

DIVISION 14 – CONVEYING EQUIPMENT

GENERAL:

All installations shall meet the City of Grand Forks and State Codes and the latest version of ASME A17.1.

Security Issues: If an elevator provides direct access to a penthouse or basement mechanical area without intervening corridors and doorways, then a means shall be provided to prevent non-authorized persons from having access to these mechanical spaces. This may be accomplished by means of a mechanical key switch or electronic card reader.

14 2010 – PASSENGER ELEVATORS

- A. Locate hydraulic elevator machine room on the lowest level served by the elevator and directly adjacent to the hoistway. Machine room and hoistway must be on the same side of any building expansion joint.
- B. Provide plans and sections for elevator machine room. Show roof top machine room on elevations and plans for electric traction elevators.
- C. For all buildings of four stories or more in height, provide at least one elevator of size to accommodate emergency medical services (large enough for a stretcher, 3500 lb. capacity).
- D. Elevator cab emergency telephone shall be vandal-proof construction and connected to the UND Operations Center.
- E. Indicate fire rating for floor, walls and ceiling construction. If required, indicate stair access, no ladders.
- F. Machine room door (exiting to the interior of the building) shall be "B" Label, fire rated 1 ½ hour with automatic closure, latching door hardware, panic hardware exit device from interior of room, key operated hardware from outside of room only. Machine room door shall not contain ventilation louvers or undercuts in excess of NFPA 80, Section 111.4 requirements. Provide threshold if floor finish under door is combustible, in accordance with NFPA 80, Section 1-11.2.
- G. Determine if emergency power is required. Emergency power is usually needed in health care facilities (with bed confinement) or high rise facilities (greater than 75'-0" (22860 mm) traveled from ground floor to highest occupied floor). If the local building code sets forth requirements for emergency or standby power, then the elevator(s) shall be so equipped as to conform with ASME A17.1 (Safety Code for Elevators and Escalators). These requirements contain information relative to power transfer and illuminated signal marked "ELEVATOR EMERGENCY POWER" in the elevator lobby at the designated level. Where the emergency power or standby power system is not capable of operating all elevators simultaneously, the elevators shall conform to requirements in ASME 17.1. In the case of multiple cars, selector switch(es) that are key operated or under a locked cover marked "ELEVATOR EMERGENCY POWER" shall be provided. An automatic means shall be provided to select each elevator, one or more at a time to return to the designated level where power operated doors shall open and remain open. If emergency power is required, coordinate requirements with the Electrical Engineer (for example, the number of elevators to run on emergency power at the same time). Per code, one elevator is required. If more than one elevator is required, each elevator will cycle on generator to bring each car to the floor one at a time.
- H. Most electric traction elevator machines are lifted up the elevator hoistway to gain access to roof top machine rooms during construction. Provide a lifting beam at the top of the machine room to accommodate installation of the elevator machine.

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- I. Provide an unobstructed 7'-0" (2133 mm) minimum vertical clearance below all solid items (including the lifting beam for electric traction elevators) throughout the elevator machine room. Provide a maximum machine floor to ceiling height of 12'-0" (3658 mm).
- J. Provide a suspended gypsum board or plaster ceiling if a ceiling is required below the structural ceiling.
- K. The machine room design shall contain only equipment related to the elevator operation as required by ASME A17.1.
- L. Pipes, ducts and conduit not related to the elevator system are not allowed to penetrate the machine room.
- M. Stainless steel should be present from the handrail (32 in.) to the floor to protect the interior of the car from possible damage.

14 2020 – FREIGHT ELEVATORS

- A. One or more elevators shall be required in buildings over one story in height.
- B. Holeless hydraulic elevators can be used where vertical rise does not exceed 55 feet. However, Machine Room List (MRL) Traction Elevators are preferred with a vertical rise of less than 98 feet. Above 55 feet, a cost comparison and life cycle by usage analysis must be done to select the better option.
- C. Freight elevator design/selection: If the elevator will be used to carry passengers and general freight, it must be designed as a passenger elevator.
- D. Elevators shall service penthouse and basement equipment rooms.
- E. Stop switches shall be key operated per ASME A17.1
- F. Consideration shall be given for sound insulation between elevator equipment and adjacent occupied space.
- G. Provide elevator fire rated Lobby construction at each floor as required by the Code. Normally, lobby vestibule doors shall be held open except when fire detection system is in alarm.
- H. Design the elevator to accommodate the disabled as required by the Code. As a minimum, provide:
 - 1. Elevator door and car size for wheelchair and stretcher users.
 - 2. Controls, both inside and outside, at lowered heights for wheelchair users. Controls, inside cab, on side wall.
 - 3. Tactile control identification and oral aural response signals for the blind.
 - 4. Visual control response signals for the deaf.
 - 5. Locate control panels inside car and in lobby to permit access by a person in a wheel chair.
- I. All control stations that are normally accessible to the user shall be vandal-proof stainless steel construction.
- J. Elevator cab emergency telephone shall be vandal-proof construction and connected to the UND Operations Center.

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- K. Each elevator machine room to have an emergency light to assist service personnel in extricating people from the elevator cab during a power failure.
- L. All key-operated switches (fireman bypass, inspection, recall and etc.) as required by the Fire Department.
- M. Temperature control is required in all elevator machine rooms due to sensitive electronics used in the controls. Temperature range shall be between 70° F and 80° F.
- N. Install the pit drainage system as required by the Local and State Codes. Must handle 3,000 gallons per hour and shall drain into a sump pit outside the elevator pit to prevent the need to lift the car in order to check the status of the elevator pit.
- O. Hoistway vent damper to be automatically opened by smoke detector actuation or power failure. Damper must close automatically when power restored or smoke detector cleared, if required by local code.
- P. See 28 31 00 - FIRE DETECTION AND ALARM for life safety details.
- Q. Architect shall specify the level of interior finish. Elevator interior finish shall be reviewed and approved by the Owner's Representative and Building Committee during the design process.
- R. Protective coat pads shall be installed to protect the interior of the elevator car.

14 2705 – CUSTOM ELEVATOR CABS AND HOISTWAY DOORS

- A. Doors
 - 1. Provide photo-electrically-controlled door opening device.
 - ~~2.~~ Hatch access keyhole (lunar) required on every floor. Keyhole must have sleeve completely through door.
 - ~~2-3.~~ Door equipment systems and components shall be GAL or equal

14 2817 – PASSENGER ELEVATOR CONTROL SYSTEMS

- ~~A.~~ Verify vendor compatibility. Elevator control systems and components shall be non-proprietary, will not require any external proprietary service tool and have on-board diagnostics.
- ~~A-B.~~ The elevator controller shall have on-board diagnostics where no special task is required. Elevator control systems shall be serviceable and maintainable by any qualified elevator maintenance provider capable of maintaining apparatus of similar design and complexity.
- ~~C.~~ Elevator control systems and components shall be Motion Control Engineering (MCE) or equal.
- ~~B-D.~~ Solid State motor starters are required.
- ~~E.~~ Elevator controller must accept "dry contact" input from smoke detectors in elevator lobbies, etc. and have output contacts to control hoistway vent damper.
- ~~E-F.~~ Maintenance and operating manuals, engineering drawings, circuit diagrams and prints shall be provided with the equipment at time of delivery. All documentation shall be available for replacement purchase, at

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reasonable cost, by any installing or maintaining elevator contractor or persons so designated by the building owner.

14 2819 – ELEVATOR EQUIPMENT

- A. Indicate pit ladder and hoist-way drain on floor plan of the elevator pit. Locate ladder on hoistway sidewall closest to hoistway door opening. Provide a pit drain pump on all elevators.
- B. Detail sump pit large enough to fully enclose submersible sump pump below hoistway pit floor level. Minimum size of elevator sump pump pit is 1' - 6" (457 mm) wide x 1' -6" (457 mm) long x 2'- 0" (609 mm) deep, larger is preferred. Provide fully supported, removable grate cover, flush with elevator hoistway pit floor. Additional water must be removed from the pit. Should be located outside of the hoistway.
- C. Provide a drain to an external sump pump for each elevator (drain tile is not acceptable). Pit drains shall handle 3,000 gallons per hour per ASME A17.1.
- D. Indicate water stops in the walls and waterproofing for elevator pit floor and walls.
- E. Hydraulic Elevators
 - 1. Design clear access for hydraulic oil line between machine room and hoistway. Hydraulic oil lines shall remain in or under conditioned space from end to end and remain within the building footprint. Provide straight pipe run in PVC pipe sleeves for oil spill containment of all buried hydraulic lines between machine room and the hoistway.
 - 2. Coordinate sprinkler and smoke detector requirements with Fire Protection Engineer and Electrical Engineer.
 - 3. Confirm smoke detectors are shown on fire alarm plans and risers.
 - 4. All hydraulic oil to be PCB free.
 - 5. Hydraulic jack assembly shall have factory applied PVC protection.
 - 6. Scavenge pumps sit on the floor of the pit to collect oil that leaks past the packing pumps and bring it back to the hydraulic pumps.
 - a. Owner prefers "Wagner" brand.
 - b. Pump specs
 - External motor pump and controls. Clear top over (for vCCal inspection) Flood control.
 - Minimum head = 100'.
 - 7. Temperature compensated hydraulic control valves preferred.
- F. Hydraulic pumps mounted inside the reservoir must be submersible pumps.

14 3100 – ESCALATORS

- A. The University of North Dakota normally doesn't utilize these. If needed, it must be viewed and approved by Academic Maintenance, within Facilities Management.

14 9100 – FACILITY CHUTES

- A. The University of North Dakota normally doesn't utilize these. If needed, it must be viewed and approved by Academic Maintenance, within Facilities Management.

END OF DIVISION 14