

Description:

The purpose of the section is to highlight the current applicable UMCP Design Standards for the design, selection and construction of elevators.

Related Sections:

- TBD

Effective Date:

December 2, 2002

Applicable Standards:

- TBD

General Requirements:

- Circulation patterns and anticipated usage of the building shall determine the appropriate types and number of elevators required to ensure a fully functioning building. At a minimum, each floor or area of the building shall be served by at least one passenger elevator with a 3500 lb. or greater capacity. Any new building, three stories or more, in which at least one elevator is planned, shall have a passenger elevator that can accommodate a horizontally carried and positioned 6 foot 8 inch rescue litter, serving each floor or area of the building that exceeds one floor or level above or below the exit floor.
- Provide State-of-the-art microprocessor based control systems with remote monitoring, independent service, firefighter's service, inspection, access, and automatic two-way leveling. The system shall provide a comprehensive means to access the computer memory for diagnostic purposes and shall have permanent indicators to indicate important elevator statuses as an integral part of the controller. Company specific proprietary systems are not acceptable. Only equipment that is supported by the manufacturer to all elevator maintenance companies without regard to affiliation or the lack thereof will be acceptable.
- The installer may either connect into an existing compatible campus wide remote monitoring system or provide all labor and materials, including software, required to install a system compatible with their Controller. The remote monitoring system shall be capable of monitoring multiple elevators and/or groups of elevators simultaneously and each elevator or group of elevators shall be simultaneously monitored from at least two remote locations outside the building on campus. In addition, the remote monitoring system shall include a dial-in-modem and software so that the system may be monitored from an off-campus site.
- Provide State-of-the-art microprocessor based drive control systems, either Variable Voltage Variable Frequency AC motor drives or solid state DC motor control systems are required. These systems, like the controller, shall be nonproprietary.
- All motors used in elevator systems shall be factory guaranteed to be a minimum 90% efficient at full load at the rpm that it is being operated. The motor shall be designed for its respective service and duty. The motor shall be designed to develop high starting torque with low starting current, with all parts capable of meeting the severe requirements of elevator service. The name plate of the motor shall identify the motor efficiency, rpm, voltage, full load amperes, frequency, and duty of the motor.
- If any diagnostic tool or equipment is required to set up, adjust, or trouble shoot the system or any part of the system that one of each of these tools or equipment will be provided with each elevator purchased including complete instructions for its use.
- The Firefighter's Service key-switch shall be operated by the EPCO MFD-1 key and that all other key-switches and locks shall be Best 7-pin cylinder key-switches and locks.
- The building shall be designed so that no thoroughfare to other areas, including the roof, is required through the elevator machine room.
- Insulation applied to walls or structural members of or within the elevator shaft or machine room shall be encapsulated to prevent flaking and peeling.

- Elevator system power and car lighting power shall be provided through a shunt trip circuit breakers with 135 degree heat detectors located in the machine room, the top of the elevator shaft, and the elevator pit. The heat detectors shall be positioned within 18 inches of any sprinkler head or heads in these areas.
- Sprinkler pipes entering the elevator machine room or the elevator shaft shall be branch lines only, serving that space only and not continuing to another area. A sprinkler shutoff valve shall be provided immediately outside the space and its location shall be marked or a sign shall be provided at the sprinkler head denoting the valves location.
- Paint elevator machine room walls with white semi-gloss enamel paint. Paint the elevator machine room floor and the elevator pit floor with gray floor enamel. In each case use the paint manufacturer's recommendations and directions for the preparation and application of their product.
- Elevators shall have telephones with hand-free operation containing an integral automatic tone dialer. Telephones shall be field programmable without the need for special tools or programmers and comply with the latest ADA guidelines. Reference Division 27, Telecommunications Systems, and Elevator Phone for acceptable Talk-A-Phone Co. Model #EPT-100E manufacturer. If the phone is to be programmed to our Work Control, the emergency message shall be defeated or blocked.
- The Elevator car lighting disconnect shall be fed from a shunt trip circuit breaker in the emergency lighting panel.
- All elevator related electrical disconnects shall be marked with the panel #, the circuit #, and the room # or location of the circuit breaker from which it is fed.
- All elevator pits that are below grade shall be fitted with a sump and a functioning sump pump system to remove ground water to the storm drain system. An "oil minder control system" shall be incorporated (see STANCOR web site www.stancorpumps.com) on hydraulic elevators with the control and alarm in the Elevator Machine Room. The alarm contacts shall be connected to the CCMS if available.
- Provide hoistway access escutcheons or devices on all hoistway doors without regard to the number of elevators in the group.

1. Shafts

- All elevator shafts and pits that are below grade shall be sealed and waterproofed with an effective barrier system on the exterior walls and below the pit floor.
- Install back draft dampers in all elevator shaft vents with access to the dampers.

2. Hydraulic Elevators

- Hydraulic elevators shall have a scavenger pump and a sump pump with an "oil minder control" (see STANCOR web site) to prevent oil from being pumped into the storm sewer system and to prevent water from being pumped into the oil reservoir.
- The controls shall be located in the Elevator Machine Room. The alarm contact shall be connected to the CCMS if available in the building.
- The Hydraulic jack shall be of double wall construction and shall be encased in a schedule 40 PVC jacket with waterproof seal at the pit floor and waterproof, high pressure seal at the bottom.
- Underground hydraulic piping shall be avoided if in any way possible. If it is unavoidable, the piping shall be coated and wrapped to prevent corrosion and encased in schedule 40 PVC piping.
- The Machine Room shall be designed with an oil containment barrier system surrounding the pump unit to prevent hydraulic oil from escaping from the room.

3. Roller Guides

- All elevators shall be equipped with constant contact roller guides on the top and the bottom of the car frame.
- Elevators with rated loads of 4000 lbs. or less shall have 3 point roller guides (3 rollers per guide) and elevators with rated loads above 4000 lbs. shall have 6 point roller guides (6 rollers per guide).
- All car and hoistway door sills shall be constructed of nickel silver. Aluminum sills either cast or extruded are too soft and are not acceptable.

4. Cabs

- Passenger elevator cab interior lighting shall be a minimum of two energy efficient florescent lamps controlled by energy efficient electronic ballasts. The lighting system shall consist of 1-1/2" stainless steel tee's and 1-1/2" stainless steel ell's permanently welded into a solid framework grid. The lighting grid shall be suspended from the ceiling of the cab at a height of no less than 90 inches from the floor to the bottom of the grid. The ceiling grid shall support milk white lighting diffusers of no greater than 2 ft. x 2 ft. in size and shall be designed to align with the top emergency exit. Exposed surfaces of the grid shall be ground and polished to a # 4 satin finish.
- Freight elevator cab interior lighting shall be a minimum of two energy efficient fluorescent lamps controlled by energy efficient electronic ballasts. The lighting fixtures shall be flush mounted to the ceiling of the cab with appropriate dress rings or molding to provide a neat appearance. The lamps and ballasts shall be removable from the interior of the cab.
- Freight elevators shall be equipped with power operated hoistway doors and car doors or gates and shall satisfy the requirements of ANSI/ASME A17.1 rule 207.4.
- Position indicators shall be provided inside the cab and at all landings or levels that lead directly to a building exit. The position indicator shall contain 2-inch high 16 segment red LED's on a black background, covered by a deep red acrylic lens. The position indicator shall also have up and down arrows included in the display to indicate the direction of travel.
- Elevator car doors shall be equipped with full length, infrared, curtain type sensing units in lieu of safety edges and photo ray devices.
- Elevator cab shall be provided with protection pads and hooks on three walls. Hooks shall be provided in the Elevator Machine Room to store pads when not in use.

5. Maintenance/Operating Manuals

- Complete wiring and single line diagrams showing the electrical connections, functions, components, and sequence of operation of all apparatus connected with the elevator system shall be provided in triplicate prior to initialization of work.
- Three complete sets of neatly bound operating and maintenance instructions shall be furnished specifically for elevator installations.
- The maintenance instructions shall include detailed information, with sufficient illustrations to prevent misinterpretation.
- The maintenance instructions shall include complete detailed data sufficient to adequately service the entire system, troubleshoot, repair, and order replacement parts.
- Each manual shall also contain a copy of the instructions and programs required to install, set-up, and adjust the elevator system or any part of the system, including passwords of all levels and advantages afforded by sprinklers.