

## 14 20 00 Elevators

Revision 01/04/2019

### **SUMMARY**

Work of this section includes providing equipment, incidental material and labor required for a new elevator. Where singular reference is made to elevator or elevator components, such references shall apply to the number of elevators or components required to complete the installation. This specification provides a broad outline of required equipment and does not describe the details of design and construction. The Architect and Owner will select either traction or hydraulic elevator(s) based on building requirements.

### **1. SCOPE of WORK**

- a. List of minimum items required for each elevator:
  1. Programmable microprocessor based elevator controller (Motion Control Engineering), with Central Monitoring capability, or Rice approved, non-proprietary equal.
  2. AC Vector Flux Drive motor (traction only)
  3. AC Hoist motor (traction only)
  4. Pumping unit (hydraulic only)
  5. Piping (hydraulic only)
  6. Door Operation
  7. Landing system
  8. Governor (traction only)
  9. Cable guards (traction only)
  10. Main line disconnects
  11. Single phase disconnects
  12. Machine room lighting
  13. ECI Cablite LED car down lighting system or equivalent
  14. Car operating panel
  15. Traveling lantern and gong
  16. Car door restrictor
  17. Car door operator
  18. Car door safety screen detector
  19. Cab hand rails
  20. Emergency escape hatch cover latch and electrical contact
  21. Car top inspection station
  22. Limit switches
  23. Car top selector
  24. New cables
  25. New car wiring including travel cables
  26. Counterweight guard (traction only)
  27. Pit ladder
  28. Pit stop switch
  29. Pit light
  30. Landing door sight guards
  31. Smoke detectors
  32. Hall Fixtures
  33. Access switches
  34. Roller Guides

## 14 20 00 Elevators

### 2. **RELATED WORK THAT MUST BE SPECIFIED ELSEWHERE**

- a. **Ballou Fire Systems**, or Rice approved Fire Alarm Contractor for fire detection.
- b. Use Rice telephone system compatible equipment.
- c. Provide modem for Central Monitoring
- d. Maintain mechanical room ambient temperature: 32°F to 80°F
- e. Division 16 electrical work per National Electric Code (NEC)

### 3. **DEFINITIONS**

- a. **First Floor**: For purposes specified herein, the main floor (second opening in buildings with basements) shall be considering as the Main Floor. The second floor (third opening in buildings with basements) shall be considered as the alternate floor for fireman's operation recall.

### 4. **SUBMITTALS**

- a. Submit controller's schematics for approval.
- b. Submit shop drawings:
  1. Manufacturer's product specification listing and description of control system features, performance and operating characteristics.
  2. Include details or catalog cuts of lanterns, position indicators, car buttons and similar items.
- c. Control systems of proprietary design are not acceptable. Complete information shall be submitted to demonstrate the universal servicing capability of the proposed system.
- d. Certificates:
  3. Submit certificates of elevator performance with contract closeout documents.
  4. After adjustments, test, and inspections are performed, forward certificate signed by the elevator installer stating that the equipment and controls provide elevator services as specified.
- e. Maintenance data:
  5. Include elevator controller manufacturer's recommended maintenance procedure for the elevator equipment including recommended spare parts list and three complete sets of final wiring diagrams.
  6. Include all diagnostics and/or trouble shooting guides and all block diagrams, including input and output signals.
  7. Include all maintenance and installation manuals, drawings and data for mechanical equipment, jack, machine, pumping unit, fixtures, etc. Information shall be of technical level to completely adjust the entire elevator system.
  8. Provide Non-proprietary diagnostics by Motion Control Engineering, Inc. (MCE) 916-638-4011

### 5. **QUALITY ASSURANCE**: Acceptable standards:

- a. American Iron and Steel Institute (ASI), standards as referenced herein.
- b. American National Standards Institute (ANSI), Specification for Making Building and Facilities Accessible and Usable by Physically Handicapped People, A 17.1-1986
- c. American Society of Mechanical Engineers (ASME), Safety Code for Elevators and Escalator ANSI/ASME A17.1 1993 with amendments, except as superseded by local codes and ordinances.

## 14 20 00 Elevators

- d. American Society of Mechanical Engineers (ASME), American National Standards Institute of National Standards of Canada, Elevator and Escalator Electrical Equipment, ANSI/ASME A17.51991/CAN/CSA-B44.1-M9 1
- e. American Society for Testing and Materials (ASTM), standards as referenced herein
- f. American with Disabilities Act (ADA) of 1992 Federal Regulations 28 CFR Part 36, Accessibility for Building and Facilities.
- g. National Electric Code (NEC)
- h. National Electric Manufacturers Association (NEMA), LD 3-1985
- i. National Fire Protection Association (NFPA), standards as referenced herein.

### 6. **JOB CONDITIONS**

- a. By submitting pricing for the elevator, the Contractor accepts that the equipment as shown and specified for this project is properly designed and engineered. Should additional design or engineering be required, additional cost shall be borne by the Contractor.

### 7. **WARRANTY**

- a. Elevator installer shall provide product and workmanship warranty for a period of one year, beginning at the date of punch list work completion, as accepted by the owner. Owner will provide punch list. Elevator installer shall provide 24 hour 7 days a week call back service with 1 hour response time, including holidays.

### 8. **ELEVATOR DATA**

Description: Geared Traction, **Gearless Traction** and Hydraulic elevator(s)

Capacity: \_\_\_\_\_

Speed: \_\_\_\_\_

Travel: \_\_\_\_\_

Number of landings: \_\_\_\_\_

Number of openings: \_\_\_\_\_

Car platform dimensions: \_\_\_\_\_

Car Height: \_\_\_\_\_

Car doors: \_\_\_\_\_ by \_\_\_\_\_ high \_\_\_\_\_ slide

Hoistway doors \_\_\_\_\_ wide \_\_\_\_\_ high \_\_\_\_\_ slide

Power Supply: \_\_\_\_\_ VAC \_\_\_\_\_ phase \_\_\_\_\_ cycle.

\* Dimensions are unmeasured and must be verified by the bidder

### 9. **BASIC MATERIALS**

- a. Steel:
  - 1. Structural shape: Meeting ASTM 36-93a
  - 2. Sheet: Meeting ASTM366-91 (1993), cold rolled carbon steel, commercial quality.
- b. Finish:
  - 1. Satin Stainless Steel or selected by Architect

### 10. **MACHINE ROOM**

- a. **Controller:**
  - 1. Furnish and install a new Motion Control Engineering, Inc. Controller (MCE) 916-638-4011 or Rice approved, non-proprietary equal.
  - 2. Architect to base design on:
    - a. Intelligent Motion Control – **Motion 4000 Traction Controls (500 FPM for passenger elevators.)**

## 14 20 00 Elevators

- b. Programmable Traction Control – **iControl Traction Controls**
  - c. Programmable Hydraulic Control – **Motion 2000 Hydraulic Control**
  - 3. Controller to be equipped with Central Monitoring capability.
  - 4. All elevators shall be supplied with **PC monitor** and keyboard **with software Motion 4000 mView iReport**.
  - 5. **Any non-proprietary elevator controllers are acceptable pending Rice Project Manager approval during Design Development Phase.**
- b. **“AC” Flux Vector Drive: (Traction Elevators)**
    - 1. The “AC” Flux Vector Drive must be manufactured by Magnetek or Rice approved equal.
  - c. **“AC” Hoist Motor: (Traction Elevators)**
    - 1. Furnish and install a properly sized low slip elevator duty “AC” hoist motor.
    - 2. The new hoist motor must be manufactured by Baldor Electric, Imperial, or Rice approved equal.
    - 3. The motor must be compatible with the “AC” Flux Vector Drive also provided.
  - d. **Pumping Unit: (Hydraulic Elevators)**
    - 1. Furnish and install a new submersible-type Minnesota pumping unit complete with a single unit valve.
      - i. The valve shall be one properly sized for this project and should be manufactured by either Maxton, ECCO, or Rice approved equal.
    - 2. Also provide new hydraulic fluid for the new machine.
    - 3. Pump motor must be Leroy Summers, US Motors, or Century.
  - e. **Piping: (Hydraulic Elevators)**
    - 1. The piping, fitting, and valve must comply with ANSI/ ASME A17.1 section 303.
  - f. **Governor: (Traction Elevators)**
    - 1. Provide and install a new centrifugal type governor complete with electrical shut down switch. The new governor must be compatible with the car safety device and be properly adjusted in all terms including the appropriate pull through pressure to properly activate the car safety device in accordance with ANSI/ASME A17.1.
    - 2. The new governor must be manufactured by Holister-Whitney, Quincy, Illinois, F.S. Payne, Boston, Mass.
  - g. **Landing system:**
    - 1. Furnish and install a new landing system by Motion Control Engineering, Inc. (MCE) 916-638-4011 or non-proprietary Rice approved equal.
  - h. **Signage:**
    - 2. Per A17. 1 and ADA
  - i. **Zoned Car Door Restrictor:**
    - 3. The door restrictor shall be mechanical with collapsible restrictor.
  - j. **Cable Guards: (Traction Elevators)**
    - 4. Furnish and install hoist cable guards consistent with ANSI/ASME A 17.1
  - k. **Geared machine: (Traction Elevators)** by manufacturer and ANSI/ASME A 17.1
  - l. **Geared machine brake: (Traction Elevators)** by manufacturer and ANSI/ASME 17.1
  - m. **Machine Drive Sheave: (Traction Elevators)** by manufacturer and ANSI/ASME A 17.1
  - n. **Three Phase Power:**
    - 1. Provide power per manufacturer and NEC.
    - 2. Furnish and install a properly sized and configured main disconnect in the proper location adjacent to the strike side of the machine room door consistent with the latest NEMA Standards and National Electric Code.

## 14 20 00 Elevators

3. Provide shunt tripping. Pipe and wire from the new disconnect to the elevator controller.
  4. Install earth ground for Motion Control controller.
  - o. **Single Phase Power:** Furnish and install a disconnect lockable in the off position and equipped with ground fault protection for the 110 AC for elevator light per National Electric Code.
  - p. **Machine Room Lighting:**
    1. Provide machine room lighting as required to provide a minimum of 10 Foot Candles of illumination per code utilizing fixtures that employ electronic ballast with T-8 energy saving bulbs.
    2. Provide new light switch with convenience outlet.
  - q. **Door Operator:**
    1. Furnish and install a new "Gal", or "Mac" Solid State Door Operator, clutch, hall door pick roller assemblies, interlocks, and door closers.
- 11. CAR ENCLOSURE:** To be in compliance with ADA. Finishes selected by the Architect, Provide two-speed fan.
- a. **Car Operating Panel:** Furnish and install a new car operating panel selected by Architect utilizing a satin stainless or brass) faceplates with the following features
  - b. **All Fixtures** are to be fabricated with PTL or Adams Equipment, buttons, and switches. Fixtures manufactured by PTL, EPCO, or Innovation. Internally illuminated buttons with graphics including floor services, functions and amenities per floor. All Braille must be non-adhesive dye cast.
    1. Emergency car lighting
    2. Emergency alarm button
    3. Door open and close button
    4. Buttons are to have adjacent tactile symbols
    5. Capacity plate
    6. Keyed independent service switch
    7. Keyed emergency stop button
    8. Keyed light fan switch
    9. Phase 1, firefighter's service indicator light
    10. Phase 2, firefighters call cancel button
    11. Phase 2, firefighter's key switch, keyed with Adams WD01 key
    12. Firefighter's instructions engraved with red epoxy fill
    13. Keyed car top inspection switch
    14. Hands-free phone to meet Rice requirements
    15. Keyed terminal access, Adams GG101 key
  - c. **Car Travel Lantern:** Furnish and install a traveling lantern with up and down lights and gong in front return panel facing into the doorway. Connect it into the control system so that the proper light will be illuminated for the direction of intended-travel when the door is fully open the gong should stroke once with the up light and twice with the down light. The finished faceplate must match the rest of the car.
  - d. **Car Position Indicator:** Furnish and install per ANSI/ASME A17.11
  - e. **Car Door Detector:** Use Adams ICU Gatekeeper
  - f. **Car Door Restrictor:** Furnish and install a mechanical door restrictor with collapsible restrictor as required by ANSI/ASME A17.1

## 14 20 00 Elevators

- g. **Car Down Lighting:** Furnish and install ECI Cablite LED lighting system or equivalent
- h. **Car Handrails:** Furnish and install car handrails consistent with ADA.
- i. **Car Emergency Escape Hatch:** Secure the existing escape hatch and provide electrical contact required by ANSI/ASME A17.1
- j. **Car Top Inspection Station:** Furnish and install a new car top inspection station with features required by ANSI/ASME A17.1 and manufactured by Adams Mfg., Skokie, Illinois or Quality Elevator Product, Niles, Illinois.

### 12. PLATFORM AND SLING

- a. Selected by the Architect, manufacturer's engineering design and ANSI A17.1.

### 13. HOISTWAY EQUIPMENT

- a. **Guide rails:** Furnish and install 8 or 16 lb. T-Rail, per ANSI/ASME A17.1
- b. **Counterweight: (Traction Elevators)** By manufacturer engineering design. Adjust the total counterweights to weight of the total car plus 40% of capacity.
- c. **Slow down, normal, and final stopping devices:** Furnish and install new roller switches complete with rail mounts to perform the task of providing positive slow down, normal and final stopping functions at the terminal floors in accordance with ANSI/ASME A17.1. The new switches should be either Quality Elevator Parts "LS Switch" or Anderson's "C3, C8, C9 and CB51"
- d. **Car Top Selector:** Furnish and install a new digital car top selector as furnished by Motion Control Engineering.
- e. **Hoist and governor cables: (Traction Elevators)** By manufacturer's engineering design and ANSI A17.1.
- f. **Wiring:** Install per current requirements of the National Electric Code.
  - 1. Terminal connections for conductors at equipment panels, hoistway, and on the elevator car will be made on terminal blocks or studs having identifying numbers.
  - 2. The conductors shall be copper throughout.
  - 3. Use no splices in wiring except at terminal blocks, control, cabinet, junction boxes or conduit.
  - 4. Provide 10% spare conductors throughout.
  - 5. Run spare wires from car connection points to the elevator controller in the machine room.
  - 6. Tag wire spares so they can be identified at both ends.
  - 7. Provide Earth Ground per Motion Control Inc. or Rice approved equal requirements.
- g. **Counterweight guard: (Traction Elevators)** Furnish and install a counterweight guard in the pit consistent with ANSI/ASME A17.1
- h. **Car and counterweight buffers: (Traction Elevators)** Furnish and install per ANSI/ASME A17.1
- i. **Pit Ladder:** Furnish and install a pit ladder configured and positioned in accordance with ANSI/ASME A17.1.
- j. **Pit Stop Switch:** Furnish and install a pit stop switch configured and located in accordance with ANSI/ASME A17.1
- k. **Pit light and convenience outlet:** Furnish and install a new pit light switch, convenience outlet. The light and outlet must be complete with ground fault protection, light guard and installed consistent with ANSJ/ASME A17.1

## 14 20 00 Elevators

- l. **Landing Door Sight Guards:** Furnish and install sight guards on the existing landing doors per ANSI/ASME A17.1 and meet ASTM366-91 standard. Finish along with landing door refinishing.
- m. **Smoke Detectors:** Smoke and heat detectors devices are to be furnished and installed, as required, in the elevator lobby at each floor, at the top of the hoistway, and in the machine room. The wiring and interconnection with elevator controller is to be with ANSI/ASME A17.1 and NFPA-72E.
- n. **Hall Fixtures:** Provide and install flush mount fixtures manufactured by PTL, EPCO, or Innovation.
  - 1. Provide one new landing push-button station at each landing complete.
  - 2. Terminal floor fixtures will have one push-button, and the intermediate floors will have two push buttons, one button for up and one button for down.
  - 3. Include a keyed fire fighter switch in the main floor fixture (second opening for buildings with basements) complete with Firefighter Phase 1 instruction engraved and red epoxy filled Traditional flush mounted per ANSI A17.1.
- o. **Access Switches:** Installed at terminal landings
- p. **Hall Door and Frames:** selected by the Architect, manufacturer engineering design and ANSI A17.1
- q. **ACCEPTANCE TESTING:** Upon nominal completion of the elevator installation, and before permitting use of the elevator, perform code require testing.
  - 1. Advise the owner of the dates and times that the tests are to be performed.
  - 2. The test shall be a continuous operating test in which the elevator under full rated load is operated continuously for 1 hour over its entire operating range, stopping momentarily at all floors.
  - 3. There shall be no operational failure.

**The owner reserves the right to engage a third party consultant to perform work progress evaluation and/or final approval evaluations.**