

## HYDRAULIC PASSENGER ELEVATORS

## SECTION 14212

### 1. GENERAL

#### 1.1 DESCRIPTION

1.1.1 General Requirements: specified under Division 1 of these Specifications shall apply to and form an integral part of this Section's Work as applicable.

#### 1.2 ALL WORK

1.2.1 In all cases where a device or part of the equipment is referred to in the singular number, provide as many such devices of equipment as are required to complete all Work of the Section.

#### 1.3 SCOPE

1.3.1 This specification is intended to cover the complete replacement of the hydraulic jack units on three oil hydraulic passenger elevator located in the Mandarin Building, 185 King Street, Winnipeg as detailed. All Work shall be performed in a workmanlike manner and is to include all labour and material in accordance with the drawings and as specified herein.

#### 1.4 CO-OPERATION:

1.4.1 Elevator Contractors are encouraged to understand the full intent and scope of the Work before submitting their Bids. Where any inconsistency between the various parts of the Specification, details incorporated in the drawings, applicable Codes or standard Industry practice are noted, these shall be brought to the attention of the Contract Administrator in accordance with B4.

#### 1.5 CODES & INSPECTIONS

1.5.1 All Work shall be performed in accordance with the latest revised edition (as of the date bids are taken) of the CAN/CSA-B44-07 Canadian Standards Association Standard Safety Code for Elevators, Escalators, and Dumbwaiters, the Canadian Standards Association Electrical Code, and/or such Provincial and Local Codes as may be applicable. The Elevator Contractor will obtain and pay for all required government permits, inspections, re-inspections as necessary and licenses.

#### 1.6 DRAWINGS

1.6.1 The Elevator Contractor shall provide a revised layout drawing showing the new hydraulic jack details including the change to the working pressure of the elevators and shall register the project with the Office of the Fire Commissioner.

1.6.2 If required by the authorities having jurisdiction, the drawings shall bear the stamp of a Professional Engineer registered in the Province where the installation is taking place.

1.6.3 Approval of the drawings (and other approval forms submitted by the Contractor) shall in no way limit the responsibility of the Contractor to provide a complete installation in accordance with the requirements of this specification.

#### 1.7 SPACE REQUIREMENTS

1.7.1 Equipment bid in this contract must accommodate the openings and spaces provided, as detailed in the specification. Failure to do so will be construed to mean complete acceptance of the design bid

documents, and that any adjustment to the building frame, hoistway and pit sizes or other affected Work shall be done at the Contractor's expense.

## 1.8 DOCUMENTS ON SITE

1.8.1 Maintain on Site a complete set of contract specifications and drawings, including all Addenda incorporated into the specification text at the appropriate place, for the use of your mechanic and The City.

## 1.9 STORAGE

1.9.1 A dry and protected area, conveniently located to the elevator hoistway, will be assigned to the Elevator Contractor without cost, for storage of his material and tools.

## 2. PRODUCTS

### 2.1 DESCRIPTION OF EXISTING EQUIPMENT:

2.1.1 The existing equipment consists of three oil hydraulic passenger elevators originally supplied and installed by Midland Elevator Ltd.

### 2.2 CAPACITY:

2.2.1 Maintain the existing capacity of 3000 pounds for each elevator.

### 2.3 SPEED:

2.3.1 Maintain the existing speed of 150 fpm for all three elevators.

2.3.2 Alternately, if the piston you propose to supply will result in a different elevator speed using the existing pump unit, confirm what the new elevator speed will be.

### 2.4 TRAVEL:

2.4.1 Maintain the existing travel of 47'-3" from Basement floor to 4th floor

### 2.5 ORDER OF WORK:

2.5.1 Only remove one elevator at a time from service. Complete all Work on each elevator in turn and do not shut down an additional elevator until all Work on the current elevator is completed and accepted by the Consultant.

### 2.6 REMOVAL OF EXISTING EQUIPMENT:

2.6.1 Remove and dispose of the existing piston follower system complete including piston follower, cables, sheaves and terminations.

2.6.2 Remove and dispose of the existing jack units complete including pistons and cylinders and sand backfill.

### 2.7 CYLINDER HOLE:

2.7.1 Once each jack unit has been removed, excavate the existing sand backfill from the cylinder hole. Base pricing on the existing cylinder hole liner being intact and sufficiently plumb and the existing cylinder hole being of adequate depth.

2.7.2 The existing cylinder culvert is understood to be 24 inches in diameter. Confirm that your PVC or HDPE cylinder protection will fit into the existing cylinder hole liner.

## 2.8 JACK UNIT:

2.8.1 Provide a conventional "in-ground" piston and cylinder. Provide a hydraulic cylinder complete with a quality, replaceable packing gland, oil collecting ring and drain tube leading to a collection pail. The piston shall be of sufficient diameter to maintain the working pressure at full load below 400 PSI. Provide a uniform polished finish to the piston designed to give maximum wear characteristics to the jack packing.

2.8.2 Provide a jack unit which does not require a piston follower but has sufficient internal rigidity for the length of piston and the weight required to be supported.

## 2.9 PIT CHANNELS:

2.9.1 Provide new pit channels to support the new jack units.

2.9.2 Mount the existing buffers on top of the new pit channels.

2.9.3 Paint the pit channels and buffers in rust-resistant enamel paint.

## 2.10 PVC CYLINDER PROTECTION:

2.10.1 Supply and install a PVC or HDPE plastic pipe and end cap to completely encase the buried hydraulic cylinder. Seal the plastic pipe, by means of a substantial mechanical connection between the plastic cylinder protection and the steel cylinder, above the pit floor to prevent water entering the pipe should the pit flood. Provide a ½" rigid plastic sampling tube fastened to the side of the hydraulic cylinder and running from the elevator pit to the bottom of the plastic pipe to allow the depth and contents of the plastic pipe to be measured from time to time. Provide a pressure port to connect an air compressor to assist in evacuating the plastic tube. Provide as part of this installation a 20 year guarantee against perforation of the underground cylinder, in conjunction with the elevator maintenance contract.

2.10.2 As part of the inspection procedure at the end of the job, demonstrate that the plastic PVC pipe is capable of maintaining 40 pounds of air pressure for a period of five minutes. (It is recommended that the contractor perform a similar test after the cylinder has been set in place but before it has been back-filled with sand or the pit closed.)

## 2.11 POWER UNIT:

2.11.1 Provide a Power Unit located in a machine room at the Basement floor and remote from the hoistway. The Power Unit shall consist of a squirrel cage motor connected directly to a hydraulic pump designed specifically for elevator service, producing the pressures and volumes required to maintain the original speed of the elevators for this installation, all submerged in an oil reservoir. Provide a Valve Unit with independently adjustable, Up Accelerate, Up Slowdown, Up Stop, Down Accelerate, Down Slowdown and Down Stop to provide smooth starts and stops and accurate levelling in both directions of travel.

2.11.2 If a submersible pump unit is not available for the pressures and volumes required for this installation, provide motor, pump and valves located outside the oil reservoir. Provide minimum 1-inch thick soundproofing material completely surrounding the pump unit to reduce airborne noise.

Limit the noise produced by the Pump Unit to 85 decibels measured 3 feet from the pump Unit.

## 2.12 MUFFLER:

2.12.1 Provide a blowout-proof muffler in the oil line, capable of removing all pulsations from the pump unit and resulting in a smooth ride free of vibration. A flexible insert in the oil line is not acceptable under this specification.

## 2.13 ISOLATION COUPLINGS:

2.13.1 Provide a minimum of two (2) isolation couplings in the oil line between pump unit and the jack. Each sound isolation coupling shall consist of flanges separated by a gasket of material designed for use with hydraulic oil. Design each sound isolation coupling so that any vibration from the motor or pump is completely absorbed by the coupling and not passed on to the adjacent oil line.

## 3. EXECUTION

### 3.1 PROTECTION

3.1.1 Aluminum or ferrous metal: placed next to concrete, protect using one heavy coat of bituminous paint on all surfaces in contact with concrete.

### 3.2 INSPECTION

3.2.1 Existing conditions: examine to ensure adequate clearances, reinforcing and the like has been provided as required to ensure for proper installation of Work of this Section.

### 3.3 INSTALLATION/APPLICATION/PERFORMANCE

3.3.1 Work: carry out using trained employees during regular working hours normal for the trade; perform in a workmanlike manner as required to include all Work as shown or reasonably implied by the Contract Documents.

3.3.2 Standard: conform to the approved manufacturer's latest printed installation directions and recommendations to all applicable codes and regulations, and to recognized good trade practice.

3.3.3 Hoisting: include all temporary hoisting facilities required for the placement and installation of the elevator equipment, including but not limited to crane, temporary beams, or any other means.

### 3.4 WORK IN OCCUPIED BUILDING

3.4.1 Ensure that all employees respect the conditions of working in an occupied building with employees and visitors frequenting the building and using the elevators. Ensure that the workplace is maintained in a clean, orderly and safe condition at all times, that proper barriers are maintained in place and locked to keep the public safe and that hallways are not blocked. When it becomes necessary to open the access to the hoistway or machine room, ensure that the openings are attended to ensure the safety of employees and visitors to the building.