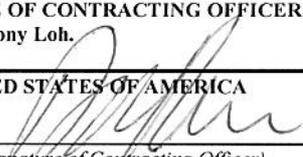


<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>		1. CONTRACT ID CODE		PAGE OF PAGES 1   1	
2. AMENDMENT/MODIFICATION NO. A001		3. EFFECTIVE DATE 08/13/2013		4. REQUISITION/PURCHASE REQ. NO.	
5. PROJECT NO. (If applicable)		6. ISSUED BY American Embassy Lisbon Av. Das Forças Armadas 1649-044 LISBOA		7. ADMINISTERED BY (If other than Item 6) CODE	
8. NAME AND ADDRESS OF CONTRACTOR (NO., street, city, county, State, and ZIP Code)		9a. AMENDMENT OF SOLICITATION NO. SPO50013Q0010		9b. DATED (SEE ITEM 11) <b>July 8, 2013</b>	
		10a. MODIFICATION OF CONTRACT/ORDER NO.		10b. DATED (SEE ITEM 13)	
<b>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</b>					
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <b>[ X ] is extended. [ ] is not extended to August 23, 2013 at 4:00 pm local time.</b> Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. <b>FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER.</b> If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. ACCOUNTING AND APPROPRIATION DATA (If required)					
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.					
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b)					
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
x D. OTHER (Specify type of modification and authority)					
E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return ___ copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) The purpose of this Amendment is to change the following items on the statement of work on the solicitation: Item 1.2 A - Paragraph 8 and Paragraph 23 Item 1.2 C - Paragraph 2 Item 2.1 - Capacity, Floors Served and Landing Entrance Type Item 2.4 B - Paragraph 3. Item 2.5 B - Paragraph 3 Item 2.7 F  The Work Statement of the original Solicitation, Pages 4 to 24, are hereby deleted and have been replaced by the attached amended Work Statement Pages 4 to 25.  The proposal due date has been extended from August 16, 2013 at 4:00 pm to August 23, 2013 at 4:00 pm..  Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.					
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME OF CONTRACTING OFFICER Anthony Loh.		
15B. NAME OF CONTRACTOR/OFFEROR BY _____ (Signature of person authorized to sign)		15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY  (Signature of Contracting Officer)		16C. DATE SIGNED 08/13/2013 8/13/13

**CONTINUATION TO SF-1449,  
RFQ NUMBER SPO500-13-Q-0010  
SCHEDULE OF SUPPLIES/SERVICES, BLOCK 20  
DESCRIPTION/SPECIFICATIONS/WORK STATEMENT**

**1.0 PRODUCTS**

**1.1 GENERAL**

- A. The intent of this Work is to replace one traction passenger elevator with an electric traction MRL (machine room less) elevator located in the CMR in Lisbon, Portugal.
- B. The Work shall include but not be limited to the following: removing the existing traction elevator in its entirety, followed by the installation of new Variable Voltage, Variable Frequency controls with Permanent Magnet gearless machine. Project shall include a new cab enclosure, new brushed stainless steel car doors and hoistway doors.
- C. Project completion is established by a successful completion of a final acceptance test and the resolution of all “punch-list” items. Notification of acceptance will be given by OBO Elevator Program Management.

**1.2 RELATED WORK TO BE PERFORMED**

- A. Hoistway and Pit:
  - 1. Retain the existing hoistway and pit.
  - 2. Verify that the hoistway and pit is clear and plumb.
    - Deviations that exceed 25.4mm (1 in.) in hoistway plumb that will require modifications shall be submitted to OBO for approval prior to any remediation efforts.
  - 3. Bevel cants not less than 75° from the horizontal on any rear or side wall ledges and beams that project or recess 101.6 mm (4 in.) or more into the hoistway.
  - 4. Repair all holes in hoistway walls and paint. Color to be white.
  - 5. Provide fire stopping to all penetrations in the hoistway.
  - 6. Provide for extending the existing elevator hoistway to incorporate the MRL design.
  - 7. If required, remove existing elevator machine beams and concrete deck directly over existing hoistway.
  - 8. Provide an enclosed, fireproof hoistway extension, directly over the existing concrete hoistway wall made of concrete masonry units (CMU) filled solid with cement. The finished hoistway shall be 2 hour fire rated. It is permissible to use structural/sheet steel framing to extend the hoistway as needed. The finished hoistway will be 2 hour fire rated. Hoistway designs require approval.
  - 9. Provide permanent certified lifting beams embedded the new hoistway extension at the top of overhead space for future hoisting. Allow 25mm (1 inch) between lifting beam and fireproof overhead roof.
  - 10. Remove any elevator related devices in the existing machine room area not being used for the new elevator and restore the area to storage space for the CMR. All left over electrical devices shall be de-energized and removed.

11. Provide any necessary cutting and patching to corridor walls and floors, any cutting which creates dust and excessive noise will require an approved window for exhausting. Dust containment is a requirement. Any remediation, cleaning or restoration as a result of this project will be the sole responsibility of the contractor. A 24 hour notification is required for any such efforts.
  12. Restore any finishes to match existing finishes without demarcation lines. It is the intent of this specification to utilize existing back boxes, openings and penetrations. Any abandoned, partially utilized or degraded surface, integral to, or, affected by this project will be restored to like new condition. This will include areas inside of and outside of the hoistway.
  13. Provide any concrete wall pockets and/or structural steel beams for support.
  14. Provide hoistway lighting throughout the hoistway. On/Off switches shall be connected by a pull string or 3 way switching that is accessible at each level. The pull string or on/off switches shall be accessible at each landing within one half meter from the entrance jamb.
  15. Provide a pit access ladder: Install a pit ladder on the same side of the pit wall that is closest to the hoistway door release mechanism with a grab bar 1220 mm (48.0 inches) above the bottom hoistway sill. The installation must be approved by OBO Elevator Program Management.
  16. Provide any necessary structural support at the pit floor required for buffer impact and guide rail loads.
  17. Provide a water monitor in the elevator pit when sump pumps and floor drains are non-existent.
    - a. The water monitor shall be installed in a location free from elevator equipment interference.
    - b. The water monitor shall have an audible/visible alarm from outside the hoistway.
    - c. The water monitor shall be connected to the elevator controller to recall elevator to an upper level in the event that water is detected in the pit.
  18. Protect all open hoistways and entrances with “closed” barriers which cover the entire opening during construction. Other than the basement level, all barriers shall be “open-able” from the inside only. Barriers shall be constructed to minimize noise and dust contamination to outside areas.
  19. Protect the car enclosure, hoistway entrance assemblies, and special metal finishes from damage during the construction phase.
  20. Provide any required onsite storage needed for elevator materials and tools. Prior to arriving onsite, coordinate the delivery and placement of any material with Post. Protect all surfaces from damage due to the placement of storage means.
  21. Provide a complete installation. All alterations shall be subject to approval.
  22. Remove all project debris from the site on a daily basis.
  23. Provide hoistway ventilation for smoke control as required by Code.
- B. Machine Room:
1. Remove the existing controller and related equipment entirely. New MRL equipment shall be located exclusively in the hoistway per the approved drawings.
- C. Electrical Service, Conductors and Devices:
1. Provide the code required lighting and Ground Fault Circuit Interrupt (GFCI) convenience outlets in all elevator spaces including: the hoistway, pit, and overhead spaces or machine room/s. The hoistway and pit lighting shall provide an illumination of not less than 100 lx (10fc) at the pit floor. The machine room/space illumination shall not be less than 200 lux (20 ftc) at floor level.

2. Provide a new fused mainline disconnecting means. Location to be approved by OBO Elevator Management Program. Verify individual protected (grounded), lockable “open,” disconnecting means. Disconnect shall be clearly labeled with car number and panel of origination. Remove the existing disconnect switch from the machine space. Install an approved junction box in that location which is bolted shut. Extend the power feed to the new equipment as required. The connection for extending the feeders will be made via a mechanical coupling, wrapped in insulating tape and then electrical tape. The finished union will be free of exposed conductors. Clearly and permanently label the panel “Elevator Feed”. Install a new main line disconnect adjacent to the hoist machine.
  - (a) Install new (3) three-phase mainline copper power feeders from the main line disconnect to the main power terminals of the new controller.
3. Provide a new fused disconnecting means for elevator cab lighting and fan with individual protected (grounded), lockable “open,” disconnecting means which is clearly labeled with car number and panel of origination.
  - (a) Install new single-phase copper power feeders to the elevator controller for car lighting and exhaust blower (exhaust fan).
4. Provide one additional non-GFCI convenience outlet in the pit for the water monitor.
5. Provide for all wiring to be enclosed in metal piping or channels in machine room, hoistway and cartop. No exposed wiring will be permitted.
6. Provide shatterproof guards for all lights.
7. Provide temporary power and illumination during construction.
8. Provide an emergency autodialing telephone and announcement speaker in the car, connected to the elevator control panel. Emergency phones shall have battery backup.
9. Conductors, wiring and cable in the scope of this project shall be new and installed in accordance with applicable codes (see section 1.4 F).

### 1.3 DEFINITIONS

- A. Defective Elevator Work: operation or control system failures; performance below specified ratings; excessive wear; unusual deterioration or aging of materials and finishes; unsafe conditions; the need for excessive maintenance; abnormal noise or vibrations; and similar unusual, unexpected, and unsatisfactory conditions.
- B. Alignment: coordinated installation of hoistway entrances with installation of elevator guide rails to facilitate alignment of the car entrance.
- C. Hoistway: or Well, or Shaft.
- D. Protected or Grounded: A connection to earth ground or to a conductive body which is connected to earth ground.
- E. Reasonable time: Time allowed for positive corrective action - twenty-four (24) hours from Contractor’s notification.
- F. Provide: to make ready, to install completely, included within the scope of Work or contract.

- G. Final Acceptance: Instance when the project is 100% complete including the resolution of any project discrepancies and punch list items, meeting the requirements of the customer or his representative.
- H. Owner: The United States Government or, its representative. To include, but not be limited to, facility management and its representatives.
- I. Machine Room Less (MRL): Elevator technology which locates the elevator hoist machine and controls in the hoistway or control closet eliminating the need for a separate machine room (penthouse).
- J. OEM: The original equipment manufacturer. The entity which originally designed/manufactured a component or, the entity which represents the proprietor of that device as sold in the current market.

#### 1.4 QUALITY ASSURANCE

- A. Qualified Providers: Alternate Providers must receive approval of the Contracting Officer (CO) at least ten days prior to the bid due date.
  - 1. Recommended Vendors: KONE, Otis, Schindler, Thyssen Krupp.
- B. Compliance with Regulatory Agencies: Comply with most stringent applicable provisions of following Code and/or Authority, including revisions and changes in effect on the date of this specification:
  - 1. EN81-1; 1998 +A3;2009 safety Rules for the construction of installation of lifts (Electric Lifts)
  - 2. EN 81-2 ; 1998 +A3;2009 safety Rules for the construction of installation of lifts (Hydraulic Lifts)
  - 3. EN 81-21: 2009 New passenger and goods passenger lifts in existing buildings.
  - 4. EN 81-28: 2003 Remote alarm on passenger and goods passenger lifts.
  - 5. EN 81-58: 2003 Landing Doors fire resistance
  - 6. EN 81-70: 2003 Accessibilities to lifts for persons with disability.
  - 7. EN 81-71: 2006 Vandal resistant Lifts
  - 8. EN 81-72: 2003 Firefighters' Lifts
  - 9. EN 81-73: 2005 Behavior of Lifts in event of fire.
  - 10. Other governing codes, ordinances, laws, etc. applicable to elevators and escalators, in the region of installation.
- C. Warranty:
  - 1. Material and workmanship shall comply in every respect with the contract documents. The provider shall correct any defective material or workmanship flaws which develop within one year from date of final acceptance, at no additional cost. Exclusive to this are issues which occur from improper use or improper care by the Purchaser.

2. During the warranty period, the provider will make modifications, adjustments and improvements to meet the performance requirements in Parts 2 and 3. Additionally, the provider will maintain the unit in accordance with the manufacturer's guidelines and at the manufacturer's suggested frequency.
- D. The elevator installation contractor shall be certified and have 5 years experience in maintenance, modernization, and construction of the elevator equipment being supplied.
- E. The minimum standard for all components will be in accordance with the OEM, as modified by OBO. The owner, or his representative, reserves the right to request in writing, a statement from the OEM, which validates any decision relative to piece of that manufacturer's equipment. It is the intent of this work to maintain safe, reliable equipment, in strict accordance with manufacturer's design.
- F. Unless explicitly stated, match colors and finishes to existing.

## **1.5 JOBSITE VERIFICATION**

- A. It is the sole duty of the contractor to review the contract documents and site conditions and to verify product compatibility. Site alterations due to product requirements shall be submitted for review fourteen (14) days prior to the bid due date.

## **1.6 DESIGN PHASE**

- A. Within thirty (30) calendar days after the contract award and prior to manufacturing and fabrication, submit three (3) complete comprehensive sets of shop drawings and sample materials for review. All submissions require OBO approval and shall be supplied in both paper and electronic formats (Compact Disk-CD). All submissions will be provided in English.
- B. Layout Drawings: Provide dimensioned drawings including: plan, elevation, and section views; Include large-scale details for: landings served, machine space layout, coordination with building structures, relationships with other constructions, pit ladders, lights, service outlets, light and stop switches. Indicate variations from the specified requirements. For new installations, include calculations and locations for maximum dynamic and static loads imposed on the building structure. Provide elevator equipment locations on the drawings.
- C. Shop Drawings: Provide detailed and dimensioned shop drawings for all equipment being installed as part of this project. Shop drawings for fixtures, cabs, doors, frames, and all other finished elements shall include information regarding the finished surface preparation.
- D. Power Confirmation Information: For the new installation, include motor horsepower, starting current, full-load running current, and demand factor.
- E. Finishes: Submit samples of actual finished materials for review of color, pattern, and texture. Include samples for cabs, doors, entrances, signal fixtures, lights, graphics, Braille plates, and any applicable details of mounting provisions when specified.
- F. Maintenance Manuals: For approval, provide maintenance manuals which include: operation and maintenance instructions, spare parts listings with recommended sources, recommended part inventories, emergency instructions, wiring diagrams, mechanical drawings, and troubleshooting

information. All information shall be provided in English and the local language. Include all diagnostic and repair information available from the manufacturer.

- G. Respond to all review comments within seven (7) calendar days of receipt. Promptly incorporate the required changes so that delivery and installation schedules are not affected. The provider's revision response time is not justification for equipment delivery or installation delays.
- H. Schedule: Submit a detailed Microsoft project schedule including key project milestones. These items shall include but not be limited to: security clearance progress, parts deliveries, start dates, installation durations, construction (temporary) use cars, testing and inspections. The project schedule shall correspond with the schedule of values and the payment application process.
- I. Maintenance Contract: For approval, provide a complete maintenance agreement as defined in section 1.8 Maintenance. Maintenance contract submissions are due 14 (fourteen) days prior to the bid submission.
- J. Maintenance Control Plan: For approval, provide a detailed, product specific, maintenance control plan. This document shall include all necessary instructions, procedures and frequencies needed to test, maintain and repair the equipment in accordance with the manufacturer's direction.

## **1.7 PERMITS, TESTING AND INSPECTION**

- A. Perform all tests required by the applicable codes and standards.
  - Final safety and acceptance tests will be witnessed by OBO Elevator Management. Scheduling notifications for testing are required fifteen (15) business days in advance. The contractor shall provide any necessary test weights and fixtures.

## **1.8 MAINTENANCE**

Provide one (1) year maintenance and warranty service. This maintenance service shall be "full-service" including preventive maintenance (adjust, clean, lubricate, etc.) and repairs. Pricing for this service shall be inclusive to the bid price and contain both labor and materials. These services shall include the following features.

- A. Monthly systematic examinations and adjustment of the equipment, exclusive of call back service visits.
- B. Cleaning, lubricating, adjusting, repairing and replacing of all parts as necessary to keep the equipment in proper working order and as required to maintain the performance standards set forth in this specification.
- C. There will no charge for the replacement of malfunctioning parts.
- D. Repairs, renewals and replacements shall be made by Contractor within a reasonable time "reasonable time" requires that positive corrective action be taken within twenty-four (24) hours from Contractor's notification. Renewals and replacements shall be made with new and genuine parts supplied by the Original Equipment Manufacturer (OEM).

- E. Provide twenty-four (24) hour emergency service to address operational interruptions or shut downs. Emergency service requires qualified elevator personnel to respond within two hours (one hour or sooner if the Contractor is advised of an entrapment).
- F. Use competent personnel, supervised and employed by the OEM or its representative. .
- G. No elevator shall be out of service for more than twenty-four (24) hours unless approved by the facility manager.
- H. Perform maintenance, including emergency callback service, at no additional cost to the Government.

## **2.0 PRODUCTS**

### **2.1 SUMMARY: ELEVATOR TECHNICAL PROFILE**

Quantity:	One (1) traction elevator, MRL design.
Car designation:	Elevator #1
Capacity:	Car # 1 = 550 kg (1200 lbs) - Provide the largest capacity lift available for the current hoistway size.
Class loading:	Class A loading.
Rated speed:	Pass Car #1= .50m/s (100fpm)
Suspension means:	Provide new.
Machine:	Provide new.
Machine location:	Provide new MRL located in the hoistway (well).
Machine Motors:	Provide new.
Governor:	Provide new.
Governor tail sheave	Provide new with slack rope switch.
Operational control:	Provide new solid state.
Motor control:	Provide new Variable Voltage Variable Frequency control (VVVF)
Power characteristics:	Retain Existing 380 volts, 3 phase, 50hz
Stops:	Retain existing four (4).

Openings:	Retain existing four (4).
Floors served:	Match the existing floor designations of “1, 2, 3, 4”
Travel:	Retain existing
Platform:	Provide new.
Landing Entrance size:	Retain existing.
Landing entrance jambs:	Provide new
Landing Entrance type:	Automatic sliding type door per specification section (2.8)
Car Door operation:	Provide new power operated closed loop
Car Door protection:	Provide new, full height, infra red door protection.
Car Doors:	Provide new, brushed stainless steel.
Car Door Equipment:	Provide new.
Safety Gear:	Provide new.
Guide rails:	Provide new.
Roller / Slide Guides:	Provide new.
Buffers:	Provide new.
Car enclosure:	Provide new premium standard package with minimum dimensions of 4 feet (1219.2mm) wide x 5 feet (1524mm)deep.
Signal fixtures:	Provide new with LED bulbs.
Hall (Landing) stations:	Provide new with LED bulbs.
Car operating panels	Provide new stainless steel with LED bulbs.
Car position indicators:	Provide new digital PI integral to the car operating panel.
Hall (Landing) lanterns:	Provide new lanterns with LED bulbs.
Hall (Landing) car position indicator:	Provide new digital position indicator (PI) integral to the hall station.
Communication systems:	Provide new hands free emergency phone integrated into the new car operating panel.
Hoistway Communication system	Provide new three way communication for service.

Traveling Cables: Provide new

**Additional features**

- Provide that the elevator will respond to automatic firefighters' operation to include main and alternate floor return with connections to elevator lobby, hoistway, and machine space smoke detectors.
- Provide new: accessibility signage
- Provide new 3 speed exhaust fan
- Provide tamper proof fasteners for all fasteners exposed to the public.
- Provide signage engraving filled with black paint or an approved an etching process.

**2.2 MATERIALS:**

A. Steel:

1. Sheet Steel (Furniture Steel for Exposed Work): Stretcher-leveled, cold-rolled, commercial quality carbon steel, complying with ASTM A366, matte finish.
2. Sheet Steel (for Unexposed Work): Hot-rolled, commercial quality carbon steel, pickled and oiled, complying with ASTM A568 and A569.
3. Structural Steel Shapes and Plates: ASTM A36.

B. Stainless Steel: Type 302 or 304 complying with ASTM A167, with standard tempers and hardness required for fabrication, strength and durability. Apply mechanical finish on fabricated work in the locations shown or specified, (Federal Standard and NAAMM nomenclature), with texture and reflectivity required to match Post's requirements. Protect with adhesive paper covering.

C. All brushed stainless steel shall be a No. 6, satin finish.

D. Plastic Laminate: ASTM E84 Class A and NEMA LD 3.1, Fire-Rated Grade (GP-50), Type 7, 1.27 mm (0.05 in.) ± 0.127 mm (0.005 in.) thick, color and texture as follows;

1. Exposed Surfaces: Color and texture selected by Post.
2. Concealed Surfaces: Provider's standard color and finish.
3. Fire-Retardant Treated Particle Board Panels: Minimum 19 mm (0.74in) thick base for natural finished wood and plastic laminate veneered panels, edged and faced as shown, provided with suitable anti-warp backing; meet ASTM E84 Class "I" rating with a flame-spread rating of twenty-five (25) or less, registered with Local Authorities for elevator finish material.

E. Paint: Clean exposed metal parts and assemblies so they are free of oil, grease, scale, and other foreign matter and apply one coat of standard rust-resistant primer. After installation, provide one finish coat of low VOC industrial enamel paint. Galvanized metal need not be painted. All components will be coated except for rails blades.

- F. Prime Finish: Clean all metal surfaces receiving a baked enamel paint finish so they are free of oil, grease, and scale. Apply one coat of rust-resistant primer followed by a filler coat over uneven surfaces. Sand smooth and apply final coat of primer.
- G. Baked Enamel Finish: Prime and finish per above (2.3 E and F). Unless specified “prime finish” only, apply three (3) additional coats of enamel in the selected solid color.

### **2.3 CAR PERFORMANCE**

- A. Car Speed:  $\pm 3\%$  of contract speed under any loading condition.
- B. Brake Capacity: Safely lower, stop and hold 125% of rated load.
- C. Car leveling accuracy:  $\pm 5\text{mm}$  (0.4 in.) under any loading condition. They elevator shall have automatic re-leveling @  $\pm 10\text{mm}$  (0.39 in).
- D. Door Opening Time: Time required from start of opening to fully open.
  - 1. All Automatic Cars = 2 seconds.
  - 2. Door Closing Time: Time required from start of closing to fully closed.
  - 3. All Automatic Cars = 4 seconds
- E. Car Floor-to-Floor Performance Time: 12-14s, measured from the start of the doors closing until the doors are fully open and the car is level and stopped at the next successive floor under any loading condition or travel direction. Measured in seconds.
- F. Car Ride Quality:
  - 1. Acceleration and Deceleration: Smooth constant and not more than  $.914 \text{ m/second}^2$  ( $2.99\text{ft/s}^2$ .) with an initial ramp between 0.5 and 0.75 second.
  - 2. Sustained Jerk: Not more than  $8 \text{ feet second}^3$  ( $2.438 \text{ m/s}^3$ ).
  - 3. Car ride shall be smooth and free of vibrations.
  - 4. Airborne Noise: Measured noise level of elevator equipment during operation shall not exceed fifty (50) dBA in elevator lobbies and sixty (60) dBA inside car under any condition including door operation and car ventilation exhaust blower on its highest speed.

### **2.4 OPERATION CONTROL**

- A. Simplex selective collective Microprocessor based:  
 Elevator operation shall be fully automatic by means of the car and landing buttons. Stops registered by the momentary actuation of the car or landing buttons shall be made in the order in which the landings are reached, in each direction of travel. The first car or landing button actuated shall establish the direction of travel. “UP” landing calls shall be answered while the car is traveling in the up direction and “DOWN” landing calls shall be answered while the car is traveling down. The car shall reverse direction after the uppermost or lowermost car or landing call has been answered, and shall proceed to answer car calls and landing calls registered in the opposite direction of travel.

B. Firefighters' Operation:

Provide main and alternate landing recall. Provide controls which are capable of providing automatic recall functions. Testing of these functions will occur at final acceptance. Program the recall floors as follows:

1. Main recall landing to be lowest level "1"
2. Alternate landing recall to be "2" floor
3. Install a key-switch in the main egress floor hall push button station and in the car operating panel which will facilitate Phase II Fire Service Operation in accordance with EN-81.

C. Card-Readers: Card readers are not required. However provisions for future card readers shall be provided.

D. Load Weighing: Provide new.

E. Access operation: Provide new with access key switches located in the door jamb

F. Door Operation: door operation shall be automatic with nudging operation and adjustable parameters.

G. Standby Lighting and Alarm: Provide a car mounted battery unit with an integrated solid state charger used to operate the alarm bell and car emergency LED lighting in the event of a power loss. The battery will be rechargeable with minimum five (5)-year life expectancy. Provide a constant pressure test button in the service compartment of the car operating panel. Provide standby lighting which is integral with a portion of normal car lighting system.

## 2.5 CONTROL EQUIPMENT

### A. Motor Controls

1. Provide a solid-state, closed loop, alternating current, variable voltage, variable frequency (VVVFAC), programmable motor controller (drive).
2. Design the unit to limit current, and suppress noise.
3. Suppress solid-state converter noises, radio frequency interference, and eliminate regenerative transients induced into the mainline feeders or the building standby power generator.

### B. Controller:

1. The controller shall be CE/UL/CSA labeled.
2. **Compartment:** Securely mount all assemblies, power supplies, chassis switches, relays, etc., on a substantial, self-supporting steel frame. Completely enclose the equipment with covers. Provide a means to prevent overheating. The main controller shall be located in the hoistway.
3. **Maintenance Access Panel:** Provide a remotely mounted maintenance access panel (MAP). The MAP shall have basic diagnostic and inspection operations as a minimum. The MAP shall be located at the lowest landing, in the machine room that once housed the old controller equipment. The required maintenance access panel can be flushed mounted, adjacent to the hoistway door. The location shall be clearly identified on the submittal drawings and requires approval
4. **Diagnostic Tools and Software:** The controls shall have on-board diagnostic capabilities eliminating the need for special tools and software. Controllers which require external devices for routine troubleshooting are strictly prohibited.
5. **Relays and Contactors:** Relays and contactors shall be of serviceable or replaceable type. Devices which are permanently embedded are strictly prohibited.

### C. MICROPROCESSOR AND RELATED HARDWARE.

1. Provide built-in noise suppression devices which provide a high level of noise immunity on all solid-state hardware and devices.
2. Provide power supplies with noise suppression devices and integral fused protection.
3. Isolate inputs from external devices (such as pushbuttons) with opto-isolation modules.
4. Design control circuits with one leg of the power supply grounded.
5. Safety circuits shall not be affected by accidental grounding of any part of the system.
6. The system shall automatically restart when power is restored.

7. System memory shall be retained in the event of power failure or disturbance and shall not be retained via a battery powered storage device. Information shall be permanently retained.
8. Equipment shall be provided with Electro Magnetic Interference (EMI) shielding.
9. Wiring: Provide CE/CSA labeled copper for factory wiring. Neatly route all wiring and securely attach wiring connections to studs or terminals.
10. Permanently mark components (relays, fuses, PC boards, etc.) with symbols shown on wiring diagrams.

## 2.6 HOISTWAY EQUIPMENT

- A. Sheaves and sealed bearings:
  1. Provide new sheaves with maintenance free, sealed bearings. Mount sheaves to the machine and structural members with manufacturer approved hardware. Pillow blocks shall be “double-nutted” and mounted using a grade 5 or equivalent hardware. Beveled washers are required for through flange mountings in structural beams and channels.
- B. Gearless Traction Hoist Machine – MRL
  1. Provide an Alternating Current induction type or Permanent Magnet Synchronous Motor (P.M.S.M.) Variable Voltage Variable Frequency Alternating Current (VVVFAC) gearless traction type motor with brake. Mounting shall be such that the drive sheave and deflector sheave are in proper alignment on a common, isolated, machine support frame in the overhead.
  2. Provide a hoist machine mounted, direct drive, digital, closed-loop, velocity encoder. Encoder wiring shall be provided in a separate, isolated conduit and maintain adequate clearance to other voltage sources which induce noise (EMF). When necessary, if crossing a noise inducing voltage source, conduits shall be arranged 90 degrees to each other.
  3. The hoist machine shall be equipped with a secondary emergency brake. The second brake shall be clearly labeled “Emergency Brake” and shall provide protection against unintended motion and ascending car over-speed. The operation of the emergency brake will be automatic and shall be automatically reset when a loss of power causes its engagement. Operation of the emergency brake through normal means will require a manual reset.
- C. Counterweight: Counterweight designs with reduced profile counterweights are preferred. Should the submitted design rely on a counterweight, it shall be designed to accommodate the largest elevator car and maximize hoistway space utilization. If a counterweight is provided it shall conform to the following:
  1. Provide a new steel counterweight frame with metal weights.
  2. Weights shall be secured in the frame with thru rods or bolted brackets to keep weights from rattling and becoming dislodged.
  3. Provide new rigidly mounted guide shoes or roller guides with replaceable inserts or rollers.

- D. Car and Counterweight Rails: Provide new rails and brackets according to the manufacturers design. Rails shall be installed plumb, square and with a consistent distance between guides (DBG). Rail fastenings will be such that the assembly is stable and rigid with no deflection during operation, testing and safety engagement. Rails joints shall be filed smooth and free from notable transitions.
- E. Counterweight Guard: Provide a new counterweight guard.
- F. Governor: Provide a new bidirectional governor with an over-speed switch and remote reset.
- G. Governor Rope Tensioning Sheaves: Provide a new sheave and support frame on the pit floor or guide rail. Provide a frame with guides or a pivot point to enable free vertical movement and constant rope tension including a slack rope switch.
- H. Suspension means: Provide new traction suspension means that meet the manufacturers design and specifications for the equipment installed.
- I. Governor Rope: Provide a new governor rope to meet the manufacturer's specification.
- J. Terminal Stopping: Provide new shaft limit switches.

## **2.7 ELECTRICAL WIRING AND WIRING CONNECTIONS:**

- A. Provide copper wiring throughout. Conductors shall be individually coded and connections made on identified studs or terminal blocks. Termination points shall correspond to the provided wiring diagrams. Provide 10% spare conductors throughout. Identify spare conductors at termination points.
- B. Conduit: All wiring shall be installed in painted or galvanized steel conduit or channel, Electrical Mechanical Tubing (EMT) or duct. Conduit shall be adequately supported, installed plumb and level, and supplied with appropriate fittings for termination at devices. Conduit size, 19 mm (0.74in.) minimum. Flexible conduit is permitted in lengths of 1.8m (6 feet) or less. Flexible heavy-duty service cord may be used between fixed car wiring and car door switches for door protective devices.
- C. Traveling Cables: Provide new traveling cables with flame and moisture-resistant outer covers. Hang traveling cables in a manner that will prevent rubbing or chafing against the hoistway or equipment within the hoistway. Separate and clearly identify spare wires at both termination points.
- D. Auxiliary Wiring: Connect the emergency phone to the building phone line.
- E. Provide pre-transfer timing capability from emergency power to normal power.
- F. The installation will be completed using wire chases, conduit and trunking that is metal and is properly terminated in accordance with the specifications.

## 2.8 HOISTWAY ENTRANCES, DOORS, AND DOOR EQUIPMENT

- A. Hoistway Sills: Provide new stainless steel sills.
- B. Hoistway Entrances and Doors: Provide new brushed stainless steel hoistway doors and door jamb assemblies.
- C. Entrance Equipment:
  1. Provide new cold drawn carbon steel hoistway door tracks with self lubricating, replaceable hanger roller assemblies. Rollers shall have sealed ball bearings and nylon rolling surfaces. All hanger rollers are to be equipped with up-thrust prevention.
  2. Provide new headers and supporting struts for each entrance. Anchor the structure to the existing sill, door frame and building structure to provide a rigid assembly.
  3. Provide new spring style door closers at all landings.
  4. Provide new landing door interlocks at all floors.
  5. Provide new galvanized hoistway fascia as required by Code.
  6. Stencil paint 101.6 mm (4 in.) minimum high floor designations in contrasting color on the inside face of the hoistway doors or hoistway fascia in a location visible from within car.
- D. Hoistway Door Panels:
  1. Provide new hoistway door panels at each entrance. The door panels shall be fire rated for 1.5 hours. Provide certifying identification tags attached to each door.
  2. Each hoistway entrance shall have provisions for access to the door release via a stainless steel escutcheon.
  3. Hoistway door panels shall be brushed stainless steel finished to match the stainless steel entrance jambs as approved.
  4. Provide new rubber astragals on leading edges for center parting doors.
  5. Provide a minimum of two (2) gibs per panel (one at leading and one at trailing edge) which penetrate the sill groove the entire length of door travel.
  6. Provide new secondary retainers at the bottom of each panel (excluding swing doors).
  7. Sight Guards: Provide new, 16 gauge, sight guards in the same material and finish as the hoistway entrance door panels. Construct without sharp edges (excluding swing doors).

## 2.9 CAR EQUIPMENT

- A. Platform and Sling: Provide a new car platform and sling which is compatible with the MRL design. Provide a minimum of ¾" marine grade plywood for the decking. The bottom of the platform shall be fire rated. Provide the code require crosshead data plate permanently attached on the front of the crosshead.
- B. Safety Gear Device: Provide new safety gear.
- C. Car Guides: Provide new rigidly mounted slide guides with replaceable inserts. The car shall be centered in the rails.

- D. Work light and duplex plug receptacle: Provide a new GFCI protected outlet and work light on the car top. Include on/off switch and a light guard.
- E. Car top inspection station: Provide a new car top inspection station consisting of an “inspection and normal” operation toggle switch, a mushroom style stop switch, individual up and down buttons, and a common run (safety) button.
- F. Car door equipment:
1. Provide new hanger rollers with neoprene roller surfaces. Adjust eccentric up-thrust rollers for minimum clearance.
  2. Provide a new, formed, cold-drawn removable steel track with a smooth roller contact surface.
  3. Provide a new steel car door header.
  4. Provide new brushed stainless steel car doors.
  5. Provide a new car door contact (gate switch).
  6. Provide a new car door restricting device (zone lock) that will restrict opening of car door(s) outside unlocking zone.
  7. Provide a new closed loop door operator. The operator shall be a medium speed, closed loop door operator capable of opening doors at no less than 0.762 m/s (2.5 ft/s) and accomplish a door reversal in no more than 63.5mm (2.5in.) of door movement. Provide solid-state door control with closed loop circuitry to constantly monitor and automatically adjust door operation based upon velocity, position, and motor current. Maintain consistent, smooth and quiet door operation at all floors, regardless of door weight or varying air pressure. Provide one door operator programming tool as part of the installation (when required for operator programming/adjusting).
  8. Infrared Reopening Device: Black, fully enclosed device with full screen infrared matrix or multiple beams extending vertically along leading edge of each door panel. Device shall prevent doors from closing and reverse doors at normal opening speed if, beams are obstructed while doors are closing, except, during nudging operation. In the event of device failure, provide for automatic shutdown of car at floor level with the doors open.
  9. Nudging Operation: After the beams of door control device (door reopening device) are obstructed for a predetermined, adjustable time interval (minimum 20.0 - 25.0 seconds), a warning signal shall sound and doors shall attempt to close with a maximum of 2.5 foot pounds kinetic energy. Activation of the door open button shall override nudging operation and reopen doors.
  10. Interrupted Beam Time: When the beams are interrupted during an initial door opening, the doors shall remain (door hold time) open a minimum of 3.0 seconds. When the beams are interrupted after the initial 3.0 seconds door hold time, will reduce to an adjustable time of approximately 1.0 - 1.5 seconds after beams are re-established.
  11. Differential Door Time: Provide separately adjustable timers to vary the time that doors remain open after stopping in response to calls.
    - a. Car Call:  
Hold open time adjustable between 3.0 and 5.0 seconds.
    - b. Hall Call:  
Hold open time adjustable between 5.0 and 8.0 seconds. Use hall call time when car responds to coincidental calls.

## **2.10 CAR OPERATING PANELS:**

- A. Provide a new car operating panel with a brushed stainless steel faceplate and corresponding back-box. Retain the faceplate using tamperproof stainless steel fasteners. .
- B. Provide combination direction arrows and digital position indicators. The new combination position indicators will be located in the car operating panels with a minimum of 50 mm (2 in.) characters.
- C. Communication System: Provide a new code compliant two-way communication device in the car operating panel with automatic dialing, tracking and recall features, supplied with shielded wiring to the controller in the machine room. Provide a dialer with automatic rollover capability that will dial a minimum of two numbers consecutively if one is busy. The first number shall be the Marine Post One.
- D. Identify floor buttons, alarm button, door open button, door close button and emergency call button in a manner suitable for the visually impaired. Identification plates shall be surface mounted. Configure the plates per the latest local building code accessibility standards including Braille. Locate operating controls no higher than 1219.2 mm (48in.) above the cars finished floor; emergency push-to-call and alarm buttons shall be mounted no lower than 889mm (35 in.).
- E. Provide minimum 19 mm (0.74in.) diameter raised or flush floor pushbuttons which activate a LED illumination to indicate a call registration.
- F. Provide an alarm button to ring the emergency alarm bell located on car. Illuminate the button when actuated.
- G. Provide a “door open” button to stop and reopen doors or, to hold the doors in the open position.
- H. Provide a “door close” button to activate the door close cycle. The door close cycle shall not begin until the normal door dwell time for a car or hall call has expired, except firefighters’ operation.
- I. Provide black paint filled (except as noted in section L), engraved or approved etched signage as follows. Provide engraved car numbers on the main car operating panels, located at top of panel: In the car the rated load of the lift in kilograms as well as the number of persons shall be displayed. The minimum height of the characters will be 10 mm for capital letters and numbers, 7mm for small letters.
- J. SERVICE CONTROLS:  
 Provide the latest EN81 Code Series controls.

## **2.11 CAR ENCLOSURE**

- A. Provide the manufacturers premium standard cab with a steel shell cab enclosure and a finished wood veneer to be chosen by Post. Provide a stainless steel suspended ceiling, with integrated LED cab lighting. Provide new, LED emergency lighting, an automatic car fan, sheet rubber flooring, pad buttons (pins) and quilted nylon cab protective pads. The cab returns and transom

shall be made of brushed stainless steel. The new cab enclosure shall be able to accommodate a wheelchair. The car sill shall be stainless steel secured with matching stainless steel fasteners.

## **2.12 HALL CALL STATIONS**

### **A. Pushbuttons:**

1. Provide a new hall call riser with flush mounted faceplates for each landing. Restore wall finish without demarcation “as new” finish. Mount push buttons 1.07m (42 in.) above the finished floors.
2. Include tamperproof LED lighted pushbuttons for each direction of travel which illuminate to indicate call registration. Include approved engraved messages and pictorial representations, prohibiting the use of the elevators during a fire or other emergency situation as part of faceplate. The pushbutton design shall match the car operating panel pushbuttons.

## **2.13 SIGNALS**

- A. Provide new combination direction arrows and position indicators integral to the new hall stations. Provide one at each entrance to indicate travel direction of the arriving car. Illuminate up or down LED lights and sound a tone once for up and twice for down direction prior to the cars arrival at the floor (advanced notification). Sound levels shall be adjustable from twenty to eighty (20 – 80) dBA measured at 1.5 m (4.92ft.) from in front of the hall control station and 91 mm (3.58in.) above the floor.
- B. Car Position Indicator: Alpha-numeric digital indicator containing floor designations and direction arrows a minimum of 25 mm (2in.) high to indicate floor served and direction of car travel.
- C. Hall Position Indicator: Alpha-numeric digital indicator containing floor designations and direction arrows a minimum of 25 mm (2in.) high to indicate floor served and direction of car travel. Mount integral with hall stations at all floors.
  - a. Faceplate Material and Finish: No. 6 stainless steel finishes for all fixtures.
- D. Floor Passing Tone: Provide an adjustable audible tone of no less than twenty (20) decibels which sounds as the car passes or stops at a floor.

## **2.14 SEISMIC OPERATIONS AND EQUIPMENT**

- A. OBO ISC 2009 Overseas Buildings Operations – International Code supplement states Lisbon, Portugal as Seismic Zone “2B”.

## **3.0 EXECUTION**

### **3.1 Site Condition Inspection**

- A. Prior to the installation of new equipment, examine the hoistway and machine spaces to verify that no irregularities exist which will affect the execution of the work specified. Do not proceed with the installation until identified variations have been resolved by an OBO approved method.

### **3.2 Product Delivery, Storage and Handling**

- A. Deliver material in the manufacturer's original, unopened protective packaging.
- B. Store the new materials in the original protective packaging to prevent soiling, physical damage, and moisture intrusion.
- C. Protect equipment and exposed finishes from damage and stains during transportation, erection, and construction.

### **3.3 Installation**

- A. Install all equipment in accordance with manufacturer's instructions, referenced Codes, this specification and approved submittals.
- B. Install machine space equipment with access clearances in accordance with applicable Codes and this specification.
- C. Install all equipment so it may be easily removed for maintenance and repair.
- D. Install all equipment to afford maximum accessibility, safety, and continuity of operation.
- E. Remove oil, grease, scale, and other foreign matter from all equipment and apply one coat of machinery enamel. Protect parts intended to move freely from paint intrusion (example: brake pins.)
- F. All exposed equipment and metal work installed as part of this work which does not have an architectural finish shall be protected with paint.
- G. Neatly touch up damaged factory-painted surfaces with original paint colors. Protect machine-finish surfaces against corrosion.
- H. Where intended, installations shall be true, plumb and substantially flush at the discretion and approval of OBO.

### **3.4 Field Quality Control**

- A. Work at the jobsite will be routinely checked during the course of the installation. It is required that the contractor fully cooperate with the reviewing personnel. Any deficiencies identified during the course of periodic site surveys shall be corrected immediately and prior to any further work continuation.

### **3.5 Adjustments**

Install rails plumb and align vertically with total deviation of less than 1.58 mm (0.063in) in 30.5 m (100ft.). Secure joints without gaps and file any irregularities to a smooth surface.

- A. Dynamically balance car for optimum performance.

- B. Lubricate all equipment in accordance with manufacturer’s instructions.
- C. Adjust motors, power conversion units, brakes, controllers, leveling switches, limit switches, stopping switches, door operators, interlocks, and safety devices to achieve required performance levels.

**3.6 Cleanup**

- A. Keep work areas orderly and free from debris during the progression of the project. Remove packaging materials, trash, and debris on a daily basis; to be disposed of in an environmentally friendly manner.
- B. Remove all loose materials and filings resulting from work.
- C. Clean the machine room equipment and floor.
- D. Clean hoistways, car, car enclosure, entrances, operating and signal fixtures just prior to handover.

**3.7 Acceptance Review and Tests**

- A. Acceptance Review:
  1. All work shall be subject to an acceptance review prior to final acceptance. The Provider shall perform a review and evaluation of all aspects of the work prior to requesting OBO’s final review. Work shall be considered ready for OBO’s final contract compliance review when copies of Provider’s test and review sheets are submitted and approved and the elevator (s) deemed ready for testing and subsequent service.
  2. The contractor shall furnish any labor, materials, and equipment necessary for the review.
  3. OBO’s written list of observed deficiencies will be submitted to the Provider for corrective action. OBO’s review shall include the following evaluations as a minimum:
    - a. Workmanship and compliance with the Contract Documents.
    - b. Verification of contract speed, capacity, floor-to-floor, and door performance relative to the Contract Documents.
    - c. Satisfactory performance of the following:
      - (a) Starting, accelerating, running
      - (b) Decelerating, stopping accuracy
      - (c) Door operation and closing force
      - (d) Equipment noise levels
      - (e) Signal fixture utility
      - (f) Overall ride quality
      - (g) Performance of door control devices
      - (h) Operations of emergency two-way communication device
      - (i) Operations of firefighters’ service
      - (j) Operations of special security features and floor lock-off provisions
      - (k) Measured motor and drive currents

B. Test Results:

1. In all test conditions, obtain specified contract speed, performance times, stopping accuracy without re-leveling, and ride quality to satisfaction of the OBO. Tests shall be conducted under both no load and full load conditions. The temperature rise in motor windings will be limited to 50° Celsius (122°F) above ambient. A full-capacity, one (1) hour running test, stopping at each floor for ten (10) seconds in up and down directions may be required.

C. Performance Guarantee:

1. Should OBO identify defects, poor workmanship, variance or noncompliance with applicable codes, standards or the requirements of Contract Documents, the provider shall complete corrective work in an expedient manner to satisfaction of the OBO representative at no cost and shall be subject to the following terms:
  - a. Replace equipment that does not meet Code or Contract Document requirements.
  - b. Perform work and furnish labor, materials, and equipment necessary to meet specified operation and performance.
  - c. Perform retesting required by Governing Code Authority, Purchaser and OBO Representative.
  - d. A follow-up, final contract compliance review shall be performed by the OBO representative after notification by the provider that all deficiencies have been corrected. Provide OBO representative with copies of the initial deficiency report marked to indicate items which the Provider considers complete. If additional reviews are required due to the Provider's gross non-compliance with initial and follow-up deficiency reports, the OBO representative shall bill the Provider at normal billing rates and expenses, and the Provider acknowledges it will pay for additional compliance reviews.

### 3.8 Contract Closeout

- A. Maintenance Manuals:
  - 1. Provide four sets of approved manuals as described in section 1.6. The manuals shall be neatly bound with all written information necessary to properly maintain and adjustment of equipment. Supply two (2) hard copies in English, two (2) hard copies in the local language and one (1) electronic reproducible master in a PDF format.
- B. Wiring Diagrams:
  - 1. Provide straight-line wiring diagrams of all “as-installed” elevator circuits. Provide one additional electronic set as a reproducible master in a PDF format. Maintain all drawing sets with the addition of all subsequent changes. These diagrams are the Purchaser’s property.
- C. Keys:
  - 1. Provide four (4) sets of keys for all switches and control features. Each key shall be numbered and tagged with its function. Provide a (3) copies of a detailed key legend clearing identifying the key number and its corresponding function.
- D. Provide upgrades and/or revisions of software during the progress of the work, warranty period and the term of any ongoing maintenance agreement between the Purchaser and Provider.
- E. Inclusive to the contract provide detailed “As Built” drawings of all areas/disciplines affected by the scope of work including, but not limited to: elevator machine spaces, hoistways, lobbies. Provide “As Built” drawings for elevator equipment, fire alarm equipment, electrical equipment, fire barriers, doors and access equipment, plumbing equipment, and structural systems. Provide both electronic and hard copies.

END OF SECTION