

SECTION 14240

HYDRAULIC CONVEYING SYSTEMS

I. PART 1 – DESIGN DIRECTIVES

A. GENERAL REQUIREMENTS

1. Elevator design shall be completed and submitted for review prior to the start of project construction.
2. Operation and Maintenance Data
 - a) Furnish neatly bound instructions giving the method of control and operation, together with data on all switches, relays and other devices as will be needed for servicing and ordering replacements.
 - b) Furnish bound instructions and recommendations for maintenance with special reference to lubrication and lubricants.
 - c) Furnish three sets of complete and legible “as-built” field wiring diagrams, layouts and straight line diagrams showing the electrical connections, functions, and sequences of operation of all apparatus connected with the system both in machine room and in hoistway, together with photographs or cuts of controller repair parts with part numbers listed.
 - d) Furnish one complete set of all diagnostic tools and equipment required for the complete maintenance of all aspects of the control and dispatch system and hydraulic pump unit. The diagnostic system shall be an integral part of the controller and provide user-friendly interaction between the serviceman and the controls. All such systems shall be free from secret codes and decaying circuits that must be periodically reprogrammed by the manufacturer.
 - e) System documentation shall include a description of component function and a hard copy schematic all microprocessor programming.

B. DESIGN CRITERIA

1. In multi-story buildings at least one elevator shall serve the penthouse and basement mechanical equipment levels.
2. Elevators for parking structures and other open spaces shall be designed in a sheltered area where snow and rain cannot reach elevator entrances or shafts.
3. Hydraulic Elevator Machine Rooms
 - a) Provide ample room for servicing and maintenance
 - b) Access to rooms shall be off public area and rooms shall not share a common wall with classrooms or offices.
 - c) Entrance shall not be accessed through an office or restroom.
4. Hoistways shall include a sump pit.
5. Guide Shoes
 - a) All guide shoes shall be of the roller type with adjustable mounting base, rigidly bolted to the top and bottom of each side of car frame.

- b) Roller guides shall consist of a set of sound reducing neoprene wheels and precision ball bearings held in contact with the rail surfaces by adjustable stabilizing springs. The bearings shall be provided with grease fittings for lubrication. Roller guides shall run on dry un-lubricated guide rails.
 - c) Equip roller guides with adjustable stops to control post wise float.
6. Elevator Car
- a) Elevator car doors shall be protected by full door infrared reversal devices with multiple beams that cover at least every six inch area of the opening.
 - b) Car shall include provisions for an ADA compliant emergency telephone.
 - c) Car ventilation shall be controlled by an "ON-AUTO-OFF" key operated switch mounted in the cab control panel. In the auto position the fan shall start upon the pressing of a car or landing call button and shall stop at an adjustable predetermined time after the car has answered the last registered call.
 - d) Car light fixtures shall utilize PL or T-8 type fluorescent lamps with electronic ballasts. Fixtures utilizing incandescent lamps are unacceptable.
 - e) Provide Engraved Signs
 - (1) Elevator ID Number
 - (2) Building Name
 - (3) Operating instructions and location of Emergency Phone
7. Controller
- a) The controller shall be a generic type microprocessor, programmable controller or relay-based unit, and shall include an integral diagnostic system which shall provide user-friendly interaction between the serviceman and the controls. All such systems shall be free from secret codes and decaying circuits that must be periodically reprogrammed by the manufacturer. Proprietary controllers are unacceptable.
 - b) The controller shall include one complete set of all diagnostic tools and equipment required for the complete maintenance of all aspects of the control and dispatch system and hydraulic pumping unit. All such tools and equipment shall be free from secret codes and decaying circuits that must be periodically reprogrammed by the manufacturer.
 - c) The motor starter shall be solid state reduced voltage NEMA rated for the pump motor and shall include protection which prevents operation during phase failure, phase reversal and low voltage conditions.
 - d) Auto Lowering
 - (1) The controller shall include an auto lowering system which, in the event of a power failure, will cause the car to descend to the next lowest level.
 - (2) In buildings with generator supplied emergency power, auto lowering shall be accomplished using an emergency power circuit to operate the elevator auto lowering controls.
 - (3) In buildings without generator supplied emergency power, auto lowering shall be powered from a storage battery.
8. Control Wiring
- a) Provide 10% but not less than 2 spare conductors in each travel cable.

- b) All communication cables shall be of the shielded type.
- 9. The hydraulic unit shall include a mainline strainer of the self-cleaning compact type, equipped with a 40 mesh element and installed in the oil line.
- C. MANUFACTURERS
 - 1. Elevator
 - a) Otis
 - b) Dover
 - c) Equal approved by FO&M Engineering
 - 2. Elevator Controller
 - a) O. Thompson Controls
 - b) Motion Control Engineering (MCE)
 - c) Equal approved by FO&M Engineering
 - 3. Elevator Components
 - a) CEMCO
 - b) Canton Elevator
 - c) Equal approved by FO&M Engineering