

PART 1 - GENERAL

1.1 SYSTEM DESCRIPTION	.1	Supply and install one holeless hydraulic elevator.
1.2 SHOP DRAWINGS	.1	Submit shop drawings in accordance with Section 01 33 00, Submittal Procedures.
	.2	Include on shop drawings: <ul style="list-style-type: none"> .1 Size and location of machine, controller and piping. .2 Size and location of car, hoisting beam, guide rails, buffers 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 overtravel of car. .7 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 telephone. .9 Location and size of access doors. .10 Loads on hoisting beams. .11 Expected heat generation of equipment in machine room. .12 Outside diameter and wall thickness of cylinder, plunger and piping, and working pressure. .13 Length of plunger and cylinder. .14 Each shop drawing submitted shall bear stamp of qualified professional engineer registered in Province of job location. .15 Include on general arrangement drawings: <ul style="list-style-type: none"> .1 Type, size, location of hoistway entrances.
	.3	Provide product data for: <ul style="list-style-type: none"> .1 Signal and operating fixtures, operating panels, indicators. .2 Car design and components. .3 Doors and frame details. .4 Door protective devices. .5 Microprocessor controller.

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| <u>1.3 SAMPLES</u> | .1 | Submit samples with approval package using manufacturer's standard format. |
| <u>1.4 CLOSEOUT SUBMITTALS</u> | .1 | Provide 3 copies of operations manuals. |
| <u>1.5 MAINTENANCE SERVICE</u> | .1 | Furnish complete service and maintenance of elevator system components during 12-month elevator contract warranty period. |
| | .2 | Maintenance to include systematic examination, adjustment and lubrication of elevator equipment; maintain hydraulic fluid levels, repair or replace parts whenever required. Use genuine parts produced by manufacturer of specific equipment. |
| | .3 | Provide emergency call back service at all hours for this maintenance period. |
| | .4 | Maintain locally, near place of work, 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. |
| | .5 | Provide an emergency phone device, including arranging and paying for connection of Aliant communication line, Aliant service and monitoring service for the twelve month warranty period. |
| <u>1.6 WARRANTY</u> | .1 | Provide a written warranty on materials, workmanship and performance for one year following Substantial Performance. |
| <u>1.7 WASTE DISPOSAL AND MANAGEMENT</u> | .1 | Separate and recycle waste materials 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. |
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| 1.7 WASTE
DISPOSAL AND
MANAGEMENT
(Cont'd) | .3 | Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, metal, pallets, packaging material in appropriate on-site containers for recycling in accordance with Waste Management Plan. |
| | .4 | Ensure the following forms, included at the end of Section 01 74 21 are completed and submitted to the General Contractor.
.1 Waste Audit (WA) Sheet - Schedule A
.2 Waste Material Tracking Form - Schedule B |
| | .5 | Coordinate all work related to Section 01 74 21 with General Contractor. |

PART 2 - PRODUCTS

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| 2.1 POWER SUPPLY | .1 | Equipment power: 575 V, 3 phase, 60 Hz, alternating current. |
| | .2 | Lighting: 120 V, single phase, 60 Hz. |
| 2.2 ELEVATOR
CHARACTERISTICS | .1 | Characteristics of elevator as follows:
.1 Rated net capacity: 1160 kgs.
.2 Rated speed: 0.25 to 0.75 mps.
.3 Travel Distance (nominal): 5800mm.
.4 No. of Stops: 3.
.5 No. of Openings: 1 front and 1 back.
.6 Inside cab dimensions: 2032 wide x 1295 front to back.
.7 Hoistway and cab entrance frame opening sizes: 1066w x 2134h.
.8 Door type: single speed.
.9 Door Operation: side-opening speed.
.10 Clear Hoistway 2540 wide X 2045 deep, Pit depth is 1220, Clear Overhead 4200 mm. |
| 2.3 ELEVATOR TYPE | .1 | Use either telescopic or direct acting holeless plunger with pumping unit, storage tank and magnetic control valves. |
| | .2 | Locate pump unit and associated control equipment in machine room shown in drawings. |

<u>2.3 ELEVATOR TYPE (Cont'd)</u>	.3	Deliver operating fluid directly into cylinder at necessary pressure and in sufficient quantity to lift rated load at rated speed.
	.4	Use fluids which are totally biodegradable and non-toxic, such as Hydro Safe, as operating fluid. Ensure seals, packing and plastic materials used are unaffected by fluid used.
<u>2.4 ELEVATOR PERFORMANCE</u>	.1	Provide smooth acceleration and deceleration of car without perceptible steps so adjusted as not to cause passenger discomfort.
<u>2.5 ELEVATOR CONTROL OPERATION</u>	.1	Provide Microprocessor based control.
	.2	Emergency Lowering: In order to prevent someone from being trapped in the elevator due to a power failure, the elevator control shall be arranged so that in the event of a power failure the elevator will automatically return to the lowest landing, open its doors and shut down. This operation shall be accomplished through a battery operated back-up system provided by the elevator contractor.
<u>2.6 SOUND ISOLATION</u>	.1	Provide sound isolation between plunger platen and car frame.
	.2	Provide sound isolation between pumping unit and controller, motor and pump and building supports.
<u>2.7 GUIDE SHOES</u>	.1	Use swivel type guide shoes for car. Assemble on metal base to permit self-alignment.
	.2	Equip each shoe with renewable, non-metallic wearing gibs or inserts and spring takeup for side play between guide rails.
	.3	Include renewable wearing gibs made of durable non-metallic material having low coefficient of friction and long wearing qualities when operated on guide rails

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| <u>2.7 GUIDE SHOES
(Cont'd)</u> | .3 | (Cont'd)
receiving infrequent light applications of
rail lubricant. |
| | .4 | Do not use gibs containing graphite or
extreme pressure type lubricants which may
adversely affect performance of safety. |
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| <u>2.8 GUIDE RAIL
LUBRICATORS</u> | .1 | Include guide rail lubricators to distribute
oil evenly. |
| | .2 | Include oil tight drip pan beneath each guide
rail in pit. |
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| <u>2.9 ELECTRICAL
COMPONENTS</u> | .1 | Use steel compression fittings where
electrical metallic tubing is used. Fittings
with setscrews are acceptable only with a
separate grounding conductor installed in same
raceway. |
| | .2 | Include 10% spare conductors and two pairs of
shielded audio cables in traveling cable. |
| | .3 | Do not use armoured flexible metal conduit as
grounding conductor. |
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| <u>2.10 LUBRICATION</u> | .1 | Grease fittings: which fit same gun, for
lubricating bearings requiring periodic
lubrication. |
| | .2 | Grease cups: automatic feed compression type. |
| | .3 | Lubrication points: visible and easily
accessible. |
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| <u>2.11 CAR PLATFORM</u> | .1 | Steel platform: filled with wood or steel
subflooring. Threshold plate: durable and
easily maintainable. Cover floor with vinyl by
others not too exceed 100 lbs. |
| | .2 | Platform: made of steel securely welded and
bolted together. Weld or bolt multigrip steel
plate flooring to platform members. |
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2.12 CAR
ENCLOSURE

- .1 Enclosure: plastic laminate side and rear walls. Cab front to be #4 St. St. swing panel, jambs and header. Car door to be #4 St. St. Suspended ceiling assembly with fluorescent lighting. #4 St. St. handrails on side and rear walls.
- .2 Floor to accept hard non-skid materials supplied by others, flush with sill and securely fastened at front edge.
- .3 Ventilate by an exhaust air-handling unit through roof and through perforations at base.
- .4 Operating panel and faceplate: stainless steel with illuminating call buttons.
- .5 Position Indicator : at top of swing panel.
- .6 Furnish plastic license holder in elevator car to suit certificate issued by enforcing authority. Design holder with hidden or tamperproof fastening.
- .7 Telephone cabinet in car with telephone symbol 75 mm in height. Include telephone wiring within elevator hoistway.
- .8 Car doors and frames: #4 St. St. Doors of sandwich panel construction, flush design. Frames of rolled sections, rigid construction.
- .9 Clear height under hung car ceiling: 2240mm.
- .10 Clear car entrance height: 2134 mm.

2.13 HOISTWAY
ENTRANCES

- .1 Hoistway doors and frames: #4 Stainless Steel.
- .2 Door and frame construction: ULC rated as per CAN B44-M94 requirements; test to CAN4-S104; sandwich panel construction, 32-mm thick minimum.
- .3 Frames: bolted construction.

2.14 OPERATING
PANEL AND BUTTONS

- .1 One operating panels per car integral with front return panels, containing buttons with integral illumination corresponding to floors served, emergency stop switch, alarm button and "DOOR OPEN, DOOR CLOSE" buttons.
- .2 Integral with front return panel key switches containing:
 - .1 Independent service switch.
 - .2 Inspection switch.
 - .3 Fan or blower switch.
 - .4 Light switch.
- .3 Single riser with UP and DOWN buttons at intermediate landings, and single call button at terminal landings, each with integral illumination and stainless steel faceplate.

2.15 DOOR
OPERATION

- .1 Automatic door operation at each landing by means of power operator mounted on top of car.
- .2 Door protective devices: multiple infrared light beams with solid state electronics providing extensive continuous scan across and in front of car entrance, unaffected by dust, humidity and vibration.
- .3 Door operating sequence to minimize car and hall door open and close times. Provide independently adjustable door open times.
- .4 Include arrangement specifically designed to minimize delays and return of car to service, should doors be prevented from closing for predetermined time.
- .5 If doors are prevented from closing for approximately 10 s because of obstruction or operation of safety devices, automatically disconnect door control device and allow doors to close more slowly and recycle until obstruction is cleared. Sound alarm.

2.16 FINISHING

- .1 Structural metal surfaces: clean surfaces of rust, oil or grease; wipe clean with solvent; prime two coats.
- .2 Machine room components: clean and degrease; prime one coat, one coat enamel.

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| 2.16 FINISHING
<u>(Cont'd)</u> | .3 | Field welds: chip and clean away oxidation and residue; wire brush weld; prime two coats. |
| | .4 | Galvanized surfaces: clean with neutralizing solvent; prime one coat. |
| | .5 | Baked enamel on steel: clean degrease metal surface, one coat of zinc oxide primer sprayed and baked; two coats of semi-gloss enamel sprayed and baked. |
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| 2.17 CYLINDER(S)
<u>AND PLUNGER(S)</u> | .1 | Plunger: selected steel tubing machined true and finished to surface finish of 0.0008 mm roughness height rating or better. |
| | .2 | At top of cylinder include stuffing box and packing gland with seal or self-adjusting packing which does not require external adjustment. |
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| 2.18 PUMPING UNIT
<u></u> | .1 | Integral unit combining motor, pump, valves and reservoir in one enclosure. |
| | .2 | Prevent lateral displacement of pumping unit. |
| | .3 | Removable or hinged panels: to ensure quick access to equipment requiring adjustment and maintenance. |
| | .4 | Use positive displacement screw-type pump, with multiple V-belt connection to drive motor or with direct connection between drive motor and pump through flexible coupling. |
| | .5 | Oil storage tank: capacity equal to volume of oil required to lift elevator to top terminal plus reserve. |
| | .6 | Oil level indicator: to show minimum permissible oil level. |
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| 2.19 LOW OIL
<u>CONTROL</u> | .1 | Low oil control feature: to automatically cause up-travelling car to descend to lower terminal landing if reservoir oil level is insufficient. |
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<u>2.19 LOW OIL CONTROL (Cont'd)</u>	.2	Arrange control so that oil reservoir is refilled before elevator can be returned to service.
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<u>2.20 MOTOR</u>	.1	40 starts per hour.
	.2	Do not exceed EEMAC design B locked rotor current.
	.3	Design for minimum locked rotor torque of 150% and minimum breakdown torque of 200% at normal voltage.
	.4	Data plate on motor showing motor connections.
	.5	Provide Solid State Soft Start.
	.6	Include class B motor insulation.

<u>2.21 CONTROLLERS AND CABINETS</u>	.1	Enclose controllers in enameled ventilated sheet steel cabinets. Include hinged doors for easy access to CSA C22.2 No.14.
	.2	Provide similar switch and solid state components of same manufacturer and clearly identify controller components and terminal connections to agree with wiring diagrams.
	.3	Use two main line contactors to avoid possibility of continued operation of pump if one switch should fail.

<u>2.22 MUFLER</u>	.1	Minimize transmission of fluid pulsations in pipeline between pumping unit and cylinder head with blowout proof muffler.
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<u>2.23 PIPING</u>	.1	Use threaded couplings or couplings, which prevent separation of adjoining members by mechanical means.
	.2	Welding is permitted providing interior of pipe is thoroughly cleaned after welding or where welding method prohibits introduction of foreign material into interior of pipe.

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| <u>2.24 EMERGENCY LIGHTING</u> | .1 | Include emergency lighting in each car as follows:
.1 Battery operated emergency lighting equipment, to CSA C22.2No.141, to provide general illumination and 10 lx minimum illumination in car at operating panels and telephone cabinet for 4 h minimum.
.2 Key operated switch for manual testing of unit from within car.
.3 Battery unit of sufficient strength to support 90 kg person without causing malfunction or damage.
.4 Means to contain leakage or spillage of electrolyte. |
| <u>2.25 BARRIER FREE DESIGN</u> | .1 | Ensure that the equipment supplied fully conforms to the requirements of Appendix E of the CSA-B44 Elevator code. |
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<u>PART 3 - EXECUTION</u> | | |
| <u>3.1 INSPECTION</u> | .1 | Verify that hoistway, pit and machine room are ready for equipment installation. |
| | .2 | Verify shaft and openings are of correct size and within tolerances. |
| | .3 | Confirm electrical power is available and of correct characteristics. |
| | .4 | Report defects in writing to Departmental Representative. |
| <u>3.2 INSTALLATION OF HYDRAULIC JACK CYLINDER</u> | .1 | Align and plumb jack unit(s). |
| <u>3.3 INSTALLATION</u> | .1 | Install hoistway and machine room components. Install piping between hoistway plunger and pump unit. |
| | .2 | Mount motor and pump unit. Place on structural supports and bearing plates. |
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3.3 INSTALLATION
(Cont'd)

- .2 (Cont'd)
Securely fasten to building supports to prevent lateral displacement.
- .3 Locate piping where it can be readily accessed for service.
- .4 Arrange equipment in machine room so functioning equipment and other equipment can be removed for repairs or replacement without dismantling or removing other equipment components. Arrange for clear passage to access door. Accommodate equipment in space indicated.
- .5 Erect guide rails using metal shims with lockwashers under nuts and threaded bolts. Compensate for expansion and contraction of guide rails.
- .6 Use splice plates and guide rails with contact surfaces accurately machined to form smooth joints.
- .7 Bolt or weld brackets directly to structural steel hoistway framing.
- .8 Provide inserts for placement in concrete formwork or self-drilling expansion shell bolt anchors that will perform to four times rated pullout load.
- .9 Install hoistway door sills, frames and headers in hoistway walls. Set entrances in vertical alignment with car openings and aligned with plumb hoistway lines.
- .10 Balance car.

3.4 TOLERANCES

- .1 Cab movement on guide rails: smooth movement, with no perceptible lateral or oscillating movement or vibration.
- .2 Cab speed variation: maximum 10% in lifting rated load.
- .3 Guide rail alignment: plumb and parallel to each other.

3.5 FIELD QUALITY
CONTROL

- .1 Perform and meet tests required by CAN3-B44.
- .2 Supply instruments and execute specific tests.
- .3 Furnish test and approval certificates issued by jurisdictional authorities.
- .4 Provide two weeks written notice to Consultant of date and time of tests.

3.6 CLEANING

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

3.7 ADJUSTMENTS

- .1 Adjust door opening and closing times to suit Owner's instructions.
- .2 Adjust automatic floor leveling feature at each floor.