

INSTRUCTIONS FOR EDITING

SECTION 14241

HYDRAULIC ELEVATOR RENOVATION

1. Existing elevator system shall be surveyed by each Bidder in the installation and maintenance of hydraulic elevator. The survey shall determine the extent of modification required to satisfy the criteria of this Section.
2. Based on the survey/inspection provide a detailed scope of work to be performed as listed in Part 2.

SECTION 14241

HYDRAULIC ELEVATOR RENOVATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. General provisions of the Contract, including General Conditions and other Division Specification Sections apply to the Work of this Section, with special attention to the following:

1. Section 01340 – Shop Drawings, Product Data and Samples.
2. Section 01730 – Operating and Maintenance Data.
3. Section 01740 – Warranties and Bonds.

1.02 RELATED WORK

- A. Section 08710: Finish Hardware - Cylinder keying.
- B. Section 09680: Carpet – Car Flooring.
- C. Division 15 Specifications related to ventilation of Machine Room.
- D. Applicable Sections of Division 16, Electrical.

1.03 REFERENCE STANDARDS

- A. ADAAG: Americans with Disabilities Act Accessibility Guidelines (Appendix A to 28 CFR Part 36).
- B. ICC/ANSI A117.1-1998 (“Accessible and Usable Buildings and Facilities”).
- C. ASME 17-1-Safety Code for Elevators
- D. National Electric Code.
- E. Applicable NEMA Standards.

1.04 DESCRIPTION OF WORK

- A. Provide all materials, labor and coordination required for a complete renovation of existing elevator as described in this specification, including conformance to Referenced Standards.

- B. The Contractor shall repair all retained equipment and components as specified hereinafter or where necessary to provide operation as originally designed or in order to be compatible with new components.
- C. Where components are retained and repaired, the Contractor shall provide original manufacturer's replacement parts.
- D. Patch and repair existing wall surfaces resulting from installation of new controls.
- E. The work shall be performed in an occupied building. It shall be conducted in such a manner as to protect building occupants and other users against any personal safety hazards. Avoid or minimize undue noise and inconvenience and prevent damage to property on or about the premises.
- F. Provide protective barricades for any opening to the hoistway/elevator shaft at all times. Hoistway/elevator shaft openings shall be protected with plywood barricades bolted in place to prevent intentional or accidental access to the hoistway/elevator shaft by staff or visitors in the building. If at any time the outer elevator doors are not closed, whether or not the Contractor's personnel are on site, a barricade shall be in place. Barricades shall be at least the height of the elevator door and constructed of a framed wood wall with plywood or sheetrock covering. Barricades shall not impede normal access nor interfere with emergency egress in the adjoining corridor. At no time shall a hoistway/elevator shaft opening on any floor be left unattended, even for short periods of time, while work is in progress. Construction warning tape, cones, or similar temporary devices are not considered sufficient safety protection to satisfy this requirement.
- G. Place warning signs on the barricade and elevator doors indicated "ELEVATOR CLOSED FOR RENOVATION – PLEASE USE STAIRWAY".
- H. Protect all flooring materials from damage or soiling during performance of work, transportation of material or removal of debris. Damage to the building caused by the work of this Section shall be repaired at no cost to the Owner.
- I. All materials and equipment necessary for completion of all elevators and the complete system must be delivered to the job site or properly stored prior to commencing work.
- J. Examine all retained and reused materials and equipment. Report in writing to the Owner's Representative, any defective, inoperable, or broken equipment found.
- K. All materials and equipment not retained shall become the property of the Contractor and shall be removed from the building.

- L. Asbestos containing floor tile in existing elevator car(s), (if existing), will be removed by the Owner.

1.05 WORK EXCLUDED

- A. The Owner shall provide telephone service from elevator machine room. (Owner's monitoring station).
- B. Removal of asbestos containing material.

1.06 PERMITS AND INSPECTIONS

- A. Obtain and pay for all required permits and inspections, and perform all tests as required including operational tests and load tests.

1.07 SUBMITTALS

- A. Provide Manufacturer's detailed specifications, technical product data for all items of equipment, and shop drawings for review prior to beginning work: Include the approved Manufacturer's recommended installation procedures, which shall become the basis for accepting or rejecting the installation methods used.
- B. The Contractor shall provide operating fixture details and finish samples for selection. Provide as follows:
 - 1. Half size drawing details of car operating panel, hall push-button panels, hall lanterns and position indicators.
 - 2. 4" square finish sample of the proposed laminate for the car interior.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in Manufacturer's original unopened protective packaging, with identifying labels intact.
- B. Store materials in a clean, dry, protected area.

1.09 WARRANTY, MAINTENANCE AND CALL BACK SERVICE

- A. Warranty: Minimum two (2) years covering parts and materials, two (2) years for labor.

- B. Provide maintenance and call back service for two (2) years, commencing on date of Owner acceptance.
- C. Provide emergency service on a daily, 24-hour basis for two (2) years, commencing on date of Owner acceptance.

1.10 OPERATING AND MAINTENANCE DATA

- A. Upon completion of work and final Owner acceptance, provide operating and maintenance manuals in accordance with Section 01730.
- B. Include complete sets of wiring diagrams in the operating and maintenance manuals. Mount one (1) copy of the wiring diagram in the machine room in laminated protective covering for maintenance use.

1.11 INSTRUMENTS AND TOOLS

- A. For each elevator renovated, provide all instruments, tools or equipment necessary for programming, maintenance, and servicing of elevators. Ownership of instruments, tools or equipment provided will be conveyed to the Owner upon completion and final acceptance of all elevators and will be retained on-site in a location to be designated by the Owner.

PART 2 - PRODUCTS

2.01 ELEVATOR CONTROLS RENOVATIONS (Edit scope of controls renovation based on individual project requirements)

Provide the following new equipment:

- A. New electric door operation with photoelectric beam control.
- B. New key switch control with illuminated buttons at each floor stop. Comply with referenced standards for required accessible mounting height. Provide new car operating push-button panels. In upper portion of panel, locate floor pushbuttons and other switches as may be required by code. Locate fan, light, independent service and other auxiliary switches to provide the operation specified herein in a locked service panel below the operating panel. Locate to conform to referenced standards. Provide oversize panel to cover existing cutout. Coverplates shall be stainless steel #4 finish. Controls shall be Adams Survivor Series Buttons or approved equal.
- C. New raised and Braille characters at each door entrance, Comply with referenced standards for required accessible mounting height.
- D. New passing gong.

- E. New emergency alarm.
- F. Control interface with building fire alarm and detection system.
- G. New accessibility complying “push to talk” autodial telephone instrument with all connections to the elevator trail cable and machine room (24AWG twisted 4-pair, shielded solid core, plenum rated cable): Telephone shall be K-phone by K-tech or approved equal. The Contractor shall program the telephone to dial out to 911; number shall be provided by the Owner’s Rep. Telephone shall have a pre-recorded message identifying the facility and indicating the address.
- H. Car Position Indicator: Remove and furnish new car position indicators located inside the operating panels. Cover plates shall match new car operating fixtures.
- I. Call Registered Lights: Provide an integrally mounted light in all car and landing push buttons, when pressed tile push button will light to indicate that a demand has been registered. After the demand has been answered, the light will be extinguished.
- J. Landing Call Buttons: Provide extended panel button fixtures at each floor served by elevators. Extended panels shall include all code-required signage and Fire Fighter’s Phase I Service. Locate per referenced standards for accessibility.
- K. Firefighters’ Services – The Contractor shall provide emergency fire fighter service Phase I and Phase II to comply with ASME 17.1 Safety Code for Elevators, Section 211. Provide all wiring, operating fixtures, signals and information or instruction signage as required. Provide all necessary interconnections to the smoke and heat sensor relays.
- L. Accessories: Provide other materials and accessories not specifically described herein, but which are necessary for a complete and legal installation.

2.02 ELEVATOR MECHANICAL SYSTEMS RENOVATION (Edit scope of systems renovation based on individual project requirements)

- A. Pump Unit: The Contractor shall replace the existing pump unit with a new unit. Motor starter shall be Solid State, soft start, minimum 80 starts per hour. The Contractor shall select and size the pump unit to meet or exceed the existing capacity and speed. Provide a “Maxton” or “EECO UV5A” oil control valve with the required valve assemblies. The oil storage tank shall be constructed of steel, with a steel cover, oil level gauge, protected vent opening, overflow connection and valve protected drain connection. Tank shall have a capacity equal to the volume of oil required to lift the elevator to the top terminal plus a reserve of not less than 20 gallons. Provide all new hydraulic piping for the entire system.

All piping shall use isolating Victualic Fittings. The new pump unit shall be Minnesota Elevator or approved equal.

- B. Controller: The Contractor shall remove the existing controller and provide a new elevator controller. The Controller shall be solid state microprocessor type. Provide all required circuitry to conform to ANSIA 17.1. The new controller unit shall be Minnesota Elevator or approved equal. The controller shall be a front wired type only, with no components requiring service from the back of the panel. All panel wiring shall be neatly formed and tied; control and signal wires shall be brought to washer, solder or studs type terminals. The voltage requirements of the elements in the cabinet shall be adapted to the building supply voltage through step-down transformers with taps, power transistors, diodes, etc.
- C. Provide dedicated permanent LED/LCD display status indicators or other means of displaying error or fault conditions, detected by the microprocessor, to indicate at a minimum the following:
1. Safety circuit is open.
 2. Door lock open.
 3. Elevator operating at high speed.
 4. Independent service on.
 5. Firefighters' Emergency Operation on.
 6. Elevator "Out of Service" Timer elapsed.
 7. Motor limit timer or valve limit timer has elapsed.
 8. Other special or error conditions.
- D. Mount cabinet securely in the machine room.
- E. Provide computer devices, components and related hardware with the following isolation and protection:
1. Properly shield cabinets containing memory equipment against line pollution.
 2. Design the system so that it will start properly when power is restored in the event of a power failure or interruption.
 3. Provide system memory, so that data is non volatile in the event of power failure or disturbance. Battery type back up is not acceptable.

- F. Provide a new oil scavenger pump system and related components as a part of this elevator replacement. Provide a complete oil scavenger pump system, to return oil from the hydraulic cylinder drip rings to the oil tank in the elevator machine room, including but not limited to the following:
1. An oil line from each plunger drip ring to a metal or composite reservoir in the pit.
 2. An electrically operated scavenger pump in the pit reservoir.
 3. A copper tubing scavenger line from the electrically operated scavenger pump to the oil storage tank in the machine room.
 4. A water float designed to prevent operation of the pump should the pit flood.
 5. The scavenger pump shall not automatically reset in the event that the water float shut off switch is activated, it shall be designed to be manually reset.
 6. Provide plug in type power circuit to accommodate a 4'-0" cord length.
- G. Wiring: The Contractor shall provide all new wiring from disconnect panel in machine room. Include all new control wiring, hoistway wiring, hoistway lights and switches, traveling cables and pushbutton wiring. Wiring shall be installed in accordance with the Division 16 requirements.
- H. Disconnect Switch: The Owner shall replace the existing main power disconnect switch in the machine room with a new fused disconnect switch to power the elevator and controls if needed. Switch shall have an auxiliary switch to interlock with the battery powered decent unit. The switch and fuses shall be sized by the contractor to meet the requirements of the National Electrical Code and the equipment manufacturer's recommendations.
- I. Emergency Power Operation: Provide emergency descent unit manufactured by Reynolds or equivalent.

2.03 HOISTWAY RENOVATION

- A. Car and Counterweight Guide Rails: Thoroughly clean, realign, tighten, replace broken and missing attachments, spot prime and paint, except for guide surface.
- B. Piston and Cylinders: Replace existing cylinders and piston. New piston and cylinders shall be by Cemco or approved equal.
- C. Car Guides: Remove existing guides and provide new nylon slide guides.

- D. Steady Plates: Replace cab steady plates on top of each elevator. Adjust to provide operation as originally designed.
- E. Platform and Car Frame: Reuse existing. Thoroughly clean, tighten attachments where loose. Replace all sound isolation rubber pads with new composition pads. Coordinate with cab renovation work.
- F. Buffers: Reuse existing buffers springs. Scrape clean to remove rust, spot prime and paint, replacing if needed.
- G. Slowdown and Final Limit Switches: Remove all existing, switches and provide new to be compatible with new and retained components.
- H. Door Equipment: Replace existing door equipment with a new solid-state operator. Provide an adjustable electronic door timer to limit the amount of time a car is held at a floor due to a defective hall call or car call, including stuck pushbuttons. Call demand at another floor shall cause the car to eventually ignore the defective call and continue to provide service to other floors. All rollers, tracks and linkage to be new on both car and hoistway doors. Door equipment shall be manufactured by GAL or MAC or equivalent. Provide new door edges by Janus Panaforty Door Edges or approved equal. Existing car and hatch doors shall be reused. Clean and refinish door panels with enamel paint.
- I. Painting: See Section 09900.

2.04 ELEVATOR CAR RENOVATION (Edit scope of car renovation based on individual project requirements)

- A. Provide new laminate interior panels for all panels of the car. Panel color and style shall be selected by the Owner from the manufacturer's standard colors and styles.
- B. Provide a new LED interior light and cover to replace the existing light.
- C. Provide a new exhaust fan in ceiling of car. In cars without existing fans, provide necessary ceiling penetration and mounting brackets.
- D. Paint the car ceiling with white enamel paint.

2.05 ELEVATOR PIT

- A. Thoroughly clean out the entire pit and dispose of all debris.

2.06 ELECTRICAL WORK

- A. All devices, material, hardware and installation shall be in accordance with the requirements of the local electrical code and the National Electrical Code (NEC).
- B. The electrical Contractor shall have an established lockout/tagout procedure, which meets the requirements of VOSH Standard 29 CFR Part 1910, Subpart J, and Subsection 147, entitled Control of Hazardous Energy Sources. The Contractor shall coordinate with the Owner's Representative to confirm with the Owner's lockout/tagout program requirements.
- C. All devices and material shall be as listed by Underwriter's Laboratory and shall bear the UL label.
- D. New disconnect switches shall have a handle which shall be capable of being locked in the closed position. The disconnect switch shall be selected to hold fuses sized per the unit manufacturer's recommendation. The disconnect amperage rating shall meet or exceed the rated amperage of the circuit breaker feeding it whether new or existing.
- E. Wire and Cable:
 - 1. All new conductors except low voltage control wiring shall be new copper THWN or THHN, 600 volt rated. Minimum wire size shall be #12 unless noted or specified otherwise.
 - 2. All wiring shall be color coded to identify phases, neutral and ground. Color code shall be in accordance with NEC and as follows:

<u>VOLTAGE</u>		
<u>CONDUCTORS</u>	<u>120/208</u>	<u>277/460</u>
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral		White Gray
Ground	Green	Green

- F. Installation of Conductors:
 - 1. Conductors shall be continuous between junction boxes. No splices shall be made except in boxes or panel board gutters.

2. All joints, splices and taps Number 8 and larger shall be connected with solderless compression type pressure connectors.
3. Oil or grease shall not be used when pulling conductors. Use only approved cable lubricants.
4. Train conductors neatly in panels, cabinets and equipment.
5. Tighten pressure type lugs on panels and equipment and then retighten 24 hours later.
6. Identification of Conductors: All branch circuits shall be left tagged in the panelboards, in all gutters, and in all junction boxes.
7. Conductors in vertical conduit runs shall be supported with split wedge type fittings, which clamp each conductor and automatically tighten under the weight of the conductors at intervals per NEC.

G. Conduit shall be in accordance with the following:

1. All conduit shall be new full-length intermediate metal conduit (IMC) or rigid. Any flexible connections to motors or other equipment, shall be made using liquid-tight, galvanized single strip flexible metal conduit minimum length 12" maximum length 36".
2. Hangers and Brackets: All new conduits shall be supported from the building structure. Horizontal runs of conduit shall be supported a minimum of 8' on center. Hangers shall be adjustable types especially made for electrical conduit. Parallel runs of conduit may be supported on trapeze hangers made of all thread rods with structural steel channel cross members. Channels shall be 1 inch for 24 inch wide trapeze and 1.5 inches for larger than 24 inches. Perforated steel straphangers are not acceptable. Conduit run along wall surfaces shall be supported with galvanized steel brackets especially designed for conduit and sized for the conduit used.
3. Pull boxes shall be provided in any conduit run which exceeds 75 feet in length or any run having more than three (3) 90-degree elbows.

H. Disconnect Switches: Will be installed and provided by owner. Disconnect switches shall be NEMA Heavy Duty type HD and shall be UL listed. The heavy duty disconnect switches shall be manufactured by SQUARE 'D', GENERAL ELECTRIC or CUTLER-HAMMER.

1. Switches shall have quick-make and quick-break operating handle and mechanism, which shall be an integral part of the box. Switches shall be horsepower rated for 250 volt or 600 volt as required. The lugs shall be

UL listed for copper conductors and be front removable. Ampere rating shall be provided as indicated on the Drawings.

2. Installation: The disconnect switches shall be securely mounted in accordance with the National Electrical Code, approximately 60 inches above finished floor to top unless otherwise noted. Provide steel channel mounting brackets where required for secure mounting.
 3. The fuses as specified shall be installed in disconnect switches requiring fuses.
- I. Nameplate: Disconnect switches, starters, panel boards, and all other related electrical devices shall have nameplates of 1/16 inch thick laminated plastic with ½ inch high white letters on a black background. Nameplates shall identify each piece of equipment and shall be mounted on the front top of the enclosure. Labels shall be securely fastened to equipment. Double-faced tape is not acceptable.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to beginning work, examine existing conditions in order to verify that no irregularities or deficiencies exist, which would adversely affect the proper installation and operation of the hydraulic elevator. Notify Owner immediately when such conditions are encountered. Do not proceed with work until observed deficiencies have been corrected.

3.02 INSTALLATION

- A. Comply with Manufacturer's installation instructions, approved submittals, and applicable codes and regulations.

3.03 FIELD QUALITY CONTROL

- A. Provide all personnel, equipment and instruments required for inspections and testing.
- B. Secure all required acceptance inspections.

3.04 TESTING

- A. Contractor is responsible for arranging all required testing and inspections with Macon-Bibb County personnel. Contractor shall provide all labor, tools, equipment, and weights required for testing.

- B. Contractor shall pay for all inspection fees and re-inspection fees.
- C. Contractor shall schedule work in order to allow testing and inspections and re-inspections in time to provide an approved and operating elevator ready for use by the required completion date.
- D. Contractor shall inform the Owner (Owner's Representative) of test dates and times so that he can be present to witness tests.
- E. Contractor shall coordinate a pre-test with Fire Alarm installer in order to check and correct if necessary the operation of the fire alarm system integration operation at least 2 days before the scheduled final inspection. Contractor shall also arrange with the Fire Alarm System installer to be present for the test.

3.05 ADJUSTMENTS

- A. Adjust brakes, controllers, leveling switches, generators, limit switched, stopping switches, and safety governors in order to operate within accepted design tolerances.
- B. Adjust car-leveling devices so that car stops within 1/4 inch of finished floor.
- C. Adjust door and signal timing to conform to accessibility requirements of referenced standards.
- D. Lubricate equipment in accordance with Manufacturer's written instructions.

3.06 CLEANING

- A. Clean hoistway surfaces to remove loose materials, filings or other foreign substances, which are existing or the result of the work of this Section.
- B. Clean machine room floor to remove dirt, oil or grease.
- C. Remove all excess materials, tools, packaging or other debris resulting from the work, and dispose of legally.

END OF SECTION