

Section 14100

Part 1 – GENERAL

1.1 SUMMARY

- A. Modernize one (1) Schumacher hydraulic freight elevator. The elevator machine room equipment was completely submerged in the flood of June 2008. The elevator cab and part of the hoistway equipment were also submerged.
- B. All new wiring, boxes and connectors will be NEMA 4x.
- C. The work shall include, but not limited to, new microprocessor controller, new pumping unit, valve, door operators, some of the hoistway doors and fixtures.
 - 1. In order for the owner to maintain flexibility and a competitive posture in the procurement of elevator maintenance and repair contract, bidders shall furnish a non-proprietary elevator control system. The microprocessor controller will have non-proprietary design. The elevator controller will either have on board diagnostics or the elevator manufacturer will leave on the job site, permanently attached to the controller, any diagnostic tools required for the maintenance repair or adjustment of this elevator. The elevator contractor will make all spare parts, manuals, adjusting information, wiring diagrams and pertinent safety upgrades available to the owner.
 - 2. Provide and maintain hoistway, pit and machine room barricades as required.
 - 3. All engineering, equipment, labor and permits required to satisfactorily complete elevator modernization as required by contract documents.
 - 4. Cartage and Hoisting: All required staging, hoisting, and movement to, on and from site including new equipment, reused equipment or dismantling and removal of existing equipment.
 - 5. Unless specifically identified as "Reuse", "Retain", or "Refurbish", provide new equipment.
 - 6. Protective barrier(s) between car(s) in normal operation and adjacent car(s) in the modernization process. Full depth and height of hoistway (if necessary).
 - 7. Provide twelve (12) months of preventative maintenance.

1.2 QUALITY ASSURANCE

- A. The specification is based upon the MCE Motion 2000 controller, the VMI VHC-102 controller or GAL Galaxy is an accepted alternate.

1.3 WARRANTY

- A. Materials and workmanship shall comply in every respect with contract documents. Correct defective material or workmanship which develops within one year from date of final acceptance of work to the satisfaction of the Purchaser and Consultant at no additional cost, unless due to ordinary wear and tear, or improper use or care by Owner. All retained equipment shall be covered under the warranty provisions. No prorations of equipment or parts shall be allowed on the preventative maintenance contract.

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1.4 MAINTENANCE

A. A quality maintenance service consisting of regular examinations, adjustments and lubrication of the elevator equipment will be provided by the elevator contractor for a period of twelve (12) months after the elevator has been turned over for the customer's use. All work will be performed by competent employees during regular working hours of regular working days and will include emergency 24 hour callback service. This callback service will not cover adjustments, repairs or replacement of parts 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 will be provided.

1.5 SCHEDULING

A. It is assumed that the time required to perform the necessary work on the individual car will be no longer than six (6) weeks. Bidder shall state the amount of time that they will need to perform the work on the Bid Submittal Form. Once the work is started on the elevator the Contractor will remain working on the project to assure that the work is completed on schedule and with the least amount of down time for the elevators.

1.6 PERMIT, TEST AND INSPECTION

- A. Obtain and pay for permit, license and inspection fee necessary to complete the work.
- B. Perform tests required by Governing Authority in accordance with procedure described in ASME A17.1 Safety Code for Elevators and Escalators in the presence of Authorized Representative.
- C. Supply personnel and equipment for test and final review required by consultant.

1.7 WORK DESCRIPTION

A.	Number- One (1) hydraulic freight elevator	Retain existing
B.	Capacity-3000 lb.	Retain existing
C.	Speed - 150 fpm	Retain existing
D.	Operation Control	MCE Motion 2000 microprocessor controllers or alternate
E.	Motor Control	Solid state soft start
F.	Power - 480 volts 3 phase	Retain existing, field verify
G.	Stops - 3 stops and 3 openings	Retain existing
H.	Entrance Type – bi-parting	<u>First floor</u> 1. Install new lower and upper door panels. 2. Install new door chains and connectors. 3. Install new Courion door operator. 4. Clean and lubricate door tracks.

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		<p><u>Second floor</u></p> <ol style="list-style-type: none"> 1. Install new lower door panel 2. Install new door chains and connectors. <p><u>Third floor</u></p> <ol style="list-style-type: none"> 1. Retain existing 2. Clean and lubricate tracks, chains and door operators. 3. Stencil paint 4" high floor designations on inside face of hoistway doors at each landing. 4. Replace damaged or missing sight guards.
I.	Door Operation	<ol style="list-style-type: none"> 1. Install new Courion door operators at first floor. 2. Install new car gate operator and chains. 3. Install new car gate reversing edge. 4. Install new retiring cam.
J.	Machine	Install new pumping unit with new unibody valve.
K.	Guides – slide	<ol style="list-style-type: none"> 1. Retain existing 2. Clean rails 3. Properly lubricate
L.	Car Enclosure – painted metal	<ol style="list-style-type: none"> 1. Retain existing 2. Sand any surface rust 3. Apply enamel paint to match existing color.
M.	Fixtures	<ol style="list-style-type: none"> 1. Install new NEMA 4x car operating panel by CJ Anderson (stainless steel finish) to match existing 2. Emergency car light, digital car position indicator with direction arrow, include "No Smoking" sign and car capacity 3. Independent service key switches, Fireman's service key switch and Fire Service Fixtures at second floor. 4. Size new car operating panel so that it is large enough to cover all holes in the existing return panel. 5. Install new NEMA 4x hall button fixture by CJ Anderson (stainless steel) at first floor. 6. Install hoistway access key switches at top floor.
N.	Smoke Detectors	<ol style="list-style-type: none"> 1. Existing smoke detectors need to be replaced. 2. Install new smoke detectors at each floor in the machine room.

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		<ol style="list-style-type: none"> 3. Split into three (3) zones to comply with existing codes. 4. Follow NFPA 72 Rule 6.16.3.2
O.	Communication – telephone	Install new ADA style telephone in new telephone box.
P.	Electrical	<ol style="list-style-type: none"> 1. Install new pit stop switch for the elevator (NEMA 4x). 2. Install new traveling cable; cable will have a minimum of 10% spare wires and will include 2 shielded spare cables for future use. 3. Install all new hoistway and car wiring. 4. All wiring, boxes and connectors will be NEMA 4x. 5. Have an electrician clean the main power and car lighting disconnects in the machine room and their connections at their power source. 6. Have an electrician meg all power source connections in the machine room to verify the wire is capable to handle the required load (replace main line and car light fuses). 7. Have an electrician check the outlets in the machine room and pit to verify that the required voltage is proper.
Q.	Additional Features	<ol style="list-style-type: none"> 1. Install a water level detection device (similar to Pumpbix model FF-98 Floodfree) in the back corner of the elevator pit. The device will be adjustable, set at approximately 12” above the pit floor. The device will be plugged into the pit 110-volt outlet. When the water level is detected, an alarm will sound in the hoistway and the elevator will be sent to the third floor where it will park until the water level in the pit is alleviated. 2. Install new fluorescent light fixture with bulbs and plastic cover in machine room. 3. Install new top of car inspection fixture (NEMA 4x). 4. Sand existing piston to remove rust. 5. Sand and paint existing oil line. 6. Remove existing cylinder packing and pump out any oil or water in the cylinder. 7. Install new hydraulic cylinder packing for the elevator.

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		<ul style="list-style-type: none">8. Install electrical switch and wing nuts on each top of car exit.9. Install proper fire extinguisher in machine room.10. Provide three (3) complete sets of all wiring diagrams, parts manuals, ordering information and operating instructions.
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1.8 EQUIPMENT: MACHINE ROOM COMPONENTS

- A. The hydraulic system shall be of compact design suitable for operation under the required pressure. The power component shall be mounted in the hydraulic-fluid storage tank. The control valve shall control flow for up and down directions hydraulically and shall include an integral check valve. A control section including control solenoids shall direct the main valve and control: up and down starting, acceleration, transition from full speed to leveling speed, up and down stops, pressure relief and manual lowering. All of these functions shall be fully adjustable for maximum smoothness and to meet contract conditions. System to be provided with a muffler, low-pressure switch and a shut-off valve.

- B. A microprocessor-based controller shall be provided, including necessary starting switches together with all relays, switches, solid-state components and hardware required for operation, including door operation, as described herein. A three (3) phase overload device shall be provided to protect the motor against overloading.
 - 1. Include a reverse phase relay.
 - 2. A new Courion door operator control box will be installed in the machine room. The control box will have a NEMA 4 enclosure.

- C. A manual lowering feature shall permit lowering the elevator at slow speed in the event of power failure or for adjusting purposes.

- D. Tank Heater.

- E. Low-oil control

- F. Pressure Switch

PART 2 – GENERAL SPECIFICATIONS FOR CONTROLLERS

2.0 GENERAL

- A. This section describes features common to all of the control systems manufactured by MCE. Features that are unique to a certain type of control will be found in the appropriate section of these specifications.

2.1 CODE COMPLIANCE

- A. The elevator controller shall use a microprocessor based logic system and shall comply with all applicable elevator and electrical safety codes. Following is a partial list of codes with which MCE products are in compliance.

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1. All local codes
2. ANSI/ASME A17.1
3. NEC

2.2 ENVIRONMENTAL CONSIDERATIONS

- A. The new controller will have a NEMA 4x enclosure.

2.3 DIAGNOSTICS

- A. The control system shall provide comprehensive means of accessing the computer memory for elevator diagnostic purposes. It shall have permanent indicators for important elevator statuses as an integral part of the controller.

2.4 INTENDED OPERATION OF CRITICAL COMPONENTS

- A. Failure of any single magnetically operated switch, contactor, or relay to release in the intended manner; the failure of any static control device, speed measuring circuit, or speed pattern generating circuit to operate as intended; the occurrence of a single accidental ground or short circuit shall not permit the car to start or run if any hoistway door or gate interlock is unlocked or if any hoistway door or car door or gate contact is not in the made position. Furthermore, while on car top inspection or hoistway access operation, failure of any single magnetically operated switch, contactor or relay to release in the intended manner, failure of any static control device to operate as intended or the occurrence of a single accidental ground, shall not permit the car to move even with the hoistway door locks and car door contacts in the closed or made position.

2.5 STATUS INDICATORS

- A. Dedicated permanent status indicators shall be provided on the controller to indicate when the safety string is closed, when the door locks are closed, when the elevator is operating at high speed, when the elevator is on independent service, when the elevator is on Inspection/Access, when the elevator is on fire service, when the elevator out of service timer has elapsed, and when the elevator has failed to successfully complete its intended movement. In addition, a means shall be provided to display other special or error conditions that are detected by the microprocessor.

2.6 OUT OF SERVICE TIMER

- A. An out of service timer (T.O.S.) shall be provided to take the car out of service if the car is delayed in leaving the landing while there are calls existing in the system.

2.7 FIRE SERVICE OPERATION

- A. Fire Phase I emergency recall operation, alternate level Phase I emergency recall operation and Phase II emergency in-car operation shall be provided according to applicable local codes.

2.8 INDEPENDENT SERVICE

- A. Independent service operation shall be provided in such a way that actuation of a key switch in the car operating panel will cancel any existing car calls, and hold the

doors open at the landing. The car will then respond only to car calls. Car and hoistway doors will only close with constant pressure on a car call push-button or door close button. While on independent service, hall arrival lanterns or jamb mounted arrival lanterns shall be inoperative.

2.9 SIMPLEX OPERATION

A. Duplex operation is a configuration of series PHC and PTC control systems. Duplex configuration, with a computer for each controller, assigns cars on a real time basis using estimated time of arrival (ETA). Should one computer lose power or become inoperative in any way, the other computer shall be capable of accepting and answering all hall calls. When both computers are in operation, only one shall assume the role of dispatching the hall calls to both elevators.

2.10 LEVELING

A. The car shall be equipped with two-way leveling to automatically bring the car level at any landing, within the required range of leveling accuracy, with any load up to full load.

2.11 TEST SWITCH

A. A controller test switch shall be provided. In the test position, this switch shall allow independent operation of the elevator with the door open function deactivated for purposes of adjustment or testing the elevator. The elevator shall not respond to hall calls and shall not interfere with any other car in a duplex or group installation.

2.12 RELAY PANEL INSPECTION

A. A relay panel inspection switch and an up/down switch shall be provided in the controller to place the elevator on inspection operation and allow the user to move the car in the hoistway. The car top inspection switch shall render the relay panel inspection switch inoperative.

2.13 ON-BOARD DIAGNOSTICS

- A. The microprocessor boards shall be equipped with on-board diagnostics for ease of troubleshooting and field programmability of specific control variables. Field changes shall be stored permanently, using non-volatile memory. The microprocessor board shall provide the features listed below.
- B. On-board diagnostic switches and an alphanumeric display shall provide user-friendly interaction between the mechanic and the controller.
- C. On-board real time clock shall display the time and date and is adjustable by means of on-board switches.

End of Section 14100