. Machine :

The machine will be of the single wrap traction type, standard manufacture, and will include a motor, electro-mechanical brake, chromium molybdenum steel worm, bronze gear, chromium molybdenum steel sheave shaft and ferro-molybdenum sheave all compactly mounted on a single base or bedplate. The worm shaft will be provided with taper roller bearings to take the end thrust and self aligning spherical roller bearings will be provided for the sheave shaft to ensure alignment and long bearing life. The driving sheave will be grooved to ensure sufficient traction and minimize rope wear. Adequate means of lubrication will be provided for all bearings and the worm gear.

12. Motor:

The motor will be of design and manufacture, to suit to the service proposed and arranged for ample lubrication.

13. Brake:

The direct current brake will be spring applied and electrically released and designed to provide smooth stops under variable loads.

14. Automatic Rescue Device (ARD):

The lift must be provided with ARD so that in the event of a power failure during normal operation, the lift operation can be activated within 10 seconds and automatically moved to the nearest landing and gates opened for rescue of the passengers in the elevator. When normal power supply resumes, the elevator shall automatically reverted to the normal operational mode.

15. Micro-self-Leveling :

The elevator will be provided with a Micro -Self-Leveling feature that will automatically bring the car to the floor landings. The Micro-Leveling will, within its zone, be entirely automatic and independent of the operating device and will not permit over-travel or under-travel.





16. The lift shall be protected as follows :-

- (1) Electrically against overload.
- (2) Safety gear on car so that in the event of rope snapping or loosening, the car will be brought to rest immediately by means of grips on the guides.
- (3) Speed governor operating the safety gear in case of over-speeding of car while descending.

17. The following tests shall be carried out to the satisfaction of the Architects :-
(1) Insulation and earth test for all electrical apparatus.

(2) Continuous operations of the lift under full load conditions for one hour at the end of which time the temperature of the motor and the operating coils will be recorded. This shall be as per I.S. specification.

(3) The car is to be loaded until the weight on the rope is twice the combined weight of the car and the specified load. This load must be carried on for about 30 minutes, without any sign of weakness, temporary or permanent elongation of the suspension rope strands.

18. At Hoist way Landings:

There will be a single riser of push button fixtures for the single car including an "Up" and "Down" at each intermediate landing and a single button at each terminal landing. The push button feature at each intermediate landing will include "Up" and "Down" arrows, and a single arrow at each terminal landing, which will illuminate when the corresponding button is momentarily pressed, to indicate that the call is registered and the direction of the call, and remain illuminated until the call is answered.

Operation :

Each car, will normally have home landing at Ground floor and will answer landing calls either above or below the landing at which it is landed..

The elevator doors will remain open for a predetermined interval of a few seconds at the landings at which it stops to enable passengers to enter or leave the car. Pressure of a car button for another landing before this time elapses will cause the car to start, after the car door and hoist way doors are closed.

The lift car cannot be started unless the car door is in the closed position and all hoist way doors for that car are in the closed position and locked electro-mechanically. AC microprocessor control with closed loop control system using solid state devices and electronic velocity pattern to continue to monitor and command motor speed. Digital speed feedback from a velocity transducer along with the feedback of digital rotary encoder shall be used to ensure leveling accuracy.





19. Microprocessor Based Control:

Microprocessor Based Control with operational card file containing the logic board with a Microprocessor chip. Random Access Memory and Erasable Programmable Read Only Memory (E.P.R.O.M.) chips to monitor and take the commands of the elevator, shall be provided.

User-friendly features as under are to be included in the microprocessor based controller such as :-

- Auto fan on-off
- Detection of stuck hall button.
- Over current protection. Motor failure protection.
- Fast speed/Deceleration protection.
- Over load non-start.
- Load non-stop.

The system shall continuously monitor critical aspects of system health. Self-health diagnostic capabilities are to be built into the control system to speed up trouble-shooting, which can be monitored from seven segment displays provided in the logic board for quick identification of fault and restoration to normal operation. Load compensation circuits are also to be included to further improve upon the leveling accuracy and riding comfort.

20. Landing gate interlocks :

Each landing gate shall be equipped with an electro-mechanical inter-lock, operated by a retiring cam on the car, which shall prevent the operation of the lift unless all gates are closed and positively locked. The interlock shall also prevent the opening of an gate until the car has reached the respective landing zone with the operating circuit open.

21. Guide shoes :

Four guide shoes for cars and counterweight to be provided for easy and smooth operation of the lifts. The liners shall be highly wear resistant.

22. Car frame. Safety & Governor:

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 comes into action due to over-speed or when the capacity loaded car is run on the buffer springs at normal lift speed. The safety shall be mounted on the bottom members of the frame operated by a centrifugal speed governor located over the lift well. The safety device shall be arranged to bring the car to a gradual stop on the guide rails in the event of excessive descending speed and provision made to shut off the power supply to the motor.





23. Buffers:

Substantial spring buffers under car and counterweight shall be furnished and installed. These buffers shall be mounted on continuous channels, fastened to the guide rails, to be provided by the contractor. The car buffer springs must be of correct design to stay the car with capacity load without damage, should the car terminal limits become inoperative. The car buffers must be located symmetrical with reference to centre of car.

24. Counterweight:

The lift shall be suitably counter-balanced for smooth and economical operation. Concrete or Iron blocks shall be contained in a structural steel frame properly guided with suitable guide shoes. The counterweight shall be equal to the weight of complete lift car and about 40% of the specified load.

25. Counterweight screens:

Substantial expanded metal counterweight screen guard 7 ft. high at the bottom of the lift well shall be furnished and installed.

26. Ropes:

The suspension ropes shall conform to IS: 2365-1963. Not less than 4 independent suspension ropes shall be used for car or counterweight and the minimum dia. Shall be 8 mm. The factor of safety of the combined suspension ropes shall not be less than 8, based on a static contract load plus the weight of car and accessories. The ropes of the car or of the counterweight shall not be repaired or lengthened by splicing.

27. Hoisting rope equalizers :

To enable each hoisting rope to take equal load and wear, both ends of each hoisting rope shall be fastened to adjustable shackle rods with suitable equalizer springs.

28. Car platform

The car platform shall be constructed of structural steel frame with double layer M.S. Sheet flooring. The platform shall be covered with heavy-duty Electrical Mat approved design and color. The complete platform shall rest on rubber pads





to relieve the car enclosure of all stresses. It shall be braced by four adjustable iron stay rods and securely fixed to the channel of the car frame.

29. Car enclosure :

Stainless steel (having hair line finish) car enclosure with Emergency Alarm and suitable cross flow type fans with compact fluorescent type lamps mounted on false ceiling.

30. Car Door & Landing Doors :

The lifts shall have automatic SS glass doors (centre opening or telescopic type) with vision panel with car/landing entrance opening emergency buttons and infra red door detector to be provided. The door frame will be of stainless steel. The width of opening shall be minimum 700 mm.

31. Indicators:

Car position indicator in the car and hall position indicator at all landing in stainless steel faceplates are to be provided. Battery operated Alarm Bell and overload warning Indicator in the car are to be provided. One Fireman switch at Ground floor to be provided.

32. Erection:

The lift contractor shall commence the erection of the lift equipment immediately after receipt of site clearance of lift- well & machine room and complete the work to the satisfaction of the Architect within the stipulated time. The lift installation shall be handed over in perfect working order on completion of the work.

33. Electric wiring

Complete necessary insulated wiring to connect all parts of the equipment shall be furnished and installed by the contractor. Insulated wiring shall run in a heavy duty flexible pipes.





35. General:

Contractors must strictly comply with the above specifications and if there are any variations these shall be separately listed.

36 . Elevators MS Shaft

Elevator Shaft Must Make By Lift Provider . From Earth Works Pit Works Shaft Foundation + PCC RCC Wall must make Around the elevator pit . with waterprufing of pit
iron shaft should be make I S Code 7205: 1974
including of all structure paint with primer

37 . Bridge will make by contractor from lift landing to building floor level with both side MS Railing .

38. Structure Cliding {Covring} By Contactor . structure Cliding By ACP Sheets 3 mm minimum

