

DIVISION 14 - CONVEYING SYSTEMS

14200 ELEVATORS

1. As a minimum, comply with applicable requirements of the “Safety Code for Elevators, and Escalators”, ANSI A17.1, hereinafter referred to as the “Code”.
2. All elevators shall meet the requirements of the New Jersey Barrier Free Subcode, Federal ADA Law, and ASME A17.1 provisions for the handicapped.
 - A. The manufacturer/installer of the elevator shall have been in business fabricating elevator equipment for a minimum of five (5) years. Elevator assembled by companies will include major components from the following list of acceptable manufacturers:
 1. Machines: Hollister Whitney
Titan
Otis
Schindler
Dover
 2. Controllers: MCE
Swift
O’Thompson
ESCO
CEMCO
 3. Door Operators: GAL
MAC
 4. Door Protection: T.L. Jones Microscan II
Janus PanaEighty
Adamo Infrared Curtain
 - B. The installation contractor is required to provide the University with a listing of at least five (5) comparable installations completed within the last eighteen (18) months.
4. A. Require the Contractor to provide, at completion of installation, as-built installation information on reproducible mylar drawings indicating the control wiring, motor data, and all pertinent elevator

information necessary for maintenance purposes. Also provide a manual describing all adjustment procedures, maintenance requirements and a list of components including manufacturers and catalogue numbers. The manual shall be provided in four (4) identical bound and organized volumes of printed information, and shall comprise of the following:

1. Step-by-step adjusting, programming and troubleshooting procedures that pertain to the solid-state microprocessor-control equipment.
 2. Passwords or identification codes required to gain access to each software program in order to perform diagnostics or program changes.
 3. A composite listing of the individual settings chosen for variable software parameters stored in the software programs of both the motion and dispatch controllers.
- B. The Contractor shall also provide four (4) sets of "AS INSTALLED" straight-line wiring diagrams in accordance with the following requirement:
1. In addition to displaying name and symbol of each relay, switch or other electrical component utilized, the diagrams shall identify each wiring terminal.
 2. Electrical circuits depicted shall include all those which are hard wired in both the machine room and hoistway.
 3. Supplemental wiring changes performed in the field shall be incorporated into the diagrams in order to accurately replicate the completed installation.
5. All key switches used in the hallway or inside the elevator should be on the University master key system. An exception is the emergency fire key which shall be Chicago Key Way H2389. Twelve copies of the key shall be provided to the University for the Emergency Services Department's use.
 6. Require double wall hydraulic piston casings on hydraulic elevators with waterproof seals at pit floor, and with waterproof, high pressure seal at bottom of casings. (See SK-16) Part IV - Standard Details.
 7. Control System:

The elevator manufacturer / vendor shall provide a new control system with all required functions including, but not necessarily limited to call allocation, logic functions, door control, speed sensing / position, all with microprocessor operation. The control system shall not require the use of any proprietary or specialized manufacturer diagnostic tools for purposes of trouble shooting and / or repair. No hand held tools (data entry devices) will be acceptable for diagnostic or adjusting use. The manufacturer will turn over to the University all tools / devices required for the maintenance of the elevator including equipment to reprogram software source codes at no extra cost to the University at the completion of the project.

All software, diagnostic, adjustment / tune-up manuals and documentation and any other documentation required for the maintenance of the elevator including tools or devices necessary to reprogram the software source codes shall be provided to the University for approval prior to commencement of the installation of the elevator equipment. Once provided, no substitution of the equipment described in the manuals and documentation will be acceptable.

All printed circuit boards shall be available to the University for purchase as spare parts in any quantity deemed reasonable by the University. These spare printed circuit boards shall be exact duplicates of those in use and shall be provided with "as-installed" software programs. Overnight delivery of printed circuit boards must be available for emergency repairs. Printed circuit boards will be accompanied by all pertinent documentation for installation and use. All components of the elevator must be commercially available from standard parts suppliers.

8. Elevator manufacturers shall provide a one-year warranty for all service and maintenance during a one-year period after acceptance. Require the Contractor to submit monthly service reports to the University during warranty period. In addition, the warranty shall include an 11th month walk-through to insure equipment quality, reliability and serviceability. During the one-year warranty period, the elevator manufacturer shall provide emergency service on a twenty-four (24) hour basis. The mechanic shall respond with two (2) hours of the call.
9. Install a ladder, stop switch, a light and a sump pit in the elevator pit. Sump pump (provided under Division 15) may be required where there is a problem with water.
10. Provide a malfunction signal to the controller which will indicate when the elevator is out of order. Rutgers will take the responsibility of transmitting this signal from the controller to its emergency maintenance

system. Auxiliary contacts shall be provide by the Contractor to achieve this function.

11. If the elevator is a hydraulic elevator, the motor starters shall be one size larger than recommended due to their frequent starting and stopping.
12. The design of hydraulic elevator machine rooms should be such as to provide for proper environmental conditions to prevent overheating or congealing of the oil.
13. Provide security mirrors in all passenger elevator cabs.
14. Contractor to provide cab protective pads.
15. All passenger elevators shall have a hands-free in-car communications system.
16. Elevators shall be integrated with the fire detection system and A. contain an ADA compliant visual alarm device, and B. an automatic return to lobby and shutdown feature in the event of fire detection.
17. The following criteria for installation of new elevators should be followed:
 - A. For two (2) floor structures with a maximum rise of 18'-0", use of a holeless hydraulic is preferred.
 - B. For three (3) to six (6) floor structures with a maximum rise of 60'-0", use of a roped or conventional hydraulic is preferred.
 - C. For all structures containing seven (7) or more floors with a rise exceeding 60'-0", use of a geared traction type elevator is preferred.
18. Where hydraulic elevators are installed, car speed shall not exceed 150 feet per minute.
19. Where geared traction elevators are installed, car speed shall not exceed 350 feet per minute.
20. The car capacity for any elevator installed will be a minimum of 2,500 lbs., with a maximum of 5,000 lbs. The maximum may be exceeded based on requirements for a special application, and requires the prior written approval of the University Architect.
21. Elevator Machine Rooms

- A. Shall be key controlled by the University.
- B. The elevator machine room shall be ventilated and accessed by means of an outwardly swinging fire rated door measuring at least 3'-0" X 7'-0".
- C. Non-elevator related equipment or piping may not be located or run through the machine room.
- D. The elevator mainline electrical disconnect and the machine room light switch must be located adjacent to the machine room door and arranged so they may be accessed without entering the room.
- E. Clearance shall be provided for all control panels and equipment cabinet doors to open at least 90 degrees, and at least three (3) feet free of obstructions on all sides of machinery.
- F. The machine room must be equipped with a minimum of one (1) wall mounted fire extinguisher.

22. Signal Fixtures

- A. All car operating panels shall contain the following:
 - 1. A call button for each floor served.
 - 2. "Door Open" and "Door Close" buttons.
 - 3. Three (3) position key switch/locks, all floors except the ground floor. The position shall be lock on, lock off, spring loaded "call" switch position which automatically returns to "lock off".
 - 4. "Alarm" button, connected to a normal and emergency lighting circuit.
 - 5. "Emergency Stop" key switch.
 - 6. Car position indicator.
 - 7. Three (3) position firefighter key-operated switch to match Phase I switch, call cancel button and illuminated/visual/audible signal system.
 - 8. Phase II firefighter's service operating procedures engraved directly to the car operating panel.

9. A locked service cabinet containing the key switches required to operate and maintain the elevator, including, but not limited to:
 - a. Light Switch
 - b. Independent service key switch
 - c. Fan switch
 - d. Duplex receptacle
10. The operating panel shall be a surface mounted type with heavy duty hinges and tamperproof screws.
11. Control face plates shall have a factory-provided knock-outs to receive a cylinder and core. All key switches shall match the building lock cylinders. All key switches must be on the University's master key system.