
Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International).
 - .1 CSA-B44-2010, Safety Code for Elevators and Escalators.
 - .2 CAN/CSA-B651-12, Accessible Design for the Built Environment.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- .3 National Building Code (NBC).
 - .1 National Building Code of Canada 2010.

1.2 SYSTEM DESCRIPTION

- .1 One hydraulic passenger elevator type;
 - .1 Elevator machine room located at bottom and immediately beside hoistway.
 - .2 Barrier-Free in accordance with CAN/CSA B651, Barrier-Free Design.
 - .3 Bilingual Markings:
 - .1 Provide identification and instructions on operating panels and on signal equipment in English and French except where design is such that inference is obvious and readily understood.
- .2 Design and construct elevator in accordance with CSA-B44, local codes and regulations.

1.3 PERFORMANCE REQUIREMENTS

- .1 Select and install passenger elevator components to form complete, operating elevator system meeting the following performance characteristics:
 - .1 Service: general purpose passenger elevator.
 - .2 Application: holeless dual piston.
 - .3 Operation: microprocessor single car.
 - .4 Quantity: one.
 - .5 Rated net capacity: 1814 kg.
 - .6 Rated speed: 46 m/min.
 - .7 Travel distance (nominal): 10.5 m.
 - .8 No. of stops: 5.
 - .9 No. of openings: 4 front, 1 rear.
 - .10 Inside car dimensions: 2337 mm wide x 1664 mm front to back.
 - .11 Cab Height: 2743 mm (nominal).
 - .12 Hoistway and car entrance frame opening sizes: 1219 mm wide x 2438 mm high.
 - .13 Door type: double.
 - .14 Door operation: centre opening in single speed.

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- .2 Hall Calls:
 - .1 Provide smooth acceleration and deceleration of car without perceptible steps so adjusted as not to cause passenger discomfort.
 - .2 Permit doors to start opening in advance of stop at floor level such that doors are at least 3/4 open when car is stopped level with floor.
 - .3 Requires visible and audible signaling at each hoistway to indicate which car is answering a call and the direction of travel.
 - .4 Audible signals to verbally state 'Up' for the Up direction and 'Down' for the 'Down' direction.
 - .5 Audible signal or verbal annunciator to be 10 db above ambient to a maximum of 80 db.
 - .3 Roller Guides:
 - .1 Provide guide operation which is inaudible to passengers in car or outside hoistway with car operating at rated speed and car fan turned off.
 - .4 Compensation:
 - .1 Select compensating chain materials to minimize noise.
 - .2 Limit total variation of motor current to 5% between full trip up and full trip down with rated load.
 - .5 Motor:
 - .1 Standard manufacture motor specifically designed for oil-hydraulic elevator service. Duty rating shall be selected specified speed and load. Provide "soft start" motor VFD driven.
 - .6 Next Stop Feature:
 - .1 In case of over-speed, tripping of overload relay, or opening of motor-generator switch in corridor control panel, stop car at next floor rather than make emergency stop between floors when serving between local floors.
 - .7 Automatic Self Levelling Feature:
 - .1 Install self-levelling feature which will automatically bring car to floor landings. Correct for over-travel, independent of operating device.
 - .2 Maintain car floor level within 10 mm of landing floor with two-way automatic maintaining levelling device.
 - .8 Home Landing:
 - .1 Arrange Intermediate Landing (Rear Door) as home station by key operation.
 - .9 Light Intensity:
 - .1 215 lx maximum measured 0.75 m above floor. Totally enclose and conceal wiring and ballasts from view within car and finish ceiling cavity white.
 - .10 Ventilation:
 - .1 Ventilate by two (2) speed exhaust air handling unit through roof and through concealed perforations at base. Limit total fan noise to 55dB on "A" scale of

General Radio Sound Level meter type 1551A from reading 0.9 m above floor with fan on high speed.

- .11 Tolerances:
 - .1 Car movement on guide rails: smooth movement, with no perceptible lateral or oscillating movement or vibration.
- .12 Machine room: located adjacent to hoistway.
- .13 Door Control Features: Elevator doors shall be provided with a reopening device that will stop and reopen the car door and hoistway door automatically should the door become obstructed by an object or person. Device shall be multi-beam light array across door opening to detect an opaque object equal to or greater than 33mm in diameter from sill to 1800 above sill and secondary three dimensional infrared multi-beam array across door opening. Device shall reopen doors when it detects a person or object entering or exiting the car in the area between the hoistway doors or the entryway area adjacent to the hoistway doors. Maximum zone penetration not to exceed 500mm into hallway.
- .14 Car position indicators:
 - .1 Requires both audible and visible car floor location indicators.
 - .2 Audible signals to verbally state 'Up' for the Up direction and 'Down' for the 'Down' direction.
 - .3 Audible signals to verbally state each floor landing (ex. 'First Floor')
 - .4 Audible signal or verbal annunciator to be 10 db above ambient to a maximum of 80 db.

1.4 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: submit manufacturer's printed product literature, specifications and data sheet.
 - .1 Submit WHMIS MSDS in accordance with Section 02 81 01 - Hazardous Materials.
- .3 Shop Drawings:
 - .1 Submit shop drawings to indicate project layout, including details and the following information:
 - .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 Location of circuit breaker, switchboard panel or disconnect switch, light switch and feeder extension points in machine room.

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- .8 Location in hoistway and 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 Shop drawings submitted stamp by qualified professional engineer registered in Province of Saskatchewan.
 - .13 Include on general arrangement drawings:
 - .1 Type, size, location of hoistway entrances showing details of fastening to hoistway structure.
 - .14 Provide wiring diagrams.
- .4 Samples:
- .1 Submit two samples, complete with colour schemes, 150 x 150 mm in size, illustrating: floor material, car interior, car ceiling, car door, hoistway entrance door and frame finishes.
- .5 Test Reports: submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.
- .6 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .7 Instructions: submit manufacturer's installation instructions.
- .8 Manufacturers Field Services: submit copies of manufacturers field reports.
- .9 Closeout Submittals:
- .1 Submit the following in accordance with Section 01 78 00 - Closeout Submittals.
 - .2 Project Record Documents:
 - .1 Record actual locations of equipment, names of equipment manufacturers and suppliers, concealed conduit and boxes, concealed devices, and disconnects.
 - .3 Operation and Maintenance Data:
 - .1 Include description of elevator system's method of operation and control including, 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.
 - .4 Instruct Departmental Representative in maintenance of special finishes.

1.5 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Installer Qualifications: company or person experienced in performing work of this section specializing in installation of work similar to that required for this project, with minimum five years documented experience and approved by elevator systems manufacturer.
- .2 Pre-Installation Meetings:
 - .1 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installations in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.
- .3 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle components in accordance with Section 01 61 00 - Common Product Requirements and in accordance with manufacturer's written instructions.
- .2 Packing, Shipping, Handling and Unloading:
 - .1 Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- .3 Storage and Protection:
 - .1 Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- .4 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
 - .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, and packaging material for recycling in accordance with Waste Management Plan (WMP).
 - .4 Divert unused metal materials from landfill to recycling facility as approved by Departmental Representative.

1.7 WARRANTY

- .1 For elevator materials, components and systems the 12 month warranty period is extended to 36 months.
 - .1 Extended warranty period must include warranty against:
 - .1 Blistering, spalling or peeling of paint due to improper surface preparation or material application.
 - .2 Opening of joints due to improper design or use of ineffective fastening devices.
 - .3 Separation, cracking or splitting of plastic laminate due to improper application to core material, or to method of fabrication which gives rise to areas of high stress concentration or which restricts normal expansion or contraction of plastic laminate.
 - .2 Manufacturer's Warranty: submit, for Departmental Representative's acceptance, manufacturer's standard warranty document executed by authorized company official.

1.8 MAINTENANCE SERVICE

- .1 Furnish complete service and maintenance of elevator system components during elevator contract warranty period.
- .2 Systematically; monthly examine, clean, adjust, and lubricate equipment as per planned maintenance tasks and frequencies.
- .3 Maintenance to include systematic examination, adjustment and lubrication of elevator equipment; repair or replace parts whenever required. Use genuine parts produced by the manufacturer of specific equipment. Replace wire rope as necessary to maintain required factor of safety.
- .4 Perform work without removing cars during peak traffic periods.
- .5 Provide emergency call back service during working hours for this maintenance period.
- .6 Maintain locally, near place of work, an adequate stock of parts for replacement or emergency purposes and have qualified installation personnel available to ensure fulfillment of this maintenance service without unreasonable loss of time.
- .7 Perform maintenance work using competent personnel, under supervision and in direct employ of elevator manufacturer.
- .8 Do not assign or transfer maintenance service to any agent or subcontractor without prior written consent of Departmental Representative.

Part 2 Products

2.1 MATERIALS

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

2.2 HOISTWAY ENTRANCES

- .1 Frames: Entrance frames shall be of bolted construction for complete one-piece unit assembly. All frames shall be securely fastened to fixing angles mounted in the hoistway and shall be UL fire rated steel. Additional sill angle support to be provided. Sills shall be extruded aluminum.
- .2 Doors: Entrance doors shall be satin stainless steel face, with vertical internal channel reinforcements.
- .3 Fire Rating: Entrance and doors shall be UL fire rated for 1 hour.
- .4 Entrance Finish: satin stainless steel
- .5 Entrance Markings: Entrance jambs shall be marked with 4" x 4" (102 mm x 102 mm) plates having raised floor markings with Braille adjacent. Markings shall be provided on both sides of the entrance.
- .6 Sight Guards: Black sight guards will be furnished with any metal finish door. Powder coated matching sight guards will be furnished with powder coated doors.

2.3 CAR CAB

- .1 Enclose car sides except entrance suitable for removing or resurfacing for maintenance purposes.
- .2 Floor to accept ceramic tile specified in Section 09 30 13, flush with sill and securely fastened at front edge.
- .3 Walls: finish with raised plastic laminate panels, installed horizontally. All cab that is not raised panels to be satin stainless steel. Departmental Representative to select plastic laminate from manufacturer's full range.
 - .1 Panels: removable, retained securely with hidden fastenings. Design for removal of panels from inside car. Face panels with materials of flame spread rating of 25 or less and trim edges.
- .4 Ceiling: suspended ceiling, 2700mm height.
 - .1 Finish: satin stainless steel panels with downlights or lights recessed in canopy.
- .5 Loudspeaker and protective grille: in car top and shielded wiring connected to controller.
- .6 Operating panel and face plate: illuminated call buttons.
- .7 Indicator panel: above operating panel with illuminated position indicators.
- .8 Bumper rail: 38 mm diameter tubular stainless steel with no. 4 (satin) finish.
- .9 Pad hooks: mounted at 2650mm height.
- .10 Wall mats: one set canvas covered, padded with fill material and sewn.

- .11 Where required by enforcing authority furnish license holders in each elevator car to suit certificate issued by enforcing authority. Design holder with hidden or tamper proof fastening.
- .12 Telephone cabinet in car with telephone symbol 75 mm in height and wording "In case of emergency, lift receiver, wait for answer" engraved in letters at least 6 mm high on orange phosphorescent paint. Identify elevator and name of building on back of cabinet cover. Include telephone wiring within elevator hoistway.
- .13 Car doors and frames: doors of sandwich panel construction. Frames of rolled sections, rigid construction.
- .14 Clear height under car ceiling: 2.74 m.
- .15 Clear car entrance height: 2.44 m.

2.4 POWER SUPPLY

- .1 Equipment Power: 208V, 3 phase, 60 Hz, alternating current.
- .2 Lighting: 120V, single phase, 60 Hz, alternating current.
- .3 Protect elevator equipment against damage or malfunction due to change to or from normal power supply and emergency power supply.
- .4 Solid State Starting: Provide an electronic starter featuring adjustable starting currents.

2.5 EMERGENCY BATTERY BACK UP POWER SUPPLY

- .1 In the event of normal power supply failure, arrange the elevator system to lower form an emergency power supply.
- .2 Provide batter back up emergency power supply for emergency operation as follows:
 - .1 Lower the elevator to the Ground Floor landing for exiting at grade. Automatically open door and remain open until regular door time has expired.
 - .2 Upon restoration of normal power supply, the elevator automatically resumes normal operation.

Part 3 Execution

3.1 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.

3.2 INSTALLATION

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

- .2 Modify existing hoistway for new elevator installation.

3.3 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 product 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 Once during progress of Work at 60% complete.
 - .3 Upon completion of the Work, after cleaning is carried out.
 - .4 Obtain reports, within 5 days of review, and submit, immediately, to Departmental Representative.

3.4 SITE TESTS

- .1 Perform and meet tests required by CSA-B44.
- .2 Supply instruments and execute specific tests.
- .3 Furnish test and approval certificates issued by jurisdictional authorities.
- .4 At agreed time during twelve month 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.

3.5 CLEANING

- .1 Remove protective coverings from finished surfaces and components.
- .2 Clean surfaces and components ready for inspection.

3.6 ADJUSTMENTS

- .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 as so not to cause passenger discomfort.

- .4 Adjust automatic floor levelling feature at each floor.

END OF SECTION