FEDERAL ELEVATOR
Advanced Elevator Systems

LULA Commercial Elevator Specifications

Part 1- General

1.1 SCOPE

1.1.1

To furnish all labor, materials and equipment necessary or required to fully complete the installation of the elevator as shown on the drawings and specifications. This suggested specification is intended to cover the complete installation of the Federal Elevator Serenus Commercial LU/LA Elevator design.

1.1.2

The Elevator Contractor shall report in writing to the General Contractor/Consultant any defects of surfaces or work prepared by other trades which may affect the quality or dimensions of work.

1.1.3

Elevator Contractor shall do all work related to the elevator from the main power disconnect to the finished installation of elevator and accessories except for the items listed in **PART 2 – PREPARATORY WORK BY OTHERS**.

1.2 SYSTEM DESCRIPTION

The elevator assembly shall consist of a power unit, car, rail guide system, 1:2 cable hydraulic lifting device, hoistway doors, car doors, control system, signals and alarms, electrical wiring, and parts and accessories necessary to provide required performance, operation, code and safety requirements.

1.3 QUALITY ASSURANCE

1.3.1

Installation, elevator, components, accessories and operation must comply with the CSA B44 Elevator Code currently in effect and all other governing Codes and By-laws. All welding of elevator components shall be done by a CWB certified company according to CSA Standards W47.1 and W59. The elevator shall meet or exceed the applicable regulations of all governing agencies and shall be in compliance with the applicable sections of the most current edition of the following codes and standards:

a) ASME A17.1 "Safety Code for Elevators and Escalators, Section 5.2 Limited Use/Limited Application Elevators".

b) CSA B44-07 "Safety Code for Elevators, Section 5.2 Limited Use/Limited Application Elevators"

c) CSA B44.1/ASME A17.5 "Elevator and Escalator Electrical Equipment".

d) Local codes and regulations, as applicable.

1.3.2

Standards:

a) To establish a standard for tendering purposes, the Drawings and Specifications are based on Federal Elevator Systems Inc. – LULA Hole-less Hydraulic Elevator(s) rated at 635 kg.

b) Elevator(s) to be Federal Elevator LULA Elevator(s).

c) Employ fully trained and licensed mechanics who are regularly employed in this field.

d) Employ only Elevator Contractors who have been satisfactorily supplying and installing similar elevating equipment over a period of at least the immediate past fifteen years.

1.3.3

Requirements of the Regulatory Agencies:

a) Fabricate and install Work in compliance with all applicable jurisdictional authorities.

b) File shop drawings and submissions to local authorities as the information is made available. Company pre-inspection and jurisdictional authority inspections and permits are to be made on a timely basis as required. Work will include all inspections and re-inspections that are required to ensure licenses are issued.

1.3.4

Guarantee:

a) The Elevator Contractor must guarantee the work and materials and must make good all defects (but not those due to ordinary wear and tear or to improper use or care) which may develop within two (2) year from the date of completion provided same has been properly used, oiled, and cared for by a registered Elevator Contractor through a Code compliant maintenance agreement, and provided all payments due by the terms of the contract have been made in full when due.

b) Workmanship and any materials supplied and used in this work to be in strict accordance with this specification.

1.3.5

Measurements:

General Contractor to confirm all hoistway measurements and plumb-ness as per Elevator Contractor shop drawings.

1.4 MAINTENANCE

1.4.1

A quality maintenance service consisting of regular examinations at least once every three (3) months, adjustments and lubrication of the elevator equipment shall be provided by the Elevator Contractor after the elevator has been turned over for the owner's use for a period of one of the following:

Three (3) months

Twelve (12) months

1.4.2

All work shall by performed by competent employees during regular working hours of regular working days. This service shall not cover adjustments or repairs due to negligence, misuse, abuse or accidents caused by persons other than the Elevator Contractor. Only genuine parts and supplies as used in the manufacture and installation of the original equipment shall be provided.

Part 2 - Preparatory Work by Others

2.1

The following preparatory work not included under this contract, but supplied and/or installed by other to accommodate/receive the elevator:

2.1.1

Machine room to meet all applicable codes and standards.

2.1.2

Provide a fused disconnect switch with type 'D' fuses for each elevator complete with an auxiliary contact switch and including the wiring from the disconnect switch to the power terminals of each controller. Provide a separate fused disconnect switch for the lights for the lift rated at 120V, 15Amp, including the wiring from the disconnect switch to the light terminals of each controller. Refer to Federal Elevator general layout drawings for permanent power specifications and location of the disconnects.

2.1.3

Provide a plumb (+/-25.4mm per 30480mm, +/-1" per 100ft of travel), square framed and enclosed legal hoistway, including venting, to the sizes shown. All ledges over 100 mm to be beveled 75° to the horizontal (top and bottom).

2.1.4

Hoistway and machine room (as required) and all applicable fire ratings in accordance with elevator, safety, electrical and building Codes.

2.1.5

No conduit, wiring, or piping other than that pertaining to the elevator is permitted in the hoistway or machine room.

2.1.6

Sleeves for oil and electric ducts from machine room to hoistway as required. All other blockouts, underpinning, pockets, patching, cutouts, grouting and concrete work where required.

2.1.7

Access to the machine room space as required by the governing Code or Authority Having Jurisdiction.

2.1.8

Provide machine room ventilation system capable of maintaining the machine room temperature between 5°C and 32°C with the relative humidity not to exceed 95%.

2.1.9

Machine room, in accordance with CAN/CSA-B44-10 Safety Code for Elevators and CAN/CSA C22.1-15 Canadian Electrical Code, shall have legal access, a self-locking self-closing door and a painted concrete floor.

2.1.10

Locate the machine room switch on the lock jamb side of the machine room door along with the elevator and light disconnects where practical.

2.1.11

Provide adequate rail bracket support to suit a maximum rail bracket spacing of 1753 mm. Review the floor spacing chart on the hoistway section and provide additional supports on all floors marked with an asterisk.

2.1.12

Front entrance partition walls are not to be constructed until after door frames are in place. If front walls are poured concrete bearing walls, rough openings are to be provided to accept entrance frame and filled in after frames are set. Entrance frames are not designed to support overhead wall loads. Suitable supports for these loads must be provided. If decorative material is applied to listed/certified frames it shall conform to the requirements of the certifying organization.

2.1.13

Suitable lintels over landing entrances are to be provided and provide rough openings as per elevator contractors' shop drawings.

2.1.14

Barricades or guards shall be provided by others outside of every opening to the hoistway to protect other trades, building occupants or visitors as per the Occupational Health and Safety Act (OSHA). These guards and barricades to be erected, maintained and removed by others.

2.1.15

Provide a dry pit reinforced to support the loads as indicated on these drawings. Pit floor to have a smooth trowel finish free of hollows or bumps. Surface to be level and flat to within $\pm$ 1/8" in any direction.

2.1.16

Pit must have provisions to be kept clean and dry. A pit drain is strongly recommended. Sump pump external to the shaft, where required. Sump hole to be outside hoistway and 600 mm (24") deeper than pit, with trap and backwater check valve. Pit drain / sump pump (where provided) to have a minimum capacity of 11.4 m^3/hr (3000 usg/hr) per elevator. Design to handle possible oil in sump discharge for hydraulic elevators.

2.1.17

Where access to a pit over 900 mm (35") in depth is by means of the lowest hoistway entrance, elevator pit ladder(s) extending a minimum of 1220 mm (48") above the sill of the lowest access door, with centreline of rung 115 mm (4 ½") from wall with 300 mm (12") vertically between rungs. Ladder width is 400 mm (16"). Ladder location as shown on elevator shop drawings. Ladder and attachments shall sustain a minimum load of 135 kg.

2.1.18

Any cutting, patching, and painting of walls, floors, or partitions together with finish painting of entrance doors and frames.

2.1.19

Necessary electric power for light, tools, hoists, etc., during installation as well as electric current for starting, testing and adjusting the elevator.

2.1.20

Pit lighting level to be minimum 100 LX. Pit to contain a 120 VAC light fixture, switch and GFCI convenience outlet. Switch to be accessible from pit access. All conduits in hoistway to be EMT. Light and convenience outlet to be on a dedicated circuit. To be marked by our forces during installation.

2.1.21

A self-closing, self-latching, fire rated machine room door, a minimum of 750 mm wide x 2030 mm high (30" wide x 80" high) with a minimum of 2286 mm (90") clear height above all equipment.

2.1.22

Lockable, fused disconnects wired to the elevator controller.

2.1.23

Machine room lighting level to be 200 LX minimum. Must contain a 120 VAC light fixture, switch and GFCI convenience outlet. Switch to be on the lock jamb side of door. All conduits to be EMT.

2.1.24

Provide a dedicated (i.e. not part of a telephone system) analogue (i.e. not computerized), tone (i.e. not pulse) telephone line in a jack to the side of our controller. Line must be monitored 24 hours a day, 7 days a week.

2.1.25

Signals to our controller from smoke detectors in machine room, landings and hoistway. Also, a signal from the General Alarm is required. These signals need to be individual, in the form of a normally open contact and the wire needs to have a ground and terminated individually in our controller.

2.1.26

Finished flooring in elevator cab.

Part 3- Submittals

3.1 SHOP DRAWINGS

The shop drawings shall show a complete layout of the elevator equipment detailing dimensions, clearances and location of machinery. Including, but not limited to, the following:

3.1.1

Drawings showing the dimensions including plans, elevations, and sections to show equipment locations.

3.1.2

Load and reaction drawings shall be provided by the elevator manufacturer and detailed on drawings.

3.1.3

a) Submit five (5) copies of all shop drawings for the Architect to review.

b) Do not commence work until approved drawings have been returned, and all finishes have been confirmed.

3.2

Digital samples of all finishes.

Part 4- Product Data

4.1 MANUFACTURER/ ELEVATOR

Elevator shall be the FEDERAL ELEVATOR SERENUS Commercial LU/LA Elevator manufactured by Federal Elevator Systems Inc. Toll Free Number 1 (888) 785-5438 and (905) 458-4015, Fax (905) 670-0017

a) Hole-less Roped Hydraulic

b) Rated Load: 635 kg. (1400 lbs.)

c) Rated Speed: 0.15 m/s. (30 fpm)

Cab Configuration:

[Select one of the following]

Enter/exit same side:	**36" x 60" (914mm x 1524mm)**	**42" x 60" (1067mm x 1524mm)**	**48"x54" (1219mm x 1372mm)**
Enter/exit front/rear:	**36" x 60" (914mm x 1524mm)**	**42" x 60" (1067mm x 1524mm)**	**48"x54" (1219mm x 1372mm)**
90° exit :	**51" x 51" (1295mm x 1295mm)**		

d) Car Inside Dimensions:

[Select one of the following]
36" x 60" (914 mm x 1524 mm)
42" x 60" (1067 mm x 1524 mm)
48" x 54" (1219 mm x 1372 mm)

TYPE C & D ONLY
51" x 51" (1295 mm x 1295 mm)

e) Hoistway Size: Refer to Architectural Drawings

f) Operation: Single Automatic Push Button

g) Car Controls: Illuminated Type with faceplate in Stainless Steel #4 finish.

(Optional Selections)
Brushed Bronze #4
Mirror Stainless Steel #8
Mirror Bronze #8

h) Hall Call Stations: Illuminated type. Stainless steel #4 Cover Plates.

(Optional Selections)
Brushed Bronze #4
Mirror Stainless Steel #8
Mirror Bronze #8

i) Hoistway Entrances Size: Automatic 36" x 80" (914 mm wide by 2032 mm high) OR 36" x 84" (914mm wide by 2134 mm high), prime coat ready to accept paint by others.

(Optional Selections)
36" x 80" (914 mm wide by 2032 mm high) Stainless Steel
36" x 84" (914 mm wide by 2134 mm high) Stainless Steel
Three Speed Prime Coat (Left or Right)
Three Speed Stainless Steel

j) Entrance Type: Two Speed Sliding (Left or Right)

(Optional Selections)
Three Speed Sliding (Left or Right)

k) Door Operator: Automatic operator for hoistway and car. Opening and closing speed to suit handicapped requirements.

l) Travel: Refer to Architectural Drawings. Maximum 25ft. (7.6m). This measurement may be exceeded dependent on local codes.

m) Stops: Refer to Architectural Drawings. Six (6) stops inline.

n) Openings: Refer to Architectural Drawings.

o) Power Supply:

[Select one of the following]
600 VAC, 3 phase, 60 Hertz, 15A
220 VAC, 1 phase, 60 Hertz, 50A
208 VAC, 3 phase, 60 Hertz, 30A

p) Lighting Supply: 120 Volts, 60 Hertz, 15 Amp

q) Jack Type: 1:2 cable hydraulic

r) Pump Type: 4HP (3kW) dry motor with "super hush" pump unit. Variable Speed Valve.

(Optional Selections)
5HP (4kW) dry motor

s) Car Controller Type: Non-Proprietary Programmable Logic Control (PLC)

t) Leveling Device Type: Magnetic Sensor

u) Elevator(s) must comply with the CSA B44 Elevator Code version currently in effect, including Supplement(s).

4.2 CAR CAB SPECIFICATIONS

4.2.1
SHELL ENCLOSURE:

a) Car Top: Minimum 16 ga. (1.5 mm) steel, white enamel finish
b) Shell Walls: 16 ga. (1.5 mm) steel - cage frame type construction
c) Strike Column: 16 ga. (1.5 mm) Stainless steel #4
d) Fascia: 16 ga. (1.5 mm) Stainless steel #4
e) Car Doors: 16 ga. (1.5 mm) Stainless steel #4 car door

4.2.2
ARCHITECTURAL FEATURES:

a) Side Walls: Plastic laminate hang-on panels
b) Ceiling: White Plastic Laminate
(Optional Selection)
Stainless Steel #4 Panel with compact fluorescent down lights (CFLs)
c) Front Return: Stainless steel #4
d) Car Door: Prime Finish
(Optional Selection)
Stainless steel #4
e) Base: Black baked enamel finish
(Optional Selection)
Stainless Steel # 4
f) Reveals: Black baked enamel finish
(Optional Selection)
Stainless Steel # 4
g) Finished Flooring: To be supplied and installed by Flooring Contractor
h) Hoistway Doors and Frames:

[Select one of the following]
At All Floors: Finish to be prime coat (ready for painting by others).
At Typical Floors: Finish to be prime coat (ready for painting by others).
At Main Floor: Finish to be prime coat (ready for painting by others).

(Optional Selections)
Stainless Steel # 4
Brushed Bronze #4
Mirror Stainless Steel #8
Mirror Bronze #8

4.2.3
SUPPLEMENTARY FEATURES:

a) Lighting: four (4) LED potlights. The failure of one lamp shall not cause the remaining lamps to extinguish.
b) Car sill(s): Extruded Aluminium
c) Overall Height: 2134 mm (7' 0") (2134 mm clear inside)
d) Car Operating Station: In compliance with CSA B44 Elevator Code Appendix E for accessibility
e) Handrail: Located on control wall: 1 ½" round Stainless Steel #4
   (Optional Selections)
   6 mm x 63 mm Flat Stainless Steel #4
   6 mm x 102 mm Flat Stainless Steel #4
   Brushed Bronze #4
   Mirror Stainless Steel #8
   Mirror Bronze #8
f) Pad Hooks: Included
g) Protective Pads:
   [Select one of the following]
   Yes – One set
   Not Required

4.2.4
OTHER CONTROL FEATURES:

a) Battery Emergency Power for lowering of elevator and door opening.
b) Door open button
c) Phone Button to activate conversation
d) Run stop Key switch
e) Access Key switch (if applicable)

4.2.5

Emergency Car Lighting: The emergency power unit shall illuminate the elevator car and provide current to the alarm bell in the event of normal power failure. The equipment shall comply with the requirements of the current CSA B44 Elevator Code.

4.2.6

Entrances: Shall be manufactured in accordance with procedures established by fire testing authorities and shall be labelled for a minimum of 1.5 hours.

4.2.7

Sight Guards: Sight guards shall be furnished on the leading edge of the doors to conceal the hoistway beyond the doors. Finish to match door panels.

4.2.8

Car Floor Indicator: One (1) to be installed in each car as part of the car station.

4.2.9

Hall Floor Indicator: None provided.

(Optional Selection)
(Specify quantity) for each elevator to be installed at (specify location) landing.

4.2.10

Car Lantern and Gong: A directional lantern visible from the corridor to be provided in the car entrance on the strike post side. Provide a visual indicator to indicate the direction of travel of the car and audio signal upon floor arrival, if required by local code.

4.2.11

Car operating panel shall be hinged and shall consist of metal push button with halo lighting for each landing, emergency alarm, keyed stop switch, door open and close buttons all mounted on (#4 finished) stainless steel panel. The car-operating panel will be engraved with Fireman Service instructions.

4.2.12

Braille floor designation tags placed beside corresponding floor buttons on the car station.

4.2.13

Pressure switch.

4.2.14

Firefighters' Emergency Operation: Provide all requirements for FEO Phase I in each elevator.

4.2.15

The car will be equipped with a battery powered emergency lowering and door opening device and alarm which is automatically actuated in the event of failure of the normal building power supply. Battery will be rechargeable with an automatic recharging system.

4.3 CYLINDER AND PLUNGER (JACK UNIT)
4.3.1

The cylinder shall be constructed of steel pipe of a sufficient thickness and suitable safety margin. The top of the cylinder shall be equipped with a cylinder head with an internal guide ring and self-adjusting packing.

4.3.2

The plunger shall be constructed of a steel shaft of a proper diameter machined true and smooth. The plunger shall be provided with a stop electrically welded to the bottom to prevent the plunger from leaving the cylinder.

4.4 ROPED HYDRAULIC FEATURES
4.4.1

Safety device: A "slack/broken cable" safety device shall be supplied, which will stop and sustain the elevator and its rated load, if either of the hoisting cables becomes slack or breaks. The safety device shall be resettable by the operation of the elevator in the upward direction. A switch shall be mounted

in such a position to sense the operation of the safety device, and will open the safety circuit to the controller to prevent operation of the elevator in either direction.

4.4.2

Plunger(s), Cylinders(s), and Sheave(s): A sheave shall be located at the top of each plunger and shall be guided through its travel by a set of plunger rails. Each plunger and cylinder shall be installed plumb and shall operate freely with minimum friction.

4.4.3

Ropes: Minimum two (2) 9.5 mm aircraft cables. Ropes shall be fastened to the top of the cylinder jack stands, travel over the plunger sheave(s) and attach to the bottom of the elevator car frame.

4.5 PUMPING UNIT

a) The motor shall be the dry type installed above the oil tank.
b) The controller shall be integrally mounted on the power unit frame.
c) Control circuitry to be Programmable Logic Controls and be located on the pump unit.
d) The pump shall be super-hush screw type
e) The power unit control valve shall be a variable speed proportional valve type that includes all hydraulic control valving inherently.
This valve shall incorporate the following features:
(i) Up and down acceleration and deceleration speed adjustment for smoother starts and stops.
(ii) Smooth stops at each landing shall be an inherent feature of the valve.
(iii) Adjustable pressure relief valve.
(iv) Manually operating DOWN valve to lower elevator in an emergency.
(v) Pressure gauge indicating in P.S.I. and Bars.
(vi) Gate valve to isolate cylinder from pump unit.
(vii) Negative pressure switch.

4.6 LEVELLING DEVICE

4.6.1

The elevator shall be provided with a 2 way-levelling device, which will maintain the car within 1/2" (13 mm) of the landing, by magnetic sensor.

4.6.2

Leveling device switches shall be located in a position to be inaccessible to unauthorized persons.

4.6.3

Hoistway car position signals shall be magnetically sensed for quiet operation.

4.7 PIPING

Pipe of adequate size and thickness shall be installed between the pumping unit and the cylinder head. A shut off valve shall be provided for maintenance and adjusting purposes.

4.8 CONTROLLER

A microprocessor controller shall be provided, including necessary starting switches of adequate size together with all relays, switches and hardware required to accomplish the operation specified. Overload protection shall be provided to protect the motor against overloading.

4.9 WIRING

All wiring and electrical interconnections shall comply with the governing codes. Insulated wiring shall have flame retardant and moisture proof outer covering, and shall be run in conduit, tubing or electrical

wire-ways. Travelling cables shall be flexible and suitably suspended to relieve strain on individual conductors.

4.10 HOISTWAY OPERATING DEVICES

Normal terminal stopping devices shall be provided. When an emergency terminal stopping device is also required, it shall be furnished and the controller switches and circuitry arranged in accordance with the requirements of the CSA B44 Elevator Code.

4.11 PIT SWITCH

An emergency stop switch shall be located in the pit.

4.12 PIT MAINTENANCE STAND

Provide a non-removable means to mechanically hold the car above the pit floor to provide an area in the pit for maintenance and inspection as per requirements of the CSA B44 Elevator Code.

4.13 PLATFORM

The car platform shall have a fabricated frame of formed and structural steel shapes, rigidly welded. Sub-flooring shall be wood floor. The underside of the platform shall be fireproofed. The platform shall be manufactured by a CWB certified shop and be equipped with an aluminum threshold.

4.14 CAR SLING

4.14.1

Car sling shall be fabricated from steel members with adequate bracing to support the platform and cab.

4.14.2

The buffer-striking member on the underside of the car must stop the elevator before the plunger reaches its down limit of travel.

4.14.3

Guide shoes to be solid slipper type with polyurethane inserts.

4.15 GUIDES

4.15.1

Steel 8 lb/ft “T” guide rails and brackets shall be securely fastened to the building structure.

4.15.2

Brackets shall securely hold the guides in a plumb and true position regardless of car loading.

4.15.3

Guides shall be bolted through the hoistway enclosure with “back-up” plates, washers and nuts. Subject to architects’ alterations and approvals.

4.16 TWO SPEED HORIZONTAL SLIDING HOISTWAY DOOR/ CAB GATE

4.16.1 CAB DOOR OPERATION

a) Power operated, two speed horizontal sliding, stainless steel #4 finish or prime coat, panels providing a clear opening of 36” x 80” (914 mm x 2032 mm) shall be provided.

b) Doors on the car and at the hoistway entrances shall be power operated by means of a solid-state 24 volt D.C. operator with smooth quiet belt drive transmission, operable during power failure.

c) Door operation shall be automatic at each landing with door opening being initiated as the car arrives at the landing and closing taking place after expiration of an adjustable time interval.

d) All control adjustments shall be potentiometer regulated.

e) The door shall be equipped with an infrared self-contained light curtain that will stop and reverse the doors should it detect an obstacle.

f) The car doors shall be equipped with a master door clutch to control the individual landing door electrical-mechanical interlocks.

g) The car door electric contact shall prevent the elevator from moving away from the landing unless the car door is in the closed position and the controller will monitor the door contacts and register a fault if any have been bypassed.

h) The car door sill shall be extruded aluminum.

4.16.2 HOISTWAY DOORS

a) Two speed horizontal sliding, stainless steel or prime coat, panels providing a clear opening of 36” x 80” (914 mm x 2032 mm) shall be provided at each landing.

b) Frames shall be of bolted construction for a one-piece unit assembly comprised of head and side jamb sections.

c) The door assembly shall be 1 1/2 UL/ULC labeled and provided with approved electrical mechanical interlocks.

d) The landing doorsill shall be extruded aluminum with non-slip wearing surfaces and grooves for door guides.

4.17 TELEPHONE

4.17.1

An ADA-approved AUTODIAL telephone shall be furnished and installed beside the car station. A separate phone line to the elevator controller shall be provided by others and located in the elevator machine room under another section of the specifications.

Part 5- Execution

5.1 EXAMINATION

a) All site dimensions shall be taken to ensure that tolerances and clearances have been maintained and meet local regulations.

b) Installation will not begin until hoistway and machine room have been properly prepared.

5.2 PREPARATION

Pre-inspect the construction and service requirements for "Work by Others." These requirements will be included in drawings, diagrams, engineering data sheets and special instructions before the work commences.

Part 6- Warranty

6.1 WARRANTY

The elevator contractor shall provide free service from date of approval by local authorities based on timeline indicated in section 1.4.1. The entire elevator and all component parts shall carry a LIMITED WARRANTY for a period of two (2) Years. The warranty shall be for the replacement at no cost of defective parts but shall not include the labor costs required to replace the defective part or parts.

Part 7 - Owner's Instruction & Manual

7.1 OWNER'S INSTRUCTION & MANUAL

After installation is completed, the contractor shall instruct the owner in the proper use, operation and maintenance requirements of the elevator. Instructions to also include emergency procedures and safety rules and precautions. The contractor shall also supply the owner with an Owner's Manual detailing the operating, safety, and maintenance procedures of the elevator.