

PART 1 GENERAL

1.1 REFERENCES

- .1 American National Standards Institute (ANSI)/National Electrical Manufacturers Association (NEMA)
 - .1 ANSI/NEMA MG1-2011, Motors and Generators.
- .2 CSA International
 - .1 ASME A17.1/CSA B44-2010, Safety Code for Elevators and Escalators (Bi-national Standard, with ASME A17.1).
 - .2 CSA B651-12, Accessible Design for the Built Environment.
- .3 Efficiency Valuation Organization (EVO)
 - .1 International Performance Measurement and Verification Protocol (IPMVP).
 - .1 IPMVP 2007 Version.
 - .2 requirements.

1.2 NATURE OF THE WORK

- .1 The Contractor will undertake all work listed below, and be responsible for coordinating other disciplines, such as electricity for elevators.
 - .1 Identify the in car equipment with characters at 13mm high, in accordance with B44-M85 3.6.1.11.
 - .2 Identify the equipment on the landing where emergency elevator recall switch is located using characters of at least 75 mm in height, in accordance with B44-M85 3.12.15.6.
 - .3 Identify each landing entrance on the hoistway side with characters of at least 100 mm in height in accordance with B44-M85 3.12.15.7. (Existing characters have a height of 55 mm).
 - .4 Replace the cabin inspection switch with a group 1 keyswitch reserved for elevator staff, in accordance with B44-M85 3.15(a).
 - .5 On an MSDS subject to the pump assembly, indicate the operating pressure and adjustment of the relief valve, in accordance with B44-M85 4.19.1.2.
 - .6 Install a pressure gauge fitted with an isolation valve on the pump assembly, in accordance with M85 B44-4.19.3.3.
 - .7 Install a hoistway access switch, since the vertical distance between the access landing and the cabin roof exceeds 900 mm, in accordance with B44-M85 2.12.9.1.2.
 - .8 Secure the panel of the cabin top emergency exit using hinges or a chain, in accordance with B44-M85 3.6.1.5(c).
 - .9 Move the pit stop switch to a height of 2,000 mm at most from the floor of the pit or install an additional stop switch, in accordance with B44-M85 2.7.6.2.

- .10 Install an MSDS on the car buffer, in accordance with B44-M85 3.3.4.3.
 - .11 Install MSDS in or on the controller, in accordance with B44-M85 2.4.1.
 - .12 Install an indicator light for emergency power supply in the recall landing station, in accordance with B44-M85 3.12.13.1(c).
 - .13 Install smoke detectors in the elevator lobbies and connect their signal to the elevator controller, in accordance with B44-M85 12.2.4.3(b).
 - .14 Equip the machine room sprinkler heads with protection, in accordance with B44-M85 12.2.4.3(c).
 - .15 Increase the luminosity in the machine room to at least 100 lux at floor level, in accordance with B44-M85 2.3.5.1.2.
 - .16 Extend the height of the handhold of the access ladder into the pit to at least 1,200 mm above floor level of the access landing, in accordance with B44-M85 2.7.3.4.
 - .17 Increase to at least 50 lux the luminosity level on the floor of the pit, in accordance with B44-M85 2.2.1.2.
 - .18 Provide with each jamb hoistway entrance, 1525 mm above the floor, metallic sign with Arab digits embossed and inscriptions in Braille to identify the hoistways. The actual signs are installed only on one jamb lower then prescribed by the safety code B44-20 E-17.
 - .19 Install lights in cab or at each hoistway, in accordance with the safety code B44-10 E-16.
 - .20 Install an infrared detector on the car's door.- A retractable band contacting the objects leading to the reopening of the doors is currently installed, according to the safety code B44-10 E-6.1.
 - .21 Install tactile signs located in car, left of the buttons. – The signs for the hoistways 2 and 4 are installed on the right side, in accordance with the safety code B44-10 E-9.4.
 - .22 Provide at least 1.5mm projecting buttons at each hoistways, according to the safety code B44-10 E15.5
 - .23 Provide an verbal position announcement in car to indicate the hoistway to which the car stops, in accordance with the safety code B44-10 E-10.3.
- .2 Proceed with the removal and replacement of the hydraulic cylinder of the elevator 1. The cylinder is part of Otis installation n° 399790, built in 1976. The cylinder technical data are:
- .1 Travel: 13.2m
 - .2 Piston: 101mm
 - .3 Current cylinder: 4.578m
 - .4 Pit: 1524mm
 - .5 Full charge: 2641kg
 - .6 Capacity: 680kg
 - .7 Speed: 22.86 m3min

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:

- .1 Submit manufacturer's instructions, printed product literature and data sheets for passenger elevator and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province, Canada.
 - .2 Indicate on drawings project layout, including details and information as follows:
 - .1 Size and location of machine and controller.
 - .2 Size and location of car, hoisting beam, guide rails, buffers stands and other components in hoistway.
 - .3 Rail bracket spacing and maximum loads on guide rails.
 - .4 Reactions at points of support.
 - .5 Weights of principal components.
 - .6 Top and bottom clearance and over travel of car.
 - .7 Wiring diagrams with location of circuit breaker, switchboard panel or disconnect switch, light switch and feeder extension points in machine room.
 - .8 Location in machine room for connection of travelling cables for car light and telephone.
 - .9 Location and size of access doors.
 - .10 Loads on hoisting beams.
 - .11 Expected heat generation of equipment in machine room.
 - .12 Seismic design data and detailed calculations.
 - .13 Include on general arrangement drawings:
 - .1 Type, size, location of hoistway entrances and showing details of fasteners to hoistway structure.
- .3 Test Reports: submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.
- .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Manufacturer's Instructions: submit manufacturer's installation instructions.
- .6 Manufacturer's Field Services: submit copies of manufacturer's field reports.

1.4 CLOSEOUT SUBMITTALS

- .1 Project Record Documents:
 - .1 Record actual locations of equipment, names of equipment manufacturers and suppliers, concealed conduit and boxes, concealed devices, disconnects.

- .2 Operation and Maintenance Data: submit operation and maintenance data for passenger elevators for incorporation into manual.
 - .1 Include description of elevator system's method of operation and control including group supervisory control system, motor control system, door operation, signals, firefighter's service, emergency power operation, and special or non-standard features provided.
 - .2 Provide parts catalogues with complete list of equipment replacement parts with equipment description and identifying numbers.
 - .3 Legible schematic wiring diagrams covering electrical equipment installed, including changes made in final work, with symbols listed corresponding to identity or markings on both machine room and hoistway apparatus.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .2 Storage and Handling Requirements:
 - .1 Store materials off-ground, indoors, in dry, clean and well-ventilated area and in accordance with manufacturer's recommendations.
 - .2 Store and protect elevator components from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

PART 2 CYLINDER

2.1 PROTECTION OF THE CYLINDER BY A PVC SLEEVE

- .1 The waterproof PVC sleeve protects the cylinder against corrosion, allows the monitoring and removal of fluids so the cylinder does not come into contact with water, and helps to retain oil when the cylinder leaks. This protective sleeve can also protect your property against possible environmental contamination and reduce associated cleaning fees. The Contractor strongly recommends ensuring that the new cylinder to be installed is equipped with a **waterproof PVC protection sleeve**. However, in some situations, insertion of a PVC protection sleeve may require considerable additional work. This is the case 1) when it is necessary to remove the existing casing of the pit cylinder or 2) when laying a protective sleeve requires the modification of the building or elevator hoistway (e.g. rig requires too much space to fit in the building, does not fit through the entrance, or may be used only if guide rails of the elevator hoistway are moved). Therefore, the Contractor will install a waterproof PVC protection sleeve, unless one of the above situations occurs during installation, in which case the Contractor shall comply with the Departmental Representative's instructions.
- .2 Regardless of the situation presented in the previous paragraph, the Contractor shall install a waterproof PVC protection sleeve subject to the provisions of the section "Removal of Equipment and Preparation of Drilled Hole".

- .3 If any of the above-mentioned situations (1 or 2) occurs, the Contractor will be responsible for removing the waterproof PVC protection sleeve from the cylinder and installing the cylinder after application thereon of zinc oxide paint and a coat of extruded polyethylene, subject to the provisions of the section "Removal of Equipment and Preparation of Drilled Hole";
- .4 If any of the above-mentioned situations (1 or 2) occurs, the Contractor shall await the written instructions of the Departmental Representative before proceeding with the work.

2.2 SYSTEM DESCRIPTION

- .1 New cylinder with waterproof PVC protection sleeve
 - .1 The head of cylinder and the existing cylinder will be replaced. A new self-adjusting seal will be installed. The outer surface of cylinder will be painted with zinc oxide and coated with extruded polyethylene. The waterproof PVC protection sleeve will be placed on the cylinder before delivery.
- .2 Piston kept
 - .1 The existing piston will be kept and reinstalled. It will be cleaned and inspected before being reinstalled.
- .3 Installation
 - .1 The piston and the cylinder will be installed plumb, and will easily operate with minimum friction.
- .4 Removal of the support of the cylinder head – by the Contractor
 - .1 The Contractor will remove the existing support of the cylinder head to replace the cylinder. After installing the new cylinder and its PVC protection sleeve, the Contractor will install a new support for the cylinder head.

2.3 REMOVAL OF EQUIPMENT AND PREPARATION OF DRILLED HOLE

- .1 The Contractor's bid must include the removal of the existing cylinder from the initial drilled hole. Include in the bid the estimated time required for the actual removal of the cylinder.
- .2 If the scheduled hours should at any time be exceeded for reasons beyond the control of the Contractor, he/she will notify the Departmental Representative and proceed with the work only after obtaining the Departmental Representative's written consent. The hourly rate surcharge will be \$350.00 per hour per team. Drilling and cleaning of the borehole, if needed, are not included.
- .3 If, while digging, a physical barrier or subsidence is met, authorization to continue digging using any special lifting or excavation equipment must be issued by the Departmental Representative. The Contractor shall be reimbursed at the rate of billing above, all additional costs incurred due to the discovery of the obstacle in the ground, including fees for the rental of special equipment.

2.4 REMOVAL OF DEBRIS RESULTING FROM EXCAVATION

- .1 All material removed by the Contractor and his/her representatives or by contractors or sub-contractors during the execution of the above-mentioned work will be placed in 55 gallon drums.

The Contractor will be required to affix the appropriate label on drums and to eliminate them properly, in accordance with regulations in force.

2.5 WORK EXCLUDED FROM THE ELEVATOR CONTRACT

- .1 If required in conditions, floors, walls and elevator entrances for normal activities related to the aforementioned work will be protected. If special equipment is required for drilling or digging in soil containing contaminants, the Owner will be responsible for all necessary measures to protect the building, to bring special equipment on site, use it and remove it.
- .2 To complete the above-mentioned installation, the owner or his/her representative shall do or provide the following in accordance with the requirements of codes. The prices and installation work program of the elevator Contractor are based on the following conditions, which must exist on site at the beginning of and during installation of the elevator equipment:
 - .1 The Owner is responsible for the drilling, cleaning of the drilled hole and removal and disposal of cuttings resulting from digging.
- .3 The Owner must provide electrical current required for lighting, welding, operating tools and equipment for lifting and drilling (if applicable), etc., until completion of work.
- .4 The Owner must ensure that, until completion of work, the elevator Contractor and his/her representatives have unrestricted and continuous access to the work site during normal working hours agreed on.
- .5 The Owner must provide a storage site. This location must be large enough to allow the storage of the cylinder, PVC sleeve, oil, tools, etc. during the work. It must be located near the work site.
- .6 The Owner must certify that the hole drilled for the cylinder is free of contaminants and obstacles.
- .7 The Owner shall provide all permits required to perform welding and cutting work using an oxyacetylene torch in the elevator hoistway(s).
- .8 The Owner must make sure to switch off and to reset all fire, smoke or combustion detectors at the work site that could be triggered by activities related to the execution of the aforesaid work.
- .9 The drilling work and cleaning of the drilled hole should be included in the bid.
- .10 The work must be completed in regular time.

2.6 MATERIALS

- .1 Materials: as required to achieve specified performance criteria; functionally compatible with adjacent materials and components.

2.7 POWER SUPPLY

- .1 Protect elevators and equipment against damage or malfunction due to change to or from normal power supply and emergency power supply.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for elevator installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions, and data sheet.

3.3 INSTALLATION

- .1 Install hoistway, machine room, and other elevator materials and components in accordance with ASME A17.1/CSA B44, local codes, regulations and manufacturer's written instructions.

3.4 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Have manufacturer of products, supplied under this Section, review Work involved in the handling, installation/application, protection and cleaning, of its work and submit written reports, in acceptable format, to verify compliance of Work with Contract.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
 - .3 Schedule site visits, to review Work, at stages listed:
 - .1 After delivery and storage of products, and when preparatory Work, or other Work, on which the Work of this Section depends, is complete but before installation begins.
 - .2 Twice during progress of Work at 25% and 60% complete.
 - .3 Upon completion of the Work, after cleaning is carried out.
 - .4 Obtain reports, within three (3) days of review, and submit, immediately, to Departmental Representative.

3.5 SITE TESTS

- .1 Perform and meet tests required by ASME A17.1/CSA B44.
- .2 Supply instruments and execute specific tests.
- .3 Furnish test and approval certificates issued by jurisdictional authorities.
- .4 At agreed time during the warranty period, and with building normally occupied using normal building traffic, conduct tests to verify performance. Furnish event recording of hall call registrations, time initiated, and response time throughout entire normal working day.

3.6 ADJUSTING

- .1 Adjust door opening and closing times to suit handicapped users in accordance with Departmental Representative instructions.
- .2 Adjust control system to cause elevators to answer hall calls during working day within performance criteria specified.
- .3 Adjust for smooth acceleration and deceleration of car so as not to cause passenger discomfort.
- .4 Adjust automatic floor levelling feature at each floor.

3.7 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by passenger elevator installation.

END OF SECTION