



NON-RESIDENT NEPALI ASSOCIATION SUPPLY AND INSTALLATION OF ELEVATOR

SCOPE OF WORKS AND STANDARDS

1. Scope of Works

- a) The Bidder shall supply, deliver, install, test and commission electric traction gearless, machine room-less passenger type elevators, control systems and accessories in accordance with the requirements specified in this Specification and other related documents all complete.
- b) Scope of works include but not limited to:
 - i. One (1) electric traction gearless, machine room-less, passenger type elevators, anti-vibration supports and accessories
 - ii. Control system including control panels, cables/wires, conduit, wire ways, trunking and all accessories
 - iii. Accessories like platform, car frame, car enclosure, guide rails including steel brackets and fish plates, counter weight, buffers etc.
 - iv. Traction media, Governor ropes etc.
 - v. Testing, Commissioning and Training at site

SUBMISSIONS

1. Submission with the Bid Document

- a) Complete layout of the elevator equipment detailing dimensions, clearances and location of motor, control panel etc. shall be shown in the drawings.
- b) Manufacturers detailed technical data, specification, and other necessary documents.
- c) Supply Record
 - i. The Bidder shall submit substantiated evidence of supply record of same or similar type of electric traction gearless, machine room-less, passenger type elevators to at least five different buildings.
- d) Performance Record
 - i. The Bidder shall submit along with the Bid document substantiated evidence of satisfactory performance record for a period of not less than 1 years of the elevators offered in the Bid.

2. Submission prior to commencement of Elevator Works

ELEVATORS

1. General

a. Ambient Operating Conditions

- i. The elevators shall be capable of being operated under the following ambient conditions:
- Ambient temperature : 0° Centigrade to +45° Centigrade
 - Relative Humidity : 10 percent to 100 percent

b. Power Supply Source

- i. The elevators shall receive power from electrical room at ITB providing the following supply:
- Voltage : For power and control 400/230 V AC (from essential supply)
 - Phase : 3 phase, 4-wire/ 1 phase, 2-wire
 - Frequency : 50 Hz
 - Earthing : 2 Separate earthing for each elevator

2. Technical Specification

a) Main Parameters

ANNEXURE 1: TECHNICAL SPECIFICATION - PASSENGER ELEVATOR					
S.N.	Description	Requirement	Compliance	Non Compliance	Remarks
1	Elevator Type	Machine Room Less, Gearless and Oil Less – Semi Scenic Passenger Elevator			
2	Motor Type	Permanent Magnet Synchronous EcoDisc® Motor manufacture by the elevator manufacturer itself not bought out from third party			
3	Drive	V3F Drive			
4	Quantity	1 Unit			
REQUIRED RATED LOAD					
1	No. of persons	8 Person			
2	Load	At least 544 Kgs.			
REQUIRED TRAVEL SPEED					
1	Speed	1.0 meter per second			
REQUIRED STOPS DETAILS					
1	Floor Designation	B, G, 1, 2, 3			

2	Stops & Openings	5 Stops, 5 Openings (all openings on the same side)			
SHAFT DIMENSION DETAILS					
1	Shaft Structure	Iron Structure			
2	Shaft Size available (W×D)	1800 mm x 1800 mm			
3	Travel	Basement floor to Third Floor upper floor (approximately 10.6 meters)			
4	Head room height	Approximately 4500 mm			
5	Pit depth	Approximately 1525 mm			
REQUIRED CAR BODY DETAILS					
1	Car inside size	1100 mm × 1300 mm			
2	Car Body Finish	i. Rear Side Panel: Laminated Transparent Glass			
		ii. Side Panel: B Side: SS Etched Silver Cloud D Side: SS Etched Silver Cloud			
		iv. Entrance Panel: SS Silver Mirror Finish			
		iv. CEILING Tile Finish: SS Silver Bead Blast			
		iv. COP Indicator: Black Acrylic			
		v. COP Face Plate: SS Silver Mirror Polish Finish			
		vi. Car Door: SS Etched Silver Cloud			
		vii. Landing Door: SS hairline Finish			
		viii. Handrail: Floor Mounting-Silver Mirror Polish SS on rear side			
3	Clear Entrance Door Width	At least 800 mm			

4	Clear Entrance Door Height	At least 2000 mm			
5	Internal Clear Car Height	At least 2200 mm			
6	Door Type	Centre Opening Power Door			
7	Grouping	Simplex			
CAR OPERATING PANEL DETAILS					
1	Car Signalization	Touch Screen Interface (Touch Panel)			
2	Landing Call Signalization	Touch Screen Interface (Touch Panel)			
TRACTION MEDIA DETAILS					
1	Traction Media/Rope Type	Round Steel Core Ropes (PawoF3 Technology)			
2	OSG Ropes	Round Fibre Core Ropes – At least 6mm thickness			
ELECTRICAL DETAILS					
1	Power Supply	400/230 V AC -3PHASE			
2	Motor Power	Not exceeding 4.1 KW			
3	Drive Rating	Not exceeding 12A			
REQUIRED SAFETY FEATURES					
1	Safety Features	Fire Rated Door – 1 Hour only			
		Automatic Rescue Device (ARD)			
		Single Phase Failure Sensing for Rescue System Mode			
		Manual Rescue Device (Should operate manually not electrically)			
		Automatic Braking System (ABS)			
		Dual Door Locking System (Both Car and Landing Door)			
		Car Emergency Lighting			
		Accurate Releveling, Automatic, Closed Door (ACL C)			
		Overload Function, Constant Indication/Buzzer (OLF C)			

		Fireman Drive (FRD)			
REQUIRED ENERGY SAVING FEATURES					
1	Energy Saving Features	Full Standby Mode (including Light, Fan and Motor)			
		Operation of Car Light – Automatic (OCL)			
		Operation of Car Ventilation Impulse and Automatic (OCV)			
		Bypass Load Function (BLF)			
REQUIRED WARRANTY DETAILS					
1	Warranty Period	One (1) Year			

Descriptions		Compliance/Non Compliance
b) Machine		
i.	Required motor must be designed & manufactured by the elevator manufacturer itself, not bought out from third party.	
ii.	Electric traction gearless, oil less, machine room-less type , consisting of a 3-phase A.C. Permanent Magnet Synchronous Motor , traction and deflector sheave(s) and brake disc or brake drum fully aligned on a single shaft and mounted on a common base plate.	
iii.	The machine shall be mounted on appropriate anti-vibration supports to minimize noise and vibration.	
iv.	The motor shall be suitable for frequent starting/stopping, heavy duty reversible elevator service.	
v.	Drive control of the motor shall be A.C. Variable Voltage Variable Frequency (VVVF) with speed encoder (close loop) capable of achieving desired speed and smooth running and stopping of elevators. Motor shall be dynamically balanced and shall have high starting torque and low starting current, suitable for elevator duty and equipped with required protection.	
vi.	There shall be provision of brake in the driving machine.	
c) Platform		
i.	The Well platform shall be of IRON STRUCTURE construction.	
ii.	The platform shall be designed on the basis of even distribution of rated load.	
d) Car Frame		
i.	A steel car frame of substantial construction shall be provided with adequate bracing to support the platform and car enclosure.	

ii.	It shall be sufficiently rigid to withstand the loads and forces imposed on it.	
iii.	The car shall be so mounted on the frame that vibration and noise transmitted to the passengers inside is minimized.	
iv.	The car frame shall be provided with suitable and adequate number of guide shoes or sets of guide rollers.	
e) Car Enclosure		
i.	The car shall be completely enclosed.	
ii.	Laminated Transparent Glass shall be provided at the rear side of the Elevator Car.	
iii.	The car wall panels shall be constructed from combination of SS Etched Silver Cloud, SS Silver Mirror polish Finish as per Car Body Type Details.	
iv.	False ceiling of the car shall be constructed from SS Silver Bead Blast	
v.	Hand rail shall be Floor Mounting-Silver Mirror Polish SS on rear side	
vi.	The roof of the car shall be designed to support the weight of maintenance team and also have light fittings. Provision of easy access to the roof of the car shall be made.	
vii.	Concealed Circular minimum 4 LED lighting fixtures shall be provided in the car to provide adequate lighting in the car.	
viii.	The car shall be provided with ventilating fan complete with metal ceiling diffuser.	
ix.	The car fan and car light shall have auto switch-off features. When there is no call registered for a predetermined period of time, the car fan and the car light shall be automatically switched-off.	
x.	Car flooring shall be PVC or Granite flooring	
xi.	A digital Display shall be fixed in a conspicuous position in the car to show the rated load in kg. and no. of person that car can carry.	
f) Car Operating Panel		
i.	Signaling and operating devices shall be mounted on Stainless Steel face plate in Silver Mirror Polish Finish comprising:	
	- Touch Screen Interface (Touch System)	
	- Floor buttons corresponding to landings served, (Floor buttons shall illuminate when a call is registered and shall remain illuminated until the call is answered)	
	- Door open button	
	- Door close button	

- Digital car position indicator combined with digital Up & Down direction indicator,	
- Emergency stop switch button	
- Alarm button	
- Fan switches	
- Intercom	
- Overload indicator	
- Rescue Button	
g) Car Top Inspection	
i. A car top inspection station with an” emergency stop “switch, inspection switch and constant pressure” UP – DOWN” buttons shall be provided.	
ii. The car top control shall override all other controls. Car shall respond to "UP-DOWN" command at inspection speed.	
iii. A 230 V AC power outlet socket and adequate lighting shall be provided.	
h) Car and Hoistway Entrance Doors	
i. Each car entrance (landing) shall be provided with door of Stainless steel construction in hairline finish extending the full height and width of the car opening.	
ii. The car and hoistway doors shall be guided on sills and door tracks for the full travel of the doors. The sills shall be of extruded aluminum with necessary non-slip grooves and shall extend the full width of the car/hoistway entrances.	
iii. Hoistway entrance doors shall have fire resistance of minimum one (1) hour.	
i) Guide Rails	
i. The guide rails thickness shall be at least 8mm.	
ii. The guide rails shall be used for guiding cars and counterweights throughout their entire travel.	
iii. Guide rails shall be machined steel “T” section of suitable size and weight for this application, including steel brackets for attachment to hoistway.	
iv. The guide rails, their attachments and fish-plates shall be of sufficient strength to withstand the loads and forces imposed on them in order to ensure a safe operation of the elevator.	
j) Counterweight	
i. The counterweight shall be metal filler weights, enclosed and secured in a steel frame and shall be equal to the weight of car plus a suitable percentage value of rated load for enhancing smooth and economic operation.	
ii. The counterweight shall be provided with necessary metal guards of required length at the bottom of the hoistway.	

iii.	The counterweight shall be provided with suitable and adequate number of guide shoes or sets of guide rollers.	
k) Buffers		
i.	Terminal Buffers shall be installed as a means of stopping the car and counterweight at the extreme limits of travel and shall be spring buffers.	
ii.	Buffers in the pit shall be mounted on steel channels or securely anchored to the pit floor.	
iii.	Buffers shall be appropriate to the load and speed of the car.	
iv.	Spring buffer shall be helical coil type with a constant spring rate.	
l) Pit Switch		
i.	An emergency stop switch shall be provided in the pit to stop the car regardless of its position in the hoistway. A maintenance switch of suitable capacity shall be provided in the pit.	
m) Traction Media		
i.	Traction media shall be hoist steel core fibre ropes and should be considered PawoF3 Technology. Traction hoist ropes constructed of stranded steel fibre core hoist wire rope of proper size, number and strength for this application to ensure proper required traction, system loading and wear qualities shall be provided. The Bidder shall submit details along with the Bid document. The hoist ropes should be minimum 8mm thickness in size.	
n) Governor Ropes		
i.	Governor ropes constructed of steel core fibre rope of proper size, number and strength for this application shall be provided. The Bidder shall submit details along with the Bid document.	
o) Trailing Cable		
i.	It shall be securely secured on the underside of the car and shall be clear of all obstructions while the car is in motion.	
p) Guarding		
i.	All dangerous parts of elevator shall be effectively guarded unless they are so constructed and located as to be safe as they would be, if guarded.	
q) Door Operation		
i.	Door operation shall be power operated and automatic. It shall automatically and simultaneously open the car and hoistway doors while the car is levelling at the respective landing. The doors shall be closed automatically and simultaneously after a pre-determined time interval, but the “door open” button on the car operating panel, when pressed, shall reverse the motion and re-open the doors. It shall not be possible to open the car and hoistway doors, while the elevator is in operation. Only the hoistway door where the car is stopping can be opened and no other hoistway door(s).	

<p>ii. Door Protection System: A microprocessor controlled infra-red light curtain 2- dimensional door protection system covering full length shall be provided to detect the presence of a person or object in the door opening. The minimum infra-red light curtain should be atleast 160 beams. If the door protection system detects a person or object while the door is closing, the door shall stop and immediately re-open. The door shall resume closing after the obstruction has been removed.</p>	
<p>iii. Interlocks: Both landing and car door shall have locking system. Electro-mechanical interlocks shall be provided on the hoistway doors to prevent operation of the car away from the landing unless all hoistway doors are locked in closed position and shall prevent opening of the doors at any landing from the landing side unless the car is at rest at that landing or is in the levelling zone and stopping at that landing.</p>	
<p>iv. Car door contact: Car doors shall be provided with an electric door contacts which shall prevent the operation of the car unless car doors are locked in closed position.</p>	
<p>v. In the event of passengers trapped inside the car from any cause, provision shall be made such that car doors cannot be opened from inside the car. The car doors shall be opened only from landing side by the trained personnel.</p>	
<p>vi. Provision shall be made for opening of all hoistway doors and car doors in case of emergency by means of special key.</p>	
<p>r) Architrave</p>	
<p>i. Architrave of stainless steel construction in hairline finish shall be provided at each hoistway entrance.</p>	
<p>s) Safety Features</p>	
<p>i) Full Load & Overload Device</p>	
<ul style="list-style-type: none"> - The elevator shall be provided with load weighing device with features like full load by-pass function having an adjustable setting range of 80% to 100% of the rated load and when operated, it shall by-pass all landing calls. When the load in the car is reduced, the car shall stop for landing calls as normal. - The elevator shall be provided with an overload device, which will prevent the elevator from starting in case the car is loaded to 110% of the rated load or more This will ensure that the doors will not close in case the car is loaded as above. Provision of audio and visual warning device shall be made to warn the passengers in case of overload. Upon removal of the excessive load, the elevator shall automatically resume normal operation. 	
<p>ii) Overspeed Protection</p>	
<ul style="list-style-type: none"> - There shall be provision for the protection of overspeed both in ascending and descending movement of the elevator. 	

<p>iii) Emergency Light</p> <ul style="list-style-type: none"> - Battery operated emergency light shall be provided in the car. It shall illuminate automatically in case of power failure. 	
<p>iv) Emergency Alarm Bell</p> <ul style="list-style-type: none"> - Battery operated emergency alarm bell shall be provided at ground floor landing. Alarm button for the bell shall be provided on the Car Operating Panel. 	
<p>v) Fireman's Switch</p> <ul style="list-style-type: none"> - Fireman's switch shall be provided at ground floor landing near entrance of the elevator. - In case of operation of Fireman's switch all car and hall calls are cancelled and the car shall return immediately to the ground floor with the doors open. - Interfacing of the Fireman's switch with the Fire Detection and Alarm System of the building shall be made such that when the fire detection sensors in the building are activated, all car and hall calls are cancelled and the car shall immediately return to the ground floor with the doors open 	
<p>vi) Auto Rescue Device</p> <ul style="list-style-type: none"> - Battery operated Auto Rescue Device shall be provided on the elevator to take the elevator to the nearest possible landing and the doors open in case of power failure. 	
<p>vii) Manual Rescue Device</p> <ul style="list-style-type: none"> - Provision shall be made to operate the elevators manually or mechanically but not electrically to the nearest landing, in case of power failure by using manual brake lever. 	
<p>viii) Phase Reversal and Phase Failure Device</p> <ul style="list-style-type: none"> - Phase reversal and phase failure relays shall be provided to protect the elevator equipment against phase reversal and failure of any phase. 	
<p>ix) Terminal Stopping Device</p> <ul style="list-style-type: none"> - Automatic normal terminal stopping devices shall be provided that shall stop the car at the terminal landings independent of the regular operating devices. - Final electric limit switches shall be provided to stop the car and also prevent normal operation, in case the car travels beyond the zone of the above stopping devices. 	
<p>x) Automatic Self Levelling</p> <ul style="list-style-type: none"> - Elevators shall be provided with self-levelling features to automatically bring the car to the landings and correct for under or over travel. - Self-levelling shall be automatic within its zone. - It shall maintain the car approximately level with landings regardless of its load. - Levelling accuracy at the landings shall be within +/-5mm or better. 	

<p>xi) Control System</p> <ul style="list-style-type: none"> - The elevator control system shall be microprocessor-based modular system, Simplex Full Collective (without attendant), A.C. Variable Voltage Variable Frequency (VVVF) with speed encoder (close loop). - Control of the elevator shall be automatic in operation by means of push buttons in the car numbered to correspond to floors served, for registering car stops, and by “up-down” push buttons at each intermediate landings and single direction push buttons at terminal landings. When all calls have been answered, the car shall park at the last landing served. - The control shall be field programmable with all safety interlocks. 	
<p>xii) Maintainability</p> <ul style="list-style-type: none"> - All parts requiring inspection, maintenance or replacement shall be easily accessible without needing dismantling of other parts or equipment. Laying of all electrical cables shall be such that they are not liable to damage and can be easily inspected and maintained. - Access for maintenance and removal of all mechanical and electrical parts shall be ensured safe. 	
INSTALLATION AT SITE	
<p>1. Installation Work</p> <ul style="list-style-type: none"> a) Prior to commencement of installation works, installation procedures as per manufacturer’s instructions shall be submitted by the Contractor for approval by the Engineer. b) The erection and installation work shall be planned and carried out so as to ensure safe working conditions at all times. c) The Contractor shall submit a detailed schedule covering the entire installation work as well as the quality assurance procedure at least two (2) months prior to the first access to the site to enable the Engineer to conduct daily supervision and inspection of the work items. d) At the time of completion of individual equipment installation, the Contractor shall submit certificate of installation completion to the Engineer. The Engineer will check the results of the installation to witness the condition of the installed equipment, however such will not relieve any obligation of the Contractor for further remedial work of equipment in case such are revealed to be necessary as a result of the successive works including other equipment installation work and/or testing. 	
WARRANTY	
<ul style="list-style-type: none"> a) The Bidder shall provide full one (1) year period warranty for the Elevators. The warranty shall be provided in writing along with the Bid document. 	

INSPECTION, TEST, TRAINING AND COMMISSIONING

1. Inspection and Commissioning Test at Site

a) After erection and adjustment of the equipment on site, installation check-up shall be carried out by the Contractor. The certificate of installation completion shall be submitted to the Engineer prior to the commencement of commissioning. The Contractor shall submit all test procedures as well as test schedules for approval by the Engineer at least four (2) months prior to commencement of the checks and tests. For all tests the Engineer shall be invited to attend and witness the results, however in any case such witness shall not relieve any responsibility of the Contractor from the obligation for remedial works if such are found necessary at a later stage.

b) The Contractor shall submit all the records of inspection and testing for the record purposes of the Engineer.

c) All equipment shall be subject but not necessarily limited to, the following tests:

- Visual Check
- Dimensional Check
- Balance Test
- Brake Test
- Insulation Resistance Test
- Rated Load Run Test: Elevator shall be tested for a period of 30 minutes continuous operation over full travel with rated load in the car, stopping at each landing and proceeding immediately to the next in both directions of travel. The temperature rise of the motor shall be determined.
- Speed Test: The actual speed of the elevator shall be determined in both directions of travel with rated load, balanced load and no load in the elevator.
- Car Levelling Test: Elevator car levelling devices shall be tested for accuracy of levelling at all floors with no load in the car, balanced load in the car and with rated load in the car, in both directions of travel.
- Setting of Car Door Contacts
- Setting of Interlocks
- Operating and Signaling Devices Function Test
- After warranty period, AMC or after sales service shall be provided by elevator manufacturer itself.

3. Training at Site

a) Comply with the requirement of above RELATED REQUIREMENTS.

b) The Contractor shall provide training of operation for the staff of Employer at site.

c) The program shall be carried out by experts who shall be subject to approval by the Engineer and Employer. They shall be experienced in the work to be taught and in explaining and demonstrating to the trainees.

d) The training program shall cover about the elevators by use of the operation and maintenance manuals to enable the trainees to become completely

familiar with the elevators, and allow the trainees to understand the commercial operation of the elevators.	
e) Full details of proposed training program and the proposed expert training shall be submitted by the Contractor to the Engineer for approval.	

PRICE SCHEDULE FOR SUPPLY, DELIVERY, INSTALLATION, COMMISSIONING AND TESTING OF ELEVATOR

S.N.	Description	Qty.	Total Price (NRs)	Total Price (In Words)	Remarks
1	Supply, Delivery, Installation, Commissioning and Testing of Passenger Elevator having 8 Person Capacity, 5 Stops Same Side Openings, Traction Medium: Rope System with PawoF3 Technology, Simplex Grouping, V3F Drive, combination of SS Etched Silver Cloud + SS Silver Mirror Finish + SS Silver Bead Blast SS hairline Finish Car Body with Rear Side Transparent Glass and remaining as per technical specification.	1			
	Total				
	VAT (13%)				
	Grand Total (NRs.)				
Amount in Words:					