# Specification – Annex A

## Technical Equipment Data

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| **Equipment-No.** | Elevator #4 |
| **Rated Load** | 3000 lb |
| **Rated Speed** | 100 fpm |
| **Travel Height** | 48 ft 6 in |
| **Number of floors** | 5 |

## Components

**Power Freight**

Supply and install complete replacement landing doors at Level #3 and PH and a complete landing door entrance for new level #4. Supply and install new landing door operators for existing landing doors at Level #1 and #2. Supply and install new landing and car door controller.

**Control System**

A new microprocessor-based control system shall be provided to perform the functions of safe elevator motion. Included shall be all of the hardware required to connect, transfer and interrupt power, and to protect the motor against overloading.

The control for the hoist motor will be by means of a solid-state drive system. The system will be a controlled pulse-width modulated AC vector drive. The variable voltage variable frequency drive will convert the AC power supply using a two-step process to a variable voltage variable frequency power supply for use by the hoist motor. Varying the frequency and voltage of the motor will automatically and continuously control the speed, acceleration and deceleration. The system will be closed loop.

Each controller cabinet containing memory equipment shall be properly shielded from line pollution. The microcomputer system shall be designed to accept reprogramming with minimum system down time.

All high voltage (110V or above) contact points inside the controller cabinet shall be protected from accidental contact in a situation where the controller doors are open.

The microprocessor-based control system shall utilize on-board diagnostics for servicing, trouble-shooting, and adjusting without requiring the use of an outside service tool.

**Hoist Motor**

A new hoist motor shall be provided. The motor will be designed to stand the loads encountered for elevator service, sufficient capacity to operate with the contract load and speed without overheating, and will be rated in accordance with the standards of the IEEE.

**New Geared Machine**

A new geared traction machine shall be provided; designed to meet the service encountered in elevator operation. A properly grooved sheave will be driven through a worm and gear by a moderate speed motor. The sheave wheel will be mounted with heavy antifriction bearings on a rigid shaft, or will be firmly pressed onto a shaft supported by a sleeve or antifriction bearing of ample capacity.

The bedplate will be of cast iron or steel in one piece either separate, or integral with the machine frame. The gear housing, brake support and motor support will be mounted on the machine, rigid bedplate or they will be a single casting. This gear case will have gasketed hand holes to permit inspection of worm gear face, worm gear and worm contact, and worm gear mounting bolts. The complete assembly will be so arranged to effectively prevent oil leakage from the gear case and worm shaft opening. The machine will be mounted in compact soundproofing units to attenuate the predominated frequency of the elevator system.

The sheave and gear spider will be pressed on and keyed to the shaft. The worm gear will have an accurately machined bronze rim or such a composition that it will not show appreciable wear after one year. The worm gear will be securely bolted to the spider. The sheave material will be of hard alloy cast iron, smooth turned grooves and flanges. These sheaves will be tested until proven free from cracks and holes or other imperfections.

The worm will be accurately machined in one piece from a solid steel forging or heat treated steel bar stock and be integral with the worm shaft. The worm shaft will be mounted on at least two bearings, one of which will be an oversized double active preloaded ball bearing, or guide bearing. All thrust bearings will be removable without dismantling the machine.

The brake will be spring actuated, electrically released of heavy construction and having a proper braking area for the load and speed. The two brake shoes will be spring operated. The springs will have sufficient power to stop and hold the elevator at 125 % of contract load.

Hoist cable guards will be installed at the front and rear of each machine. Guards will be installed in such a manner so as to cover all pinch points.

**Governor**

The car safety will be activated by a new speed governor located overhead, driven by a governor rope suitably connected to the car safety. The governor will be equipped with rope grip jaws designed to clamp the governor rope so as to actuate the car safety upon a predetermined over speed downward. The governor will be set at not less than 115% of specified rated car speed and not more than the maximum governor tripping speed specified in the code for the specified rated car speed. The rope grip jaws must be positively tripped within the permitted range of speed. The governor rope-tripping device will be so designed that

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| | no appreciable damage to or deformation of the governor rope will result from the stopping action of the device in operating the car safety. The governor over speed switches will conform to ANSI A17.1 Code requirements and be so located and enclosed that excess lubricant will not enter the switch enclosure. Upon activation of the safety switch, the switch will remain in the open position until manually reset. The governor will be accurately adjusted and sealed with tripping speed specified. Date tags indicating the test date will be applied. |
| **Governor Ropes** | A new governor cable(s) compatible with the specifications for the new governor will be provided. The governor cable is to pass over the governor sheave and under a weighted tension device at the bottom of the hoist way. During normal operation of each elevator, the governor rope will run free and clear of the governor gripping jaws, cable guards and all other stationary parts. A metal tag will be attached to the top of the car-releasing carrier, giving the diameter, material of cable, and with date of cable installation. Tags will be attached in an approved manner. |
| **Hoist Ropes** | New hoist cables shall be provided. The hoisting cables will be designed for elevator service, compatible with the hoist machine, and having a factor of safety at least equal to that specified in the ANSI Code. |
| **Rope Gripper** | A new rope gripper over speed device shall be provided. The rope gripper shall prevent the car from striking the hoistway overhead structure due to a failure in the hoist motor, brake, coupling, shaft, gearing or control system. The rope gripper will be set to detect an ascending car over speed condition at a speed not greater than 10% higher than the speed at which the car governor is set to actuate. The device will also detect unintended car movement away from the landing with the hoistway door not in the locked position and the car door not in the closed position. The rope gripper will be designed so that no appreciable damage to, or deformation of, the cables will result from the stopping action of the device. Once activated by unintended movement or car over speed the device will remain activated until manually reset. |
| **Signalization** | New car and hall signalization shall be provided to include a forth floor level. |
| **Permit** | Complete the required TSSA submissions and inspection for the elevator to return to service after the major alteation. |
| **Handover Date** | Mutually agreeable project schedule will be determined at time of proposal acceptance. |