

**SECTION 2**  
**DIVISION 14**  
**CONVEYING EQUIPMENT SYSTEMS**

## **DIVISION 14 – CONVEYING EQUIPMENT**

**Note: This is a guide for Designers only. Contents shall not be used in lieu of specifications as part of the Designer’s contract documents.**

### **SECTION 14 2000 – ELEVATORS**

#### **PART 1 - GENERAL**

##### **1.1 QUALITY ASSURANCE**

- A. The system must comply with ADA requirements; ASME/ANSI A17.1/A17.5; CSA & UL approved; and FCC Class A approved, and all applicable codes.
- B. Provide heat and smoke detector devices, and sprinkler heads as required by authorities having jurisdiction.

#### **PART 2 - PRODUCTS**

##### **2.1 GENERAL**

- A. Elevator Equipment Room floors shall be a minimum of four feet in elevation above the bottom of the elevator shaft.

##### **2.2 SYSTEMS AND COMPONENTS**

- A. New Elevator Controls Modernization System.
  - 1. This system shall be a microprocessor-based network with improved performance over relay-based or conventional dispatching systems. The system shall have the capability of real time management and advance information processing to analyze building traffic patterns and evaluates estimated times of arrival (ETA) based on car position and hall call assignments for each car in the building. The system shall dispatch the car with the shortest ETA so passenger wait time is minimal.
  - 2. The system shall also improve ride quality by continually regulating the key elements which affect ride comfort, acceleration and deceleration, door opens, and floor to floor times.
  - 3. The system shall have modernization compatibility built in, such that it can work and function with existing peripherals such as door operators and signals.
  - 4. The system shall land elevators consistently at floor levels with greater accuracy. Cars shall not stop first, and then adjust to floor position. Actual floor heights are stored in memory and the system automatically adjusts to compensate for shifts in floor levels.
  - 5. The system shall be compatible with upgrading the elevator drive control to solid state DC or ACVF depending on the condition of the elevator system and the desired performance improvements.
  - 6. Each car shall have its own microprocessor so any car can act as the dispatcher. This redundant dispatching capability enables another car to assume master controller responsibilities in the event the master controller is taken out of service.

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7. Phase I & II emergency fire service shall be provided in compliance with the ANSI A17.1 and NC State Building Code.
8. An emergency alarm bell shall be located on the car in conformance with ANSI A17.1 Code requirements, and connected to a plainly marked pushbutton in the car.
9. Elevators will return to ground floor and open doors in the event of a power failure. Provide emergency power as needed to accomplish this.
10. Elevator door emergency access keys shall be keyed to match the University Standard system and be placed in a Knox box on premises with a copy given to Campus Police Department.
11. Provide shunt-trip circuit as required.

2.3 OPERATION SYSTEMS (DUPLEX CAR AUTOMATIC, INDEPENDENT SERVICE FEATURE):

- A. Control of the elevator car shall be automatic in operation by means of a push button in the car marked for each of the two landing levels served and one button at each landing, wherein all stops registered by the momentary pressure of landing or car buttons shall be maintained until the car answers the call. An emergency stop switch shall be provided in the car push button station which, when in the off position, will render the elevator inoperative, and which will enable attendant or passenger to stop the car at any point during its travel. Opening of this switch shall not cancel registered calls, and when the switch is closed the care will continue to answer calls that have been registered. Each landing station shall contain a push button which shall become illuminated when pressed to indicate that a call has been registered to bring the car to that particular landing. A time delay, noninterference feature shall be incorporated in the control mechanism to allow ample time for opening and closing car and hoistway doors before it is again placed in motion.
- B. The operating buttons in the car and at the landings shall be vandal resistant fixtures and mounted in flush plates of a stainless steel finish. Fixtures shall be etched for illumination.
- C. An adjustable time delay (minimum 3-15 seconds) shall be provided so that after the car has stopped in response to a hall button, the entering passenger may register his car button before the car will reverse to answer calls in the opposite direction. The car stations hall contain an emergency switch for stopping the car at any point in its travel. Opening of this switch shall not cancel registered calls; when the switch is closed, the car shall continue to answer calls that have been registered. If the emergency switch is activated it shall be connected so as to sound the alarm bell located on the car top.
- D. The car station shall contain key switch (es) to operate the fan, lights and independent service operation. The independent service operation shall be capable of locking out each floor by use of key switch at each floor button location. Some floors will have restricted access and some floors will have limited access at certain times of the day. The independent service shall be such that it can be adaptable to add a card reader access system into the cab if necessary. A "door open" button shall be provided for stopping the closing motion of the doors, causing them to return automatically to their open position. The buttons in the car and hall stations shall be of the light-up type which will illuminate when the button is pressed, indicating that a call has been registered for that landing.
- E. Smoke detectors in the elevator machine room and each elevator lobby are on a separate zone. Only these detectors will affect the elevator. Should the first floor elevator lobby detector or elevator machine room detector be activated, the elevator is to park at the 2<sup>nd</sup> floor.
- F. Door Hold-Open Timer:
  1. The door hold-open timer shall be a modification to the elevator control circuitry combined with a solid state timer which is wired to the door open button in the elevator car. Pressing the door open button twice activates the timer and establishes an open door time which can be adjusted anywhere from 10 seconds to 2 minutes. After this time period has elapsed, the doors close and the car is restored to service automatically. The

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pressing of a floor button in the car cancels the remaining time and permits immediate elevator service.

G. Corridor Hall Stations:

1. Hall station shall be surface mounted and have a modular design to allow for quick and easy installation of all components including key switches, etched instructions, and signage. Hall stations shall be made of anodized aluminum in stainless tones and mirror finished in frame. Mounting is with tamper resistant screws of a mirror finish. Hall stations must comply with ADA 4.10.3 and ANSI requirements.

2.4 DOOR OPENING DEVICES

A. New Door Operator:

1. New door rollers, interlocks, clutches, door tracks and spirator closures shall be retrofitted to existing elevator cars. Door operators shall provide smooth, quiet operation and outstanding reliability. Operators shall be easy to assemble and their configurations shall be field reversible and adjustable. Operators shall consist of a closed loop operation to provide smooth, steady motion at all times. Doors shall open and close without jerky movement or unnecessary noise.
2. Door operators shall feature solid state technology and strong, durable components. When maintenance is required all door operator elements shall be engineered for quick access and easy servicing.
3. Doors shall react instantaneously to safety sensors, and door closing speed and force shall be well within safety standards.
4. Elevator door safety edges to be Pana 40 continuous light beam.
5. Position adjustments shall be clearly identified and easily accessible from the top of the cab even when the door is in motion.
6. The system's service switch has open and close button on the control. This allows for easy selection of automatic or manual operation and means that adjustments can be performed quickly and easily. Door operators shall use a rigid door clutch design meeting code requirements.
7. Elevator Door Protection Device:
  - a. The elevator door safety system shall provide full opening protection; the screen shall fill the doorway from ground level to a height of six (6) feet. The system shall have no moving parts and can be set to tolerate damage keeping elevator in service.
  - b. The elevator door safety system shall protect passengers by setting up a harmless curtain of infrared beams. Block a single beam and the door reopens. The beams shall be controlled by ultra-reliable electronic circuitry. Elevator doors shall open and close automatically. They shall be provided with a reopening device that will stop and reopen the car door and hoistway door automatically if the door becomes obstructed by an object or person. The device shall be capable of completing these operations without requiring contact for an obstruction passing through the opening. The device shall be a non-reflective through beam system with a minimum of forty sensors per edge. It shall have a maximum sensor spacing of 1.8" or less. It shall incorporate a microprocessor controlled fail-safe system. It shall be capable of self adjustment to compensate for varying environmental conditions.

2.5 CAR ENCLOSURES

A. Removable Cab Wall Panels:

1. Panels to be covered in plastic laminate, using a standard design from either Nevamar or Formica product lines.
2. Reveal strip package and kick plate also in plastic laminate.

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- B. Elevator Ceiling Grid and Tile:
  - 1. Ceiling shall be elevator standard suspended ceiling. Three light metal frame with translucent diffusers.
  - 2. Use fluorescent lighting in the elevator cab – not reflector floods.
- C. Elevator Cab Flooring:
  - 1. Floor covering shall be 12" x 12" glue down vinyl composition tile flooring.
- D. Elevator Cab Fan:
  - 1. Elevator 2-speed cab fan shall be fitted for each car.
- E. Painting:
  - 1. All exposed metal work furnished by the elevator contractor under these specifications shall be properly painted after installation, except as otherwise specified.
  - 2. Minimum requirements shall be include one coat of metal primer, and one coat of semi-gloss industrial grade enamel.
  - 3. All surfaces painted must be clean and free from rust, grease, etc., before painting.

2.6 SIGNAL EQUIPMENT

- A. All elevators shall contain flush mounted emergency telephones meeting University standards. Control wiring and conduit required from the elevator to the elevator equipment room shall be provided and installed by the prime contractor who installs the elevator. Conduit and wiring from the elevator equipment rooms to the facility termination point shall be installed by either the Electrical Contractor or the General Contractor. The University shall provide telephone cabling beyond the project termination point.
  - 1. Telephones in elevators shall be GAI-Tronics ADA Emergency telephone flush-mounted Model 287RP-AD.
- B. Car Position Indicator:
  - 1. An electrical position indicator shall be provided in the upper portion of the elevator cab. An audible signal shall sound prior to elevator arriving at or passing any landing.
  - 2. A digital readout type indicator may be substituted.
  - 3. Fixtures shall be vandal resistant and shall be stainless steel.
- C. Car Riding Lantern with Gong:
  - 1. The elevator shall be provided with a fixture mounted in the jamb, or soffit of the elevator cab entrance. It shall notify waiting passengers by means of electrically illuminated direction arrows and audible gong as to which direction the elevator will be traveling. The gong shall sound once indicating an "up" traveling car and twice to indicate a "down" traveling car. Fixtures shall be vandal resistant and shall be stainless steel.
- D. Braille Elevator Plates and Signage:
  - 1. Plates and signage shall be high quality zinc die cast Braille and shall meet all ADA and ANSI requirements.