

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 00 10 General Instructions.
- .2 Section 01 33 00 Submittal Procedures.
- .3 Section 01 35 29.06 Health and Safety Requirements.
- .4 Section 01 91 13 General Commissioning.
- .5 Section 06 40 00 Architectural Woodwork.
- .6 Section 09 65 16 Resilient Sheet Flooring.

1.2 DESCRIPTION OF WORK

- .1 This Section covers the engineering, fabrication and refurbishment of four traction passenger elevator cab interiors located at 80 Wellington Street.
- .2 Before execution of the work, verify all dimensions with actual site conditions. All new equipment to be designed to meet existing space provisions.
- .3 Provide all materials, labour, design, manufacturing, inspection and testing as required to complete the work as specified herein.
- .4 Commission all components, systems and integrated systems in accordance with the requirements of Section 01 91 13 – General Commissioning.
- .5 Arrange and pay for all permits, certificates, inspections and tests required by the governing authorities, including TSSA Design Submissions and initial and follow-up inspections.
- .6 Where a device or component is mentioned in the singular number, such references shall be understood to mean that this Con shall provide as many of said devices or components as is necessary for the completion of the elevator covered under this Section.
- .7 All equipment being replaced shall become the property of the Contractor and as such, it is the responsibility of the Contractor to remove it from the premises in a prompt and orderly manner.
- .8 Include all related building work required to complete the modernization of the elevator including the following:
 - .1 Machine Room
 - .1 Provide an alteration data plate or laminated copy of the alteration data sheet on the controlled as per B44 Code requirements.
 - .2 Provide a licence frame holder for the elevator licence to be installed on the front of the controller door. Indicate on the TSSA design submission that the licence will be located in the machine room.
 - .2 Car Top
 - .1 Provide a cab alteration data plate on the car top and permanently attach it to the crosshead.

1.3 REFERENCES

- .1 Definitions
 - .1 The term Departmental Representative refers to: The person designated in the Contract, or by written notice to the Contractor, to act as the Departmental Representative for the purposes of the Contract, and includes a person, designated and authorized in writing by the Departmental Representative to the Contractor.
 - .2 The term Professional Engineer refers to: A Professional Engineer registered in the Province having jurisdiction.
 - .3 The term Electrical Safety Authority refers to: The Electrical Inspection Authority in the Province having jurisdiction.
 - .4 The term elevator Contractor or Contractor refers to any person, partners, firm or corporation having a contract with the Departmental Representative to furnish labour and materials for the execution of the work herein described.
 - .5 The term sub-contractor refers to any person, partners, firm or corporation having a contract with the Contractor to furnish labour and materials for the execution of the work herein described.
 - .6 Where the terms “furnish” or “provide” are used, it shall mean to supply and install new equipment.
 - .7 All terms in the specifications that are not otherwise defined shall have the definitions as given in the latest edition of the **CSA-B44** Safety Code for Elevators.
- .2 Comply with all building codes, by-laws, regulations, directives, and ordinances as set forth and mandated by Federal, Provincial, and Municipal Authorities, in effect at the time of installation.
- .3 The following Standards as a minimum shall apply:
 - .1 ASME A17.1-2010/CSA-B44-10 Safety Code for Elevators, including latest supplements and Appendix E, elevator requirements for persons with physical disabilities.
 - .2 The Ontario Building Code 2012 and the National Building Code of Canada – 2010.
 - .3 CAN/CSA-B44.1- 11/ASME A17.5 2011 Elevator and Escalator Electrical Equipment.
 - .4 Technical Standards and Safety Act 2000O. Reg. 209/01, Elevating Devices Code Adoption Document and O.Reg. 222/01 Certification and Training of Elevating Devices Mechanics.
 - .5 CSA Standard B651-04 Accessible Design for the Built Environment.
 - .6 CSA Standard C22.1-15 Canadian Electrical Code Part 1 – Section 38.
 - .7 The latest copy of the TSSA Code Adoption Document.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-installation Meetings:
 - .1 Convene pre-installation meeting one (1) week prior to beginning work of this Section, with Departmental Representative to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building construction sub trades.
 - .4 Review manufacturer's written installation instructions and warranty requirements.

1.5 SIMPLEX SELECTIVE COLLECTIVE OPERATION

- .1 Retain existing operation as is.

1.6 FIREFIGHTERS'S EMERGENCY OPERATION

- .1 Retain existing firefighters' emergency operation as is.

1.7 FUTURE FIRE OPERATION PANEL

- .1 Provide in the new car operating panel a blank plate sized correctly to suit a future CSA B44-10 code compliant phase II fire operation panel.

1.8 FIREFIGHTERS' EMERGENCY OPERATION KEY – FEO-K1

- .1 Provide a standard firefighters' operation key (FEO-K1)
- .2 The key shall be of a tubular type, 7-pin, style 137 construction and have a biting code of 6143521 starting at the tab sequenced clockwise as viewed from the barrel end of the key.
- .3 The key switches shall be of Group 3 Security.

1.9 IDENTIFICATION

- .1 Provide all necessary engraving on faceplates as required by the Departmental Representative, in English and French, Helvetica medium, upper and lower case.
- .2 All fastenings of cover plates for signals, buttons and panels shall be tamper proof type.
- .3 Provide raised character and braille floor designations on both door jambs minimum size 50 mm/ Locate centre-line of numeral 1,525 mm above floor level measured from the base line of the characters.
- .4 At the main entry level on both door jambs provide a 50 mm raised star designation to the left of the floor designation number. All characters to comply with clause E-17 of Appendix E of the B44 Code.

1.10 AUTOMATIC EMERGENCY POWER OPERATION

- .1 Retain the existing emergency power operation as is.

1.11 INDEPENDENT SERVICE OPERATION

- .1 Provide independent service operation by means of a toggle operated switch in the elevator to allow the car to operate independently in response to car calls only.
- .2 Park the car with the doors open and respond to a selected car call by constant pressure on the door close button provided that the doors have been closed and the interlock is made up. Arrange for the doors to reopen if the constant pressure on the door close button is released at any point prior to the car starting.
- .3 Place the direction of travel under the control of the attendant. Arrange the operation to cancel all registered car calls and by-pass registered hall calls. Do not operate hall lanterns when stopping at a floor.

1.12 ACTION AND INFORMATIONAL SUBMITALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 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.

- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province having jurisdiction.
 - .2 Indicate on drawings the following information:
 - .1 Car and hall operating fixtures and indicator details showing materials and finish.
 - .2 Cab interior details showing materials and finish.
 - .3 All technical information and operating instructions for the elevator communication system.
 - .4 Do not order any materials until all shop drawings are approved.
- .4 Test Reports: submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.
- .5 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .6 Manufacturer's Instructions: submit manufacturer's installation instructions.
- .7 Manufacturer's Field Services: submit copies of manufacturer's field reports.

1.13 CLOSEOUT SUBMITTALS

- .1 Project Record Documents:
 - .1 Record actual location of equipment, names of equipment manufacturers and suppliers.
 - .2 Provide a letter from a registered Professional Engineer conforming that the marked-up drawings are complete and are "as built".
 - .3 Provide two (2) sets of final issue shop drawings and two (2) copies of "as built" drawings to be incorporated into the operation and maintenance manuals.
 - .4 Provide an electronic copy of final "as built" fixture and cab drawings.
- .2 Operation and Maintenance Data:
 - .1 Provide all information necessary for the safe and efficient maintenance of the equipment and incorporate into the maintenance manual.
 - .2 The maintenance data must include the following information:
 - .1 Copies of the TSSA registered design submission and any amendments or revisions.
 - .2 Copies of the TSSA initial and all subsequent inspection reports.
 - .3 Signed copy of the warranty letter.
 - .4 All technical information and operating instructions for the elevator communication system.
 - .5 Cleaning and maintenance instructions for all cab interior finishes.
- .3 Equipment: Information of each piece of equipment will be assembled in the following order.
Equipment details such as:
 - .1 Approval drawing number.
 - .2 Model, part and serial number.
- .4 Spare Parts:
 - .1 List of recommended spares to be maintained on site to ensure optimum efficiency.
 - .2 List of all special tools and appropriate unique applications.
 - .3 Detail manufacturer and supplier names and addresses.
 - .4 All equipment is to be listed as to types

1.14 SCHEDULE

- .1 Submit a progress schedule to the project team within four (4) weeks of contract award. Indicate, as a minimum, the time out of service for each elevator and any work that is to take place after normal working hours.
- .2 In addition, the following shall also apply:
 - .1 Carry out on-site work from the basement level to minimize disruption to building occupants.
 - .2 Carry out any odour generating, interior painting, loud communication or noise generating work after normal working hours of the building and at a time which is acceptable to the Departmental Representative. Thoroughly ventilate areas painted during "off hours".

1.15 MARKINGS

- .1 All identification, instructions, and position indicators are to be in English and French.
- .2 English to appear first on all markings or engravings and instructions.

1.16 USE OF ELEVATOR FOR PERSONS WITH PHYSICAL DISABILITIES

- .1 Fully comply with the requirements of Appendix E of the B44 Safety Code for Elevators and all other governing codes and regulations.
- .2 Locate all new car operating buttons to comply with Appendix E requirements.
- .3 Locate the PHONE button in the cab no higher than 1220 mm above the floor.

1.17 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 a minimum of five years documented experience and approved by elevator systems manufacturer.
- .2 The Contractor shall take into consideration the fact that this is an occupied building and must continue to function during the course of the refurbishment with a minimum of disruption.
- .3 The Contractors employees shall be appropriately attired in company uniforms, be courteous to the occupants and abide by the same building rules and regulations required of the occupants.
- .4 All work must be performed in a manner that ensures the safety of the occupant and the user of the operating elevators. Should it be necessary to perform work where such safety cannot be ensured, it shall also be performed at a time acceptable to the Departmental Representative and during hours other than normal building business hours at no additional cost to the Departmental Representative.
- .5 All hoarding around hoistway entrances shall be removed at the end of the modernization.
- .6 Provide barricades as required to protect the Public from hazardous conditions. Obtain Departmental Representative's approval for the appearances of all barricades erected.

1.18 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Deliver and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 All deliveries must be scheduled at least forty-eight (48) hours in advance and the vehicle authorization form must be submitted by the Departmental Representative.
- .4 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well ventilated area.
 - .2 Store and protect elevator components from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

1.19 WARRANTY

- .1 Warrant that the **NEW** materials, the performance and workmanship are first class in every respect and make good any defects not due to ordinary wear and tear or improper use, which may develop within one (1) year from the date of final acceptance of the equipment.
- .2 Neither the final payment nor any provision of the Contract documents relieves the Contractor of the responsibility for negligence or faulty materials or workmanship within the extent and period provided by law.
- .3 Upon written notice remedy any defects and pay all expenses for any damage to other work resulting from the defects.

Part 2 Products

2.1 SYSTEM DESCRIPTION

- .1 The characteristics of the existing passenger elevators is as follows:
 - .1 PASSENGER ELEVATORS

.1 Elevator No.:	1	2	3	4
.2 Installation No.:	29293	29302	29335	10590
.3 Original Manufacturer:	Montgomery			
.4 Machine Type:	Armor Geared Traction			
.5 Drive Type:	Kone SCD			
.6 Control Type:	Kone TMS600			
.7 Rated Speed:	1.02 m/s	1.52 m/s	1.52 m/s	1.52 m/s
.8 Rated Capacity:	1,134Kg	907Kg	907Kg	1134Kg
.9 Floors Served:	Six (6)	Five (5)	Five (5)	Five (5)
.10 Type of Operation:	Simplex Selective Collective Operation			
.11 Car Operating Panels:	One			
 - .2 ELEVATOR CONTRACTOR TO CONFIRM THE ABOVE INFORMATION ON SITE.

2.2 BASIC MATERIALS AND DESIGN

- .1 Include basic materials as follows:
 - .1 Sheet steel to ASTM A366M, cold rolled sheet, commercial quality.
 - .2 Flat-rolled Stainless and Heat-resisting Steel Plate, Sheet and Strip to ASTM A480M-99 Standard Specification for General Requirements.

2.3 MATERIALS AND COMPONENTS

- .1 All materials and equipment shall be new and of the best quality of their respective kind. Furnish samples as directed by the Departmental Representative.
- .2 Provide only systems designed and field tested for the application with adequate capacity to meet all performance criteria and to provide long term reliable operation.
- .3 All retained equipment shall be thoroughly cleaned, painted and tested as required to ensure safe operation and compliance with the B44 Code.
- .4 Paint to latest MPI requirements.

2.4 WIRING, CONDUIT AND FITTINGS

- .1 Retain existing wiring as is.

2.5 TRAVELLING CABLES

- .1 Retain and reuse existing travelling cables.

2.6 CAR DOORS

- .1 Retain and refurbish existing car doors.
- .2 Adjust car door for quiet and smooth operation.
- .3 Reduce the clearance between the car door and frame to no more than 10 mm.
- .4 Clad car door with stainless steel n° 4 Satin Finish with a vertical grain.

2.7 INFRARED PROXIMITY DETECTOR

- .1 Retain existing detector.
- .2 Carefully remove detector while completing the cab interior refurbishment and re-install at the completion.
- .3 Test operation prior to putting elevator back in service.

2.8 ALARM BELL

- .1 Retain existing alarm bell located on the car designed to operate under permanent and emergency power conditions.
- .2 Alarm button in the cab to illuminate when pressed.

2.9 CAB COMPONENT WEIGHING

- .1 As required by the TSSA CAD clause 8.7.2.15*1, prior to the start and at the completion of the alteration, weigh the car and counterweight and record the weights.
- .2 Provide the Departmental Representative with a digital photograph of each recorded weight and advise if there is a difference between the measurement and what is listed on the crosshead data tag.
- .3 Provide on the car top and fill in an Auxiliary Weight Data Tag.

2.10 CAR CAB INTERIOR

- .1 General:
 - .1 Refurbish cab interior as per architectural drawings.
 - .2 Thoroughly clean, sand and prepare surfaces to receive new materials. Refurbish interior as specified herein.
 - .3 Completely remove as much of the redundant material as possible to keep the car weight to a minimum.
 - .4 All fastenings for new materials to be concealed.
 - .5 All new materials provided shall conform to clause 2.14.2 of the CSA-B44 Safety Code for Elevators.
- .2 Ceiling:
 - .1 Completely remove existing egg crate ceiling and fluorescent lights.
 - .2 Paint underside of cab shell ceiling and area above new drop ceiling with paint colour approved by Departmental Representative.
 - .3 Provide a new, removable type, drop ceiling panels as per architectural drawings. Ceiling panels to be constructed of 0.95 mm stainless steel n° 4 Satin Finish set in heavy duty extruded aluminum frames with walnut trim. Mount ceiling panel as close as possible to the underside of the car top.
 - .4 Provide in the stainless-steel pans new, flush mount, MR-16 fixtures and warm white LED lamps complete with silver aluminum rims. Provide pot lights with flexible wiring and plugs to allow for removal of drop ceiling and replacement of fixtures. Light fixtures must remain serviceable from inside the elevator without the use of special tools.
 - .5 Provide dimmable type LED lighting with an approved type dimmer switch mounted above the drop ceiling.
 - .6 Arrange panels to provide access to the emergency exit on the car top.
- .3 Front return panel, transom and car door:
 - .1 Completely remove all existing hang on wall panels.
 - .2 Clad the front return panel and transom with stainless steel n° 4 Satin Finish.
 - .3 Clad the car door with stainless steel n° 4 Satin Finish.
 - .4 Provide new walnut veneer panels, stainless steel reveals and stainless steel vented base plates as per architectural drawings.
- .4 Side Walls:
 - .1 Completely remove all existing hang on wall panels.
 - .2 Provide on the side walls from the base plate to within 130 mm of the underside of the ceiling, walnut veneer applied panels as per the architectural drawings.
 - .3 Provide a 158 mm handrail mounting panel clad with stainless steel n° 4 Satin Finish complete with phenolic backer.
 - .4 Provide corner reveals of approximately 135 mm between panels and corners. Clad reveal strips in stainless steel n° 4 Satin Finish.

- .5 Rear wall
 - .1 Completely remove all existing hang on wall panels.
 - .2 Provide on the side walls from the base plate to the underside of the ceiling, walnut veneer applied panels and 6 mm grey smoked safety mirror panels as per the architectural drawings.
 - .3 Provide a 158 mm handrail mounting panel clad with stainless steel n° 4 Satin Finish complete with phenolic backer.
 - .4 Provide corner reveals of approximately 135 mm between panels and corners. Clad reveal strips in stainless steel n° 4 Satin Finish.
- .6 Entrance columns:
 - .1 Re-clad the car door jambs with stainless steel n° 4 Satin Finish.
- .7 Handrails:
 - .1 Provide new handrails as per the architectural drawings at 826 mm above the floor on all non-access walls. Design handrails to be removable from inside the car. Space handrail 35 mm to 45 mm from wall.
 - .2 Handrails to be installed on a 158 mm mounting panel clad with stainless steel n° 4 Satin Finish complete with phenolic backer.
 - .3 Handrail to be constructed of 50 mm tubular stainless steel and returned to the wall at each end.
- .8 Base plates:
 - .1 Provide a 100 mm vented base plate on all walls clad with stainless steel n° 4 Satin Finish as per the architectural drawings.
- .9 Car sill:
 - .1 Provide new nickel-silver car sill.
 - .2 Ensure sill is mounted so that it is level with the new flooring and it does not cause a tripping hazard.
- .10 Flooring:
 - .1 Completely remove existing flooring and sub-flooring and install new water-resistant plywood sub-floor to suit new sill height.
 - .2 Provide new flooring as per architectural drawings.
 - .3 Provide clean, flush cut-outs in new flooring to suit any existing access panels located in the floor.
- .11 Mirrors:
 - .1 Provide standard 'gray' tinted mirrors to suit as indicated on drawings.

2.11 CAR PROTECTIVE PADS

- .1 Install suitable pad hooks in all car cabs on all four (4) walls.
- .2 Provide one (1) complete set of fire-retardant protective pads for **elevator 1** covering all exposed wall surfaces and the front return panel (except car station) and covering from 100 mm to approximately 2400 mm above the car floor.

2.12 CAR OPERATING PANEL AND SERVICE CABINET

- .1 Provide in the car cab, in the location of the existing car operating panel, one (1) new car operating panel, with hinged stainless-steel face plate and service cabinet.

- .2 Locate all buttons in accordance with Appendix E of the CSA-B44 Safety Code for Elevators. Top button to be no more than 1,220 mm above the finished floor. Telephone button to be a minimum of 890 mm above the finished floor.
- .3 Provide **Dupar Optic Compact 3** (US91BB) buttons with **BLACK** braille tag floor buttons. Illuminate the braille tag and floor number WHITE at all times. Illuminate the halo around the button and the braille tag RED when the button is activated.
- .4 Where possible use international symbols. All other markings to be engraved on the faceplate in both official languages.
- .5 Common devices to be included in the car station are as follows:
 - .1 Floor push buttons with integral RED illumination using LED type lights with a minimum of 100,000-hour rating. Illuminate button and provide momentary audible signal when call is registered and extinguish the call when the car stops at the selected floor.
 - .2 Alarm, door open and door close buttons. Engrave the bilingual wording "door open" and "door close" above or below the buttons.
 - .3 "PHONE" button to be installed a minimum of 890 mm and a maximum of 1,220 mm above the floor. Provide a raised 6 mm high stainless-steel collar around the "PHONE" button to prevent accidental activation. Spot weld collar to the car operating panel.
 - .4 Lens for emergency lighting system as specified elsewhere.
 - .5 Car position indicator as specified elsewhere.
 - .6 A separate cabinet with hinged, **self-locking** door containing a hands-free communication system, as specified elsewhere in these specifications. Provide perforation holes for the speaker mounted behind the panel. Beside the phone button, provide a YELLOW international telephone symbol and YELLOW engraved bilingual wording "PHONE". Provide an LED visual indicator and engraving, to indicate to persons with hearing disabilities that their call for assistance has been acknowledged.
 - .7 A blank cut-out large enough to accommodate a future CSA B44-10 code compliant fire service cabinet. Provide a new 3 position (ON-HOLD-OFF) phase 2 key switch (FEO-K1) on the surface of the blank cut-out. Engrave "EMERGENCY / SECOURS" with RED infill above or below the key switch. Provide Visual and audible signal for Firefighter's Operation matching the existing.
 - .8 Audible signal to sound when car stops at or passes a floor. Signal volume to be adjustable between 50 and 70 dBA.
 - .9 Provide a flush mounted, translucent, smoked Plexiglas, 7 mm thick lens large enough to accommodate the existing or new card reader (provided by others).
- .6 Provide in the car station a service cabinet with a hinged, **self-locking** door. Provide metal rocker switches and key switches inside the service cabinet, appropriately marked by wording or symbols, to control the following:
 - .1 Car lights (Engrave: OFF – ON).
 - .2 Car ventilation fan (Engrave: OFF – ON).
 - .3 Test **button** for emergency lighting.
 - .4 Independent service (Engrave: OFF – ON).
 - .5 Key operated inspection operation (Engrave: OFF – ON).
 - .6 Provide one (1) spare rocker switch.
 - .7 Key operated stop switch. Engrave the STOP and RUN positions.
 - .8 One (1) GFI receptacle.
 - .9 Volume control knob for the voice enunciation.
- .7 Engrave the following on the operating panel as indicated below:
 - .1 Elevator capacity in Kilograms and Number of Persons.
 - .2 TSSA installation number and logo.

- .3 "Licence located in machine room" and French translation in letters 12 mm in height. Engrave with black infill.
- .4 Elevator number in minimum 50 mm high numerals.

2.13 CAR POSITION INDICATOR

- .1 Provide a new digital car position indicator located near the top of the car operating panel. Indicator to display identical markings to car operating buttons, including bilingual markings for main floor. Numerals to be minimum of 50 mm high to match hall indicator.
- .2 Arrange letters and numbers appearing on the indicator to illuminate in sequence and to transfer illumination instantaneously between floor levels.
- .3 Provide RED LED type illumination, 100,000-hour rating, on a high-resolution screen display.

2.14 HALL BUTTONS

- .1 Retain and refurbish the existing hall button stations as follows:
 - .1 Replace the existing emergency recall key switches on the recall level hall fixtures with new 2-position (OFF – ON) FEO-K1 style key switches.
 - .2 Include for all modifications required to the existing fixtures to accommodate new key switches.

2.15 CAR EMERGENCY LIGHTING

- .1 Provide new battery-operated emergency lighting equipment. The lens is to be incorporated into the new car operating panel.
- .2 Provide general illumination in the car with a minimum of 2 lx intensity 1220 mm above the car floor and 300 mm in front of the car operating panel for at least a four (4) hour period.
- .3 Include a means for convenient manual operation and testing of the unit in the car station service cabinet. **Arrange test button switch to turn off normal lighting when testing emergency lighting.**

2.16 AUDIBLE AND VERBAL FLOOR ANNOUNCEMENT

- .1 Provide verbal floor announcement as per clause 10.3 of Appendix E of the CSA-B44 Safety Code for Elevators.
- .2 Provide and install a digitally controlled voice synthesizer for various messages in English and French.
- .3 Provide in the car operating panel, perforation holes for a separate speaker for the verbal floor annunciator device.

2.17 EMERGENCY COMMUNICATIONS SYSTEM IN THE CAR

- .1 Comply with clause 2.27.1.1.1 of the CSA-B44 Safety Code for Elevators.
- .2 Provide a hands-free, vandal resistant, emergency communications device containing an internal, adjustable, volume control speaker and microphone, mounted on a hinged and locked panel in the car operating panel to enable two-way voice communication between the car and a location staffed by authorized and emergency personnel. Locked panel to be similar and be keyed the same as the service panel.

- .3 The device shall be activated by pressing the PHONE button and shall automatically ring a telephone number of the Departmental Representative's choice. Once activated in the elevator the line shall remain open until disconnected by the receiver.
- .4 Provide an LED and engraving to visually indicate that the call has been answered. Provide beside the PHONE button, an international telephone symbol as per clause 11.2 of Appendix E of the CSA-B44 Safety Code for Elevators and the operating instructions.
- .5 The line dialer network shall operate on any central office line along with conventional phones and shall have an internal battery for memory back-up for a minimum of two (2) hours in the event that power fails, or the line dialer is removed from the telephone line.
- .6 The device shall contain a ring sensor which shall allow the initiation of a call to the elevator. The number of rings shall be adjustable. The two-way communication shall not be transmitted to an automatic answering system.
- .7 The two-way communications, once established, shall be disconnected only when authorized personnel outside the car terminate the call.
- .8 The two-way communications mean shall provide on demand, to authorized personnel, information that identifies the building location and elevator number and that assistance is required.
- .9 Provide all wiring necessary for the complete installation of the system from the device in the elevator to an externally located terminal in the elevator machine room. Connect to the existing communication system.
- .10 If the emergency communication system is connected to the building emergency power supply, it shall automatically transfer to a source of standby or emergency power as required by the applicable building code, after the normal power fails. The power source shall be capable of providing for illumination of the visual indication within the car, and the means of emergency communication for at least four (4) hours; and the audible signaling device for at least one (1) hour.

2.18 BILINGUAL MARKINGS

- .1 Engrave identification and instructions at least 0.25 mm deep on operating panels and on all signal equipment in both English and French except where design is such that inference is obvious and readily understood. All floor markings for car and hall indicators to be bilingual.
- .2 All engraving to be English first, followed by French.

2.19 KEYS

- .1 Provide twenty (20) sets of keys for each control device and twenty (20) FEO-K1 keys.
- .2 Organize keys on suitable key rings with permanently engraved tags, clearly identifying use. Tags to be approved by Departmental Representative.
- .3 All keys shall be grouped as per the CSA-B44 Safety Code for Elevators.

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 INSTRUCTION

- .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 17.1/CSA B44, local codes, regulations and manufacturer's written instructions.
- .2 Install all equipment in a first-class workmanship manner. Upon completion do all necessary repairs, cleaning and painting as required to turn the equipment over in "New Condition".

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 products 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 25% 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.

3.6 CLEANING

- .1 Remove protective coverings from finished surfaces and components.

- .2 Clean surfaces and components ready for inspection.
- .3 Progress Cleaning: clean in accordance with Section 01 00 10 – General Instructions.
 - .1 Leave work area clean at the end of each day.
- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 00 10 – General Instructions.
 - .1 Remove protective coverings from finished surfaces and components.
 - .2 Clean surfaces and components ready for inspection.
- .5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 00 10 – General Instructions.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.7 PROTECTION

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

3.8 REDUNDANT EQUIPMENT

- .1 Take possession of and remove all redundant equipment from the site unless instructed otherwise by the Departmental Representative.

3.9 WELDING

- .1 All field welds shall be identified with the welder's identification stamp.

3.10 SURFACE PROTECTION

- .1 Provide protective coverings for finished surfaces.

3.11 CAR BALANCE

- .1 Check the static balance of the car.
- .2 Adjust the equipment and all roller guide rollers so that at any point the pressure upon the rollers does not exceed 11 Kg.

3.12 INSPECTION FIELD TESTS AND COMMISSIONING

- .1 Furnish competent personnel to assist the Departmental Representative during the inspection and testing of the systems. Make the appropriate corrections until final acceptance of the installations.
- .2 The inspections will be carried out to ensure that the workmanship is in compliance with plans and specifications.
- .3 Provide one (1) weeks' notice for testing. Prior to giving notice the Contractor shall test all systems to ensure proper operation.
- .4 Perform all tests as required by the CSA – B44 Safety Code for Elevators.

END OF SECTION