M/s HLL INFRA TECH SERVICES LTD. (HITES)

(Subsidiary of HLL Lifecare Ltd., A Government of India Enterprise)

TENDER

FOR

SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF ELEVATORS FOR DEVELOPMENT OF TALUK HOSPITAL CHITTUR PALAKKAD

Volume- III

TECHNICAL SPECIFICATIONS

Tender No. HITES/IDS/22/07

HITES
HLL INFRA TECH SERVICES LTD

Golden Jubilee Block, HLL Bhavan,
Poojappura P.O
Thiruvananthapuram
PH: 0471 - 2775500

SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF ELEVATORS FOR DEVELOPMENT OF TALUK HOSPITAL CHITTUR PALAKKAD

TECHNICAL SPECIFICATIONS FOR ELEVATORS

1.1 This section deals with technical requirement of Electric Traction Type & Passenger Elevator, its components, and safety devices. All features shall be of latest International standards such as EN81, European standards, American standards or IS 14665 (part -1 to 5) and amended up to date. The technical specifications given below are for general guidance only and standard specifications of manufactures are acceptable subject to the condition that these specifications meet the technical / functional requirement specified below.

The contractor shall be responsible to check and ensure dimensions of lift well before tendering. Those requirements of statutory laws and local codes of Electrical / elevator inspector are met with and the equipment offered are suitable for the space available and getting the approval from inspectorate. The scope of work also includes minor civil works and providing necessary channel supports etc for making lift shaft suitable for erection of lifts.

It is the responsibility of the Lift contractor to obtain all statutory approvals such as Electrical Inspectorates approval. All the necessary administrative procedures are to be taken care by the Lift contractor. The statutory fees required shall be reimbursed to the contractor on submission of necessary fee receipts/ challan in original

1.2 POWER SUPPLY

HITES shall provide 415 V+10%, 3 phases, 50 Hz AC power supply for the elevator at suitable location in top landing. Elevator shall be suitable for operation on 415 V+10%, 3 phases, 50 Hz AC power supply. Wiring, shaft lighting, earthing and required electrical panel with all switches and connections shall be carried out by the elevator contractor which shall be included in his quoted rates and nothing extra shall be paid on this account. All power required for erection, testing and commissioning of the elevator shall be in the scope of the contractor.

1.3 CODES & STANDARDS

1.3.1 Work carried out shall in general be in conformity with following:

(i) CPWD specification for electrical work.
(ii) IS 14665 (part -1 to 5) and amended up to date or international specifications which ever is superior shall be applicable and in accordance with regulations of local codes which govern the requirements of the elevator.
(iii) In addition, Indian Electricity Rules 1956 and Indian Electricity Act 1910 and the rules issued there under with amendments issued from time to time shall also apply.
(iv) All the codes and standards mean the latest publication. Unless specified otherwise, the installation shall generally follow the Indian Standard code of practice/the relevant British Standard code of Practice.

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1.3.2 **All designs, materials, manufacturing techniques and workmanship shall be in accordance with accepted National or international standards/ practices for this type of equipment.**

1.3.3 **The tenderer shall also state, where applicable, the National or other International Standard (s) to which the whole or any specific part, of the equipment or system complies. In addition, any other information/ description, the tenderers may wish to provide, the features/ performance figures specified/indicated shall be with supporting documents/calculations.**

1.4 TECHNICAL REQUIREMENT

1.4.1. Passenger Lifts

Sl.No.	Items	Technical requirement
1	Type of Elevator	Passenger Lift
2	Capacity	1360Kgs (minimum), 20 Persons (minimum) 1020Kgs (minimum), 15 Persons (minimum) 544Kgs (minimum), 08 Persons (minimum)
3	Speed	1.0 Mtr/sec
4	Serving Floors	Ground floor to 5 Floor(6 stops) (20 Person) Ground floor to 5 Floor(6 stops) (15 Person) Ground floor to 5 Floor(6 stops) (08 Person-2 Nos) Ground floor to 6 Floor(7 stops) (08 Person-1 Nos)
5	Machine	Gearless without Machine room (MRL)
6	Control system	Micro-processor based control with variable voltage variable frequency technology.
7	Operation	Simplex/Duplex
8	Car Enclosure	Mat finish stainless steel (Grade 304) panel on all the four sides & Ceiling for passenger lift.
9	Flooring	Granite flooring
10	Number of Entrance	Entrance at front side on all the serving floors (All stops – Center / side opening).

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11	Car & Hoist way Entrance (landing) Doors.	Automatic center/side opening automatic mat finish stainless steel (Grade 304) door. Landing Doors - 1hour fire rated
12	Safety Feature	(i) All safety feature required as per IS / International Standards.
13		(ii) Additional features.
14		a) Reverse phase relay on controller.
		b) Single Phasing power supply protection.
		c) Overload warning indicator on car (visual and audio)
		d) Fireman's switch
		e) Anti - Nuisance Home Landing Facility Over Load Bypass Door Nudging/Hold Operation Car Display – 10" LCD Display (Floor and travel directions of lift, Lift status messages, Date / time, Time based pictures/videos) Safe landing operation Next landing operation Car call erase False call cancelling Braille Buttons
		f) Battery operated alarm bell & emergency light with battery and charger.
		g) Infra-red rays sensing device along the edge of the car door for full height.
15	Signals	a) LED Hall buttons/ landing call registered indicator at all landings.
		b) Digital car position indicator in car and at all landings.
		c) Up/ Down pre-announcing indicator at all landings
		d) Integral car operating panel with aesthetic luminous switches, key switch for auto/ attendant mode.
		e) Annunciator in car
16	Fixtures (In car)	a) Matt finish stainless steel fixtures four sides.
		b) Concealed decorative luminaries with LED lamps complete with housing, reflector and accessories.

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		c) Axial pressure fan suitable design to suit the ceiling.
17	Inter com (In car)	Suitable to hook to EPABX system.
18	Automatic rescue device.	Solid state battery operated device to automatically rescue passengers trapped in the elevator car in between floors in the event of power failure.
19	Manual Rescue Device	Manual rescue device shall also be provided so as to bring the elevator car to the nearest floor in the event of failure of battery operated automatic rescue device.

1.5 CONTROLLER

1.5.1 The control system shall be of microprocessor controller type, incorporating variable voltage variable frequency drive. It shall be suitable for site programmability and shall have field test mechanism for quick fault diagnosis. The elevator motor shall be fed through this controller for smooth & silent operation of elevator.

1.6 ELEVATOR HOISTING MACHINE

1.6.1 Manufacturer's standard design/constructional features are acceptable. The elevator hoisting machine shall be compact, energy efficient and proven design. The hoisting machinery shall be gearless type with 3 Phase AC motor. The drive shall be of variable voltage variable frequency type.

1.7 MOTOR

1.7.1 The elevator hoisting motor shall be as per manufacturer's selection. Motor shall be dynamically balanced and shall have high starting torque and low starting current, suitable for elevator duty and equipped with required protection. Motor shall be part of drive unit.

1.8 INSTALLATION OF ELEVATOR HOISTING MACHINE

1.8.1 The required arrangement for installation of elevator hoisting machine shall be provided by the contractor. Necessary scaffolding, channels, load hooks, buffer spring, cutouts on slab and all related civil works shall be in the scope of the contractor.

1.9 GUIDE

1.9.1 Machined steel guides shall be provided for the car and counterweight. The guide rails shall have tongued and grooved joints, sliding clips shall be used for fastening the guides to allow building settlement without distorting the guide. The flanges shall be mechanical for the fish plate mounting so that rail alignments at joints almost remain constant. To keep down the noises level and to reduce wear and tear of sections, only Nylon ribs shall be used in the guide shoes. However, initially cast iron ribs shall be provided for smoothening of guide rails which shall later be replaced free of cost by Nylon ribs.

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1.10 DRIVING MACHINE BRAKE

1.10.1 Electric elevator machine shall be equipped with brakes which shall be applied automatically by means of springs in compression only or by gravity when the operating device is in the 'off' position or in the event of power failure. The brake shall be designed to have a capacity sufficient to hold the car at rest with 125% of its rated load.

1.11 ROPES / FLAT BELTS

1.11.1 The elevator shall be provided with round stranded steel wire ropes or flat belts having tensile strength not less than 12.5 tone/ cm2. Lubricants between the strands shall be achieved by providing impregnated hemp core. The rope shall conform to IS –2365 – 1963 amended up to date.

1.12 LEVELING

1.12.1 Leveling with floors should be exact virtually independent of passenger load. This is to be achieved by self-adaptive load compensation.

1.13 SELECTOR

Selector shall be as per OEM, however selector shall be microprocessor based.

1.14 CAR DETAILS

1.14.1 CAR FRAME

The car frame shall be made of structural steel of rigid construction to withstand without permanent deformation the operation of safety gear. The car shall be so mounted on the frame that vibration and noise transmitted to the passengers inside is minimized.

1.15 CAR PLATFORM

1.15.1 The car platform shall be of framed construction and designed on the basis of rated load evenly distributed. The dimensions shall conform to IS – 3534 – 1968 amended up to date unless otherwise specified. The flooring shall be finished with granite (sample shall be got approved).

1.16 CAR BODY

1.16.1 The side walls of the car shall be as per BOQ.

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1.17 CAR ROOF

1.17.1 The roof of the car shall be solid type with extra supporting arrangement capable of taking load of maintenance team (at least 140 Kg weight) and also have a fan and light fittings.

1.18 CAR DOOR

1.18.1 The car entrance doors shall be as per BOQ. Doors shall be automatic side/centre opening horizontal sliding and power operated type.

1.19 HOIST WAY (LANDING) DOORS

1.19.1 Doors shall be as per BOQ. It shall be fitted with a locking device which shall comply with clause 21 of IS –3-4666-1980 amended up to date.

1.20 CAR DOOR & HOIST WAY DOOR OPERATORS

1.20.1 (i) Each hoist way door shall be provided with an interlock which shall prevent movement of the car away from the landing unless the door is in the closed position as defined in the IS codes.

(ii) Door system should have the following features:

(a) Reliable robust construction, linear drive door gear with electronically controlled closing and opening for trouble free operation under adverse duty conditions.

(b) Door system interface compatible with modern micro-contactor control system for optimum performance.

(c) Proven door safety devices for maximum safety of users.

1.21 SAFETY GEARS & GOVERNORS

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(a) **Elevator shall be provided with car safety devices attached to the elevator car-frame and placed beneath the car. The safety device shall be capable of stopping and sustaining the elevator car with full rated load.**

(b) **The elevator shall be provided with over speed monitoring & tripping safety device and its operation shall be independent of power.**

(c) **The car safety is provided to stop the car whenever excessive descending speed is attained. The safety shall be operated by a centrifugal speed governor located at the top of hoist way and connected to the governor through a continuous steel rope. The governor shall be provided with ropes in proper tension. Even after ropes stretch, suitable means shall be applied to cut off power from motor and apply the brakes on applications of the safety.**

(d) **Temper proof infrared rays sensing device shall be provided through out the height of door or upto 1.8m above sill as per OEM to ensure the door reopens till the obstruction exits in case obstruction comes while the door is closing.**

1.22 COUNTER BALANCE

1.22.1 A suitable guided structural steel frame with appropriate CI weights shall be furnished to promote smooth and economical operation.

1.23 TERMINAL SWITCHES

1.23.1 Elevator shall be provided with proximity switches arranged to stop the car automatically within the limits of top car clearance and bottom run by over travel from any speed attained in normal operation. Such switches shall Act independently of the operating device, the ultimate or final limit switches and the buffers.

Proximity switches may be fitted in the elevator car or in the elevator well or in the machine room and such switches shall be brought in to operation by the movement of elevator car.

An automatic safety switch shall be provided to stop the machine should the chain, rope or other similar device mechanically connecting the stopping device to the car, fail.

1.24 ULTIMATE OR FINAL SWITCHES

1.24.1 Elevator shall be provided with ultimate or final switches arranged to stop the car automatically within the top and bottom clearance independently of the normal operating device and the terminal switches.

Final switches shall act to prevent movement of the elevator car under power in both directions of travel and shall after operating remains open until the elevator car has been moved by a hand winding to a position within the limits of normal travel.

All ultimate or final switches shall be of enclosed type and shall be securely mounted. The contacts of all switches shall be opened positively and mechanically by the movement of elevator car.

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1.25 TERMINAL BUFFERS

1.25.1 Heavy-duty spring Buffers/polyerethene rubber pads as per OEM to adhere the latest safety parameters shall be installed as a means of stopping the car and counter weight at the extreme limits of travel. Buffers in the pit shall be mounted on steel channels, which shall extend between both the car and counter weight guide rails. Oil buffer as per OEM standard is acceptable.

1.26 ELECTRICAL INSTALLATION REQUIREMENTS

1.26.1 IS: 4666 – 1980 amended up to date state the requirement for main switches and wiring with reference to relevant regulations and read in conjunction with clause-3.1 (i).

1.27 ELECTRICAL WIRING AND WIRING FOR SIGNALS

1.27.1 Complete electric wiring shall be done in copper cable/ wires by the elevator supplier as per clause 7.1.2 of IS: 1860-1980 amended up to date and read in conjunction with clause-3.1 (i).

The wiring for signals, landing call buttons & indicators shall use serial communication technique to reduce the number of wires and read in conjunction with clause-3.1 (i)

1.28 TRAVELLING CABLE

1.28.1 Flat traveling cable shall be 12/16/20 core to give better running performance.

1.29 OVER LOAD WARNING

1.29.1 Over load warning feature with audiovisual indication shall be provided (Visual indication shall show "Over Loaded" and a buzzer shall also operate). Car shall not move until the overload condition is removed.

1.29.2 A load plate giving the rated load and permissible maximum number of passengers should be fitted in each lift car in a conspicuous position.

1.30 INTERCOM SYSTEM

1.30.1 Intercom suitable to hook to EPABX shall be provided inside the car for making emergency calls.

1.31 EMERGENCY RESCUE DEVICE:

1.31.1 AUTOMATIC EMERGENCY RESCUE DEVICE:

Elevator system shall have automatic battery operated emergency rescue device to automatically rescue passengers trapped in the elevator car in between floors in the event of power failure having following features:

Automatic operation and immediate actions in the event of mains failure capable to move the elevator to the nearest landing, opens the doors automatically. Shall have sealed maintenance free battery back up of suitable size with automatic charging unit and auto change over unit on mains failure. Message indicator in the elevator car.

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1.32 MANUAL EMERGENCY RESCUE DEVICE

1.32.1 Manual emergency rescue device shall be provided to rescue the passengers trapped in the elevator car in the event of failure of battery operated automatic emergency rescue device. The elevator car stopped in between floors due to power failure shall be brought to the nearest landing by releasing the break by means of pulling the mechanical lever provided in the last landing. The standard constructional feature of OEM for this manual emergency rescue device is acceptable.

1.33 OPERATION

1.33.1 The elevator shall be operated in Simplex/Duplex mode (with/ without attendant) and generally the elevator shall be in automatic mode. However a two position key-operated switch marked to indicate "ATT" (Attended Operation) and "AUTO" (Automatic Mode) shall be provided. When the switch is in the position of "ATT" mode, the elevator shall be in attendant mode. It will connect the hall button pushes to the annunciate, provided in the car, to register the calls. In automatic mode, momentary pressure of the car button/ landing button will send/ bring the car to this landing and car will automatically stop.

1.34 LIST OF APPROVED MAKES

ELEVATORS	**OTIS/ KONE / SCHINDLER /JOHNSON/THYSSEN KRUPP (TK Elevator)**

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