TN 02-0002

Proposed revisions to A17.1-2000:

Add New Requirement 2.27.3.1.6(n)

If the normal power supply, emergency power supply and standby power supply are not available and the elevator is equipped with an alternate source of power which is insufficient to move the car to the recall level, the following requirements shall apply:

1) The visual signal (2.27.3.1.6 (h)) shall extinguish;
2) A car which is not at a landing, shall move to the closest landing it is capable of reaching;
3) A car which has automatic power operated horizontally sliding doors or power-operated vertically sliding doors provided with automatic closing operation and is stopped at a landing, shall open the doors, and then within 15 s, initiate re-closing.
4) A car which is stopped at a landing shall have its door open button operative.
5) A car stopped at a landing shall not move until normal power, emergency power, or standby power becomes available.

Add New Requirement 2.27.3.3.1(m)

If the normal power supply, emergency power supply and standby power supply are not available and the elevator is equipped with an alternate source of power which is insufficient to move the car to all landings, the requirements of Requirement 2.27.3.1.6 (n) (1) through (5) shall apply.

Modify Requirement 3.27.1:

3.27.1 Phase I Emergency Recall Operation After Device Actuation

If Phase I Emergency Recall Operation is activated while the elevator is responding to any of the following devices, the car shall return to the recall level:

(a) low oil protection (see 3.26.9);
(b) plunger follower guide protection, provided the car is capable of being moved (see 3.18.2.7); or
(c) auxiliary power lowering device (see 3.26.10).

If the elevator is incapable of returning to the recall level, the car shall descend to an available floor. Upon arrival, automatic power-operated doors shall open, and then reclose within 15 s. The door open button shall remain operative. The visual signal (2.27.3.1.6 (h)) shall extinguish.

Modify Requirement 3.27.2:

3.27.2 Phase I Emergency Recall Operation Prior to Device Actuation

If any of the devices specified in 3.27.1(a), (b), or (c) is activated, while Phase I Emergency Recall Operation is in effect, but before the car reaches the recall level, the car shall

(a) complete Phase I Emergency Recall Operation, if the car is above the recall level, or
(b) descend to an available floor, if the car is below the recall level.

Upon arrival, automatic power-operated doors shall open, and then reclose within 15 s. The door open button shall remain operative. The visual signal (2.27.3.1.6 (h)) shall extinguish.

Modify Requirements 2.27.3.2.3(d):
The Phase I Emergency Recall Operation to the designated level shall conform to 2.27.3.1.6 (a) through (m).

Modify Requirement 2.27.3.2.4(b):

The requirements of 2.27.3.1.6 (f), (j), and (m) and (n).

Rational:

1. Power supplies (auxiliary power supplies) are currently being installed which offer limited operating capability when electric elevators lose mainline power.
2. This proposal addressed the requirements for firefighters emergency operations on electric elevators equipped with an auxiliary power supply
3. It proposes allowing persons to find alternative means of leaving the building when the auxiliary power supply is insufficient to conform to the requirements of Phase I and Phase II Emergency Operation.
4. Turning the in-car fire lamp off informs the firefighter that the car is not available for Phase II operation.
5. Note that this does not apply where an emergency or standby power system is provided.
Revise requirement 3.25.2 of A17.1-2000 as follows:

3.25.2 Terminal-Speed Reducing Devices

3.25.2.1 Where Required. Terminal-speed reducing devices shall be installed for the up direction where the car speed exceeds 0.25 m/s (50 ft/min.), to ensure that the plunger does not strike its solid limit of travel at a speed in excess of 0.25 m/s (50 ft/min.), (see 3.18.4.1).

3.25.2.2 General Requirements.
Terminal-speed reducing devices shall conform to 3.25.2.2.1 through 3.25.2.2.2.5
3.25.2.2.1 They shall operate by mechanical, hydraulic or electrical means independently of the normal terminal-stopping device and shall function to reduce the speed of the car if the normal terminal stopping device fails to cause the car to slow down at the top terminal the car at the terminals as intended.

Rationale: Similar wording as in 2.25.4.2 and additional clarification that TSRD protection is required only at the top terminal. Added the term “by mechanical, hydraulic or electrical means” to state that the device can be of any one of these technologies.

3.25.2.2.2 They shall provide retardation not in excess of 9.81 m/s^2 (32.2 ft/s^2).

3.25.2.3 Requirements for Mechanical or Hydraulic Means.
Where the terminal speed reducing devices are implemented by mechanical or hydraulic means, a means shall be provided to prevent overheating of the drive system (pump and motor). The mechanical or hydraulic means shall not cause permanent deformation to any part upon which the means act.

Rationale: A mechanical or hydraulic means used to implement terminal speed reducing may introduce the possibility of overheating the pump or motor or both, if the mechanical or hydraulic means is not designed to cause power to be removed from the motor. A method is required to prevent overheating of the system and a pump run timer is one such method. The mechanical or hydraulic means may cause certain stresses and therefore additional requirements have been added to address these stresses.

3.25.2.4 Requirements for Electrical Means.
Where the terminal speed reducing devices are implemented by electrical means they shall conform to 3.25.2.4.1 through 3.25.2.4.5

Rationale: Added to group the requirements for terminal speed reducing devices implemented by electrical means.

3.25.2.4.1 3.25.2.2.3 They shall be so designed and installed that a single short circuit caused by a combination of grounds or by other conditions shall not render the device ineffective.

3.25.2.4.2 Control means for electro-hydraulic elevators shall conform to the following.
(a) For the up direction of travel at least two control means are required, one or both to be controlled by the terminal-speed reducing device and the other or both by the normal terminal-stopping device.
If, in the up direction, the pump motor is the only control means, the pump motor control shall conform to the following.
(1) Two devices shall be provided to remove power independently from the pump motor. At least one device shall be an electromechanical contactor.
The contactor shall be arranged to open each time the car stops.

The electrical protective devices shall control both devices [Rule 305.2(b)(1)(b)(1)] in accordance with Rule 306.4.

If, however, the pump motor is one control means, and there is a second control means (e.g., a valve), at least one of the means shall be directly controlled by an electromechanical contactor or relay.

(b) For the down direction, the terminal speed reducing and normal terminal stopping devices shall each directly, or through separate switches, affect the control valve. Where two devices are used, the terminal speed reducing and normal terminal stopping devices each may control one or both.

3.25.2.4.2 Where magnetically operated, optical, or solid state devices are used for position sensing, a single short circuit caused by a combination of grounds or by other conditions, or the failure of any single magnetically operated, optical, or solid state device shall not

(a) render the terminal speed reducing device inoperative; or

(b) permit the car to restart after a normal stop

3.25.2.4.3 Mechanically operated switches, where located on the car or in the hoistway, shall conform to the following:

(a) be operated by the movement of the car;

(b) have metal operating cams;

(c) have contacts that are positively opened mechanically;

(d) be of the enclosed type; and

(e) be securely mounted in such a manner that horizontal movement of the car shall not affect operation of the device.

Rationale: Requirements for mechanically operated switches were not previously addressed. These are similar to ETSL requirements for electric elevators. Other parts of the deleted rules are more general requirements that should not be within the TSRD requirements and are better specified in section 3.26.6 (see 3.26.6.3, and 3.26.6.4)
3.25.2.4.4 Electro-hydraulic Elevators with two means to control upward movement (e.g. pump motor and valve) shall conform to the following:

(a) One or both means to control upward movement of the elevator shall be controlled by the terminal speed reducing device, either directly or through an intermediate device.

(1) Where an intermediate device is implemented with a solid state device or software system to satisfy 3.25.2.4.4(a), the failure of any single solid state device or a software system failure in the intermediate device shall not render the terminal speed reducing device ineffective.

(2) Redundant devices used to satisfy 3.25.2.4.4(a)(1) shall be checked prior to each start of the elevator from a landing, when on automatic operation. When a failure as specified occurs the car shall not be permitted to restart.

(b) The other means or both means to control upward movement of the elevator are to be controlled by the normal terminal-stopping device, either directly or through an intermediate device.

Rationale:

3.25.2.4.4 Clarification. These are requirements of the deleted rule 3.25.2.2(4) that should remain in the TSRD section. TSRD are no longer required in the down direction because of the elimination of reduced stroke buffers on hydraulic elevators. Therefore requirements for independence between TSRD and NTSD in the down direction are no longer necessary.

3.25.2.4.4(a) The allowance for the use of solid state devices or software systems as intermediate devices, for this purpose, necessitates single failure requirements.

3.25.2.4.5 Electro-hydraulic Elevators with one means to control upward movement (e.g. pump motor only). One or both of the devices required in 3.26.6.4(a) shall be controlled by the terminal-speed reducing device and the other device or both devices by the normal terminal-stopping device.

Rationale: Rewritten to clarify the intent of the existing rule. Independence between TSRD and NTSD is required even in the case where there is only one means to control upward movement of the elevator. This is assured by independently controlling the devices required in 3.26.6.4.1

Revise 3.26.6 as follows:

3.26.6 Control & Operating Circuits
The design and installation of the control and operating circuits shall conform to the following requirements.

3.26.6.1 Springs, where used to actuate switches, contactors, or relays to stop an elevator at the terminals or to actuate electrically operated valves, shall be of the compression type.

3.26.6.2 The completion or maintenance of an electric circuit shall not be used to interrupt the power to the control-valve-operating magnets, or to the pump driving motor of electro-hydraulic elevators, or both under the following conditions:

(a) to stop the car at the terminals; and

(b) to stop the car when the emergency stop switch or any of the electrical protective devices operate.

Rationale: Operating magnets deleted for consistency of wording with other rules. An emergency stop switch is an electrical protective device and is not always permitted/required.
3.26.6.3 For electro-hydraulic elevators where there are two means of controlling upward movement of the elevator (e.g. a pump motor and a valve) at least one means shall be directly controlled by an electromechanical contactor or relay unless the terminal-speed reducing device [see 3.25.2] directly removes power from one of the control means.

Rationale: These are control and operating circuit requirements that were formerly described in 3.25.2.2.4 and are more appropriately located in this section of the code. Since there are two control means to independently control the upward movement of the elevator at any floor (e.g. pump motor and valve), no single failure of a solid state device should cause an unsafe condition.

3.26.6.4 For electro-hydraulic elevators where the only means of controlling upward movement of the elevator is the pump motor, the pump motor control shall conform to the following:

(a) Two devices shall be provided to remove power independently from the pump motor. At least one device shall be an electromechanical contactor.
(b) The contactor shall be arranged to open each time the car stops.
(c) The electrical protective devices shall control both devices [see 3.26.6.4(a)] in accordance with 3.26.4.

Rationale: These are control and operating circuit requirements that were formerly described in 3.25.2.2.4 and are more appropriately located in this section of the code.
TN 02-0015

PROPOSED REVISION TO A17.1-2000 FOR OUTDOOR ESCALATORS AND MOVING WALKS

6.1.8 Outdoor Escalators

6.1.8.1 Weatherproofing. Escalators shall be so constructed that exposure to the weather will not interfere with normal operation.

6.1.8.1.1 The escalator equipment and its supports shall be protected from corrosion.

6.1.8.1.2 Electrical equipment shall be provided with a degree of protection of at least Type 4 construction as specified in NEMA 250, and wiring shall be identified for use in wet locations in accordance with NFPA 70 or CSA C22.1 as applicable (see Part 9).

6.1.8.2 Precipitation. A cover, directly over the horizontal projection of the escalator, shall be provided. The cover shall extend outward from the centerline of the handrail so that a line extended from the edge of the cover to the centerline of the handrail forms an angle of not less than 15 deg from the vertical. The sides may be open.

6.1.8.2.1 When the escalator is indirectly subject to snow or freezing rain, subjected to blowing snow or freezing rain, heaters heating systems shall be operated to prevent accumulation of snow or ice and freezing on the steps, landings plates, and skirt deflector devices. The heating systems operation shall be thermostatically controlled and independent of the escalator operation. Drains shall be provided in the lower pit.

6.1.8.2.2 Drains suitable for all weather conditions shall be provided to prevent the accumulation of water.

6.1.8.3 Slip Resistance. Landing plates and combplates shall be designed to provide a secure foothold when wet.

6.2.8 Outdoor Moving Walks

6.2.8.1 Weatherproofing. Moving walks shall be so constructed that exposure to the weather will not interfere with normal operation.

6.2.8.1.1 The moving walk equipment and its supports shall be protected from corrosion.

6.2.8.1.2 Electrical equipment shall be provided with a degree of protection of at least Type 4 construction as specified in NEMA 250, and wiring shall be identified for use in wet locations in accordance with NFPA 70 or CSA C22.1 as applicable (see Part 9).

6.2.8.2 Precipitation. A cover, directly over the horizontal projection of the moving walk, shall be provided. The cover shall extend outward from the centerline of the handrail so that a line extended from the edge of the cover to the centerline of the handrail forms an angle of not less than 15 deg from the vertical. The sides may be open.

6.2.8.2.1 When the moving walk is indirectly subject to snow or freezing rain, subjected to blowing snow or freezing rain, heaters heating systems shall be operated to prevent accumulation of snow or ice and freezing on the treadway, and landings plates, and skirt deflector devices. The heating systems operation shall be thermostatically controlled and independent of the escalator operation. Drains shall be provided in the lower pit.
independent of the moving walk operation. Drains shall be provided in the lower pits where water could collect.

6.2.8.2 Drains suitable for all weather conditions shall be provided to prevent the accumulation of water.

6.2.8.3 Slip Resistance. Landing plates and combplates shall be designed to provide a secure foothold when wet.

Rationale:
The cover specified in the present language will not protect the units from blowing rain and snow. Since rain and snow seldom fall straight down, the cover alone as presently described is not effective. The proposed language is performance based and requires design to protect the unit considering local conditions.
5.2.1.13 Power Operation of Hoistway Doors and Car Doors and Gates. When provided, power operation, power opening, and power closing of hoistway doors and car doors and gates shall conform to 2.13, except as modified by 5.2.1.13.

(a) Requirement 2.13.1 does not apply.

(b) is modified as follows: Power-operated swing hoistway doors shall be permitted with power-operated horizontally operated car doors. Both car and hoistway doors shall be of the horizontally sliding type or a power-operated swinging hoistway door with a power-operated horizontally sliding car door shall be permitted. Power operation of accordion or bi-fold type car doors shall be permitted.

(b) Vertically sliding doors shall not be permitted.

(c) Requirement 2.13.2.2.3 does not apply.

(d) Requirement 2.13.3.4 does not apply.

Rationale: Clarification that power operated accordion or bi-fold type car doors are permitted and can be used in combination with power operated swinging hoistway doors.

Vertical sliding door prohibition was removed between the A17.1b-1998 addenda and A17.1-2000 edition.

To correct a reference to a requirement is also included in the proposal.

Rational for editorial: The proposal has been editorially revised to match the wording of A17.1-2004. There is no longer 2.13.1(a) or (b).
TN 02-2232

Revise Title:

SECTION 3.17
CAR SAFETIES, AND COUNTERWEIGHT SAFETIES, AND PLUNGER GRIPPERS AND GOVERNORS

Revise:
3.17.1.3 The switches required by 2.18.4.1 2.17.7 shall, when operated, remove power from the hydraulic machine motor and control valves before or at the time of application of the safety.

Rationale: This requirement refers to car safeties and therefore should refer to the applicable safety switch, not governor switch.

Add new requirement to 3.17

3.17.4 Governors
Governors, when provided, shall comply with Section 2.18, except 2.18.4. In addition, governors shall conform to 3.17.4.1 through 3.17.4.2:
3.17.4.1 The term “operating speed in the down direction with rated load” shall be substituted for the words “rated speed” wherever these words appear.
3.17.4.2 For governors located inside the hoistway see 2.7.6.3.4.

Rationale: To address governors on hydraulic elevators and update with MRL requirements.
3.17.4.1: Wording is required to provide correct terminology for hydraulic elevators.
3.17.4.2: For clarification of means to prevent movement for uncounterweighted hydraulic elevators.

It is noted that access, clearances, etc… are covered by the MRL requirements (see TN ) and are not excluded by hydraulic section.
TN 02-2266

Proposal Revised to A17.1:

TEST OF SEISMIC SAFETY VALVE

8.10.3.2.5 Pit

(n) Overspeed valve and seal:
Overspeed valves, where provided, shall be inspected and tested to verify that they will stop the car, traveling down with rated load within the specified limits of 3.19.4.7.5(a), using a written procedure supplied by the valve manufacturer or installer.

8.11.3.4.4 Periodic Test Requirements – Category 5

Overspeed valves, where provided, shall be inspected and tested to verify that they will stop the car, traveling down with rated load, within the specified limits of 3.19.4.7.5(a) using a written procedure supplied by the valve manufacturer or the person or firm maintaining the equipment. If the seal has been altered or broken, the overspeed valve shall be resealed after successful test.

Reason: To verify that overspeed valves will operate.
Proposed Revision:

leveling device, elevator, dumbwaiter or material lift car: any mechanism that will the portion of a motion control system comprised of a device or group of devices that, either automatically or under control of the operator, initiates leveling move the car within the leveling zone towards the landing only, and automatically stops it the car at the landing.

Rationale: The car-leveling device has been updated to use state of the art terminology. (Term is used in Rules 210.1e 2.26.1.6 and 110.10a 2.11.10.1.)
TN 02-2274

**Add to A17.1 Requirement 8.10.4.1.2(d)(3):**

(b) minimum no load stopping distance for moving walks and escalators with variable torque brakes

**Add to A17.1 Requirement 8.10.4.1.2(d):**

(6) Escalator brake certification (6.1.5.3.3)

**Rationale:** Updated inspection and test requirements to reflect current A17.1 escalator and moving walk requirements.
TN 02-2283

The Hoistway Committee is proposing the following text be added to Rule 2.2.2.5:

PROPOSED REVISION: 2.2.2.5 In elevators provided with Firefighters’ Emergency Operation a drain or sump pump shall be provided. The sump pump/drain shall have the capacity to remove a minimum of 11.4 m³/hr (3000 gal/hr) per elevator.

REASON: To specify the minimum capacity of a sump pump/drain capable of removing water from a typical sprinkler head. This may not guarantee to keep the water out of the pit, however it will give firefighters additional time to use the elevator before the water in the pit may interfere with its operation.
TN 02-2334

Note: Existing language shown reflects ASME A17.1-2004.

2.27.3.3.1(c) Door open and close buttons shall be provided for power operated doors and located as required by 2.27.3.3.7. Buttons shall be a minimum of 19 mm (0.75 in.) in the smallest dimension. The door open and close buttons shall be labeled “OPEN” and “CLOSE”. The door open and close buttons shall be operative when the elevator is stopped within an unlocking zone.

2.27.3.3.1 (i) Floor selection means shall be provided in the car to permit travel to all landings served by the car, and they shall be operative at all times, except as in 2.27.3.3.2. The floor selection means shall be operable without the use of keys, cards, tools or special knowledge. The floor selection means shall be permitted to be located behind the locked cover specified in 2.27.3.3.7, only if floor selection means for all landings served are included behind the locked cover. Where buttons not accessible to the public are provided they shall be a minimum of 19 mm (0.75 in.) in the smallest dimension.

Modify Rule 2.27.3.3.1(h) to add the sentence:
Every car shall be provided with a button labeled “CALL CANCEL,” located as required in 2.27.3.3.7, which shall be effective during Phase II Emergency In-Car Operation. When activated, all registered calls shall be canceled and a traveling car shall stop at or before the next available landing. The button shall be a minimum of 19 mm (0.75 in.) in the smallest dimension.

Modify Rule 2.27.3.3.1(m) to add the sentence:
Every car shall be provided with a switch, conforming to the requirements of 2.26.2.33 and located as required in 2.27.3.3.7. When the switch is in the stop position, all registered calls shall be canceled and power shall be removed from the elevator driving machine motor and brake. When the switch is moved to the run position from the stop position the car shall not move, except for leveling, until a call is entered. If the type of switch used is a button, it shall be a minimum of 19 mm (0.75 in.) in the smallest dimension.

Note [2.27.3.3.1(m)]: This requirement does not limit the firefighters’ stop switch to a specific style of switch. Toggle switches and push/pull buttons are two possible styles. A switch, if provided should be operable to the “STOP” position by a firefighter wearing protective gloves (See NFPA 1971).

Add to Section 9:


Rationale:
1) The intent of this rule was to prevent the use of security systems or key-operated switches which would limit the use of the elevator by a Firefighter. The new wording is performance oriented to permit designs other than individual pushbuttons (such as keypads).
2) The new wording makes it clear that the floor selection means must be available to the Firefighter, but are not required to be available to the public.
3) Relocate the DOB/DCB requirements to the rule which requires those buttons.
4) To assure the devices are operable by a firefighter wearing protective gloves.
TN 02-2340

2.27.3.5 Multicompartment Elevators. Multicompartment elevators shall also conform to 2.27.3.5.1 through 2.27.3.5.7.

2.27.3.5.1 The “FIRE RECALL” switch (2.27.3.1) shall be located at the designated level served by the upper compartment.

2.27.3.5.2 The “FIRE OPERATION” switch (see 2.27.3.3) shall be located in the upper compartment. The elevator shall be provided with a means for placing the lower compartment out of service, located in that compartment or adjacent to the entrance at the lower lobby landing.

2.27.3.5.3 A means to display the entire floor area in the lower compartment shall be located in the upper compartment. The means shall display the lower compartment only when Phase I and Phase II is in effect.

2.27.3.5.4 A switch labeled “LOWER CAR LOCK OUT” with two positions marked “OFF” and “ON”, shall be located behind the firefighter operation panel cover (see 2.27.3.3.7).

Note (2.27.3.5.4): The switch should be operable by a firefighter wearing protective gloves (See NFPA 1971).

(a) The “LOWER CAR LOCK OUT” switch shall only be functional when Phase II is in effect.

(b) When placed in the “ON” position, the “LOWER CAR LOCK OUT” switch shall:
   (1) disable all door re-opening devices in the lower compartment; and
   (2) initiate closing of the lower compartment doors in accordance with 2.13.4.2.1(c).

(c) When the car is stopped at a landing and the “LOWER CAR LOCK OUT” switch is in the “OFF” position the lower compartment doors shall be opened.

Rationale: Firefighters need a dependable and quick method to assure that the lower compartment of double deck elevator is vacant, and to take it out of service, before they use the upper compartment on Phase II. A lower car lock out switch is provided to give the firefighter full control over both compartments.
TN 02-2777

Replace rule 2.27.3.4 in its entirety with the following:

2.27.3.4 Interruption of Power

Upon the resumption of power (normal, emergency, or standby), the car shall be permitted to move to reestablish absolute car position. Restoration of electrical power following a power interruption shall not cause any elevator to be removed from Phase I Emergency Recall Operation or Phase II Emergency In-Car Operation.

The failure and subsequent restoration of electrical power (normal, emergency, or Standby) shall not cause any elevator to be removed from Phase I Emergency Operation or Phase II Emergency In-Car Operation.

(a) Elevators on Phase I Emergency Operation shall be permitted to move only to the next floor in the direction of the recall level to re-establish absolute car position prior to conforming to 2.27.3.1 and 2.27.3.2.

(b) Elevators on Phase II emergency In-Car Operation with the key in the OFF position shall be permitted to move only to the next floor in the direction of the recall level to re-establish absolute car position prior to conforming to 2.27.3.3.3 and 2.27.3.3.4. If the key is moved to the ON or HOLD position before the doors are fully closed, 2.27.3.4 (c) or (d) shall apply, and automatic power operated doors shall open if in a level zone.

(c) Elevators on Phase II Emergency In-Car Operation with the key in the HOLD position shall not move, except for leveling within a leveling zone. Automatic power operated doors shall open if the doors are not fully closed and the car is in a level zone.

(d) Elevators on Phase II Emergency In-Car Operation with the key in the ON position shall not move, except for leveling within a leveling zone, until a car call is entered. Automatic power operated doors shall not move until a door open or close button is pressed; after which they shall conform to rules 2.27.3.3.1 (d) and (e). After a car call is entered, the car shall be permitted to move only to the next floor in the direction of the recall level to re-establish absolute car position prior to answering car calls.

Modify the last sentence of Rule 2.27.3.3 as follows:

The “OFF”, “HOLD”, “and “ON” positions shall not change the mode of operation within Phase II Emergency In-Car Operation until the car is at a landing with the doors in the normal open position, except as required by 2.27.3.3.4 and 2.27.3.4.

Rationale: Current rule permits any motion at any speed (below rated speed) to re-establish position. Many old relay systems re-established position at the top or bottom terminal. This means a firefighter who is half a floor away from his destination when the power returns might be taken on a long slow ride back down to the bottom floor before starting to his destination again, delaying his arrival at the fire. It also means a firefighter who was planning on exiting the car 2 floors below the fire floor might be taken on a slow ride past the fire floor and all the way to the top floor. This revision reduces these risks by restricting the motion of the car. Firefighters do not use the elevator if the fire is below them; moving down towards the recall floor is moving towards safety; moving up away might put them in danger.

Also, since the guiding principle of Phase II “ON” operation is that the firefighter in the car is in control, we don’t want to initiate any actions automatically, so the car is not permitted to find itself until a firefighter enters a call, indicating that he is ready for the car to move.

Also, current rules are silent on the behavior of a door which is partly open at power-up, allowing various results, some of which may surprise or strand a firefighter. The behavior is now specified.
TN 02-2823

Revise 2.8.2.3 as follows:

2.8.2.3.2
In jurisdictions not enforcing the NBCC, means shall be provided to automatically disconnect the main line power supply to the affected elevator upon or prior to the application of water from sprinklers located in the machine room or in the hoistway more than 600 mm (24 in.) above the pit floor. This means, conforming to the requirements of NFPA 72, shall be actuated by a heat detector and shall delay the removal of power and the release of water from sprinklers, to allow for the completion of Phase I Emergency Recall Operation in accordance with 2.27.3.2.3. This means shall also be independent of the elevator control and shall not be self-resetting. The activation of sprinklers outside of the hoistway or machine room shall not disconnect the main line power supply.

Revise 2.27.3.2.1 as follows:

2.27.3.2.1
In jurisdictions not enforcing the NBCC, fire alarm initiating devices used to initiate Phase I Emergency Recall Operation shall be installed in conformance with the requirements of NFPA 72, and shall be located to initiate Phase I Emergency Recall operation:

(a) system type smoke detectors, or where permitted in NFPA 72 other automatic fire detection used in place of system type smoke detectors, located at each floor served by the elevator;

(b) system type smoke detectors, or where permitted in NFPA 72 other automatic fire detection used in place of system type smoke detectors, located in the associated elevator machine room control space, or control room, and

(c) system type smoke detectors, or where permitted in NFPA 72 other automatic fire detection used in place of system type smoke detectors, located in the elevator hoistway, when sprinklers are located in those hoistways.

(d) heat detectors located in the machine room and hoistway where required to comply with the requirements of 2.8.2.3.2.

Revise 2.27.3.2.3 as follows:

(b) The activation of a fire alarm initiating device specified in 2.27.3.2.1(b) or 2.27.3.2.1(c) or 2.27.3.2.2(c) shall cause all elevators having any equipment located in that machine room, and any associated elevators of a group automatic operation, to be returned nonstop to the designated level. If the machine room is located at the designated level, the elevator(s) shall be returned nonstop to the alternate level.

(c) The activation of a fire alarm initiating device specified in 2.27.3.2.1(c) or 2.27.3.2.1(d) shall cause all elevators having any equipment in that hoistway, and any associated elevators of a group automatic operation, to be returned nonstop to the designated level, except that initiating device(s) installed at or below the lowest landing of recall shall cause the car to be sent to the upper recall level.

Add new requirement 2.27.3.2.7 as follows:

2.27.3.2.7
When the heat detector required by 2.27.3.2.1(d) is activated and the elevator is stopped, car leveling shall be inoperative.
Add new requirement 2.27.3.3.1(n) as follows:

2.27.3.3.1(n)
When the heat detector required by 2.27.3.2.1(d) is activated, the visual signal specified in 2.27.3.1.6(h) shall illuminate intermittently in accordance with 2.27.3.2.6. When the car is not in motion, car calls shall not register.

REASONS:

1. The above proposed revisions along with those in TN 02-02820 (TR 91-81) taken in unison provides a common sense approach to protecting against an entrapment when sprinklers are provided in elevator machine rooms and hoistways.

2. Coordination with NFPA 72 to allow time to complete a Phase I recall before power is removed. Note that Phase I recall may not be completed if the fire affects the elevator system.

3. Limiting the probability of entrapping firefighters’ during Phase II operation [2.27.3.3.1(n)].

4. The ASME Ad-Hoc Committee on Sprinklers in Elevator Machine Rooms will also be pursuing an exemption in NFPA 13 to the requirements for providing sprinkler protection in elevator machine rooms. However, even if successful these requirements are needed as other codes may require sprinklers in elevator machine rooms and hoistways.
TN 02-2916

Revise 5.9.26 of A17.1 as follows:

5.9.26 Operating Devices and Control Equipment

Operating devices and control equipment shall conform to 2.26, except 2.26.2.5, 2.26.2.21 and 2.26.12.

An emergency stop switch shall be provided in the car, and located in or adjacent to each car operating panel. The in-car stop switch, 2.26.2.21 is not required.

When open (“STOP” position), this switch shall cause the electric power to be removed from the elevator driving-machine motor and brake.

Emergency stop switches shall:
(a) be of the manually opened and closed type;
(b) have red operating handles or buttons;
(c) be conspicuously and permanently marked “STOP”, and shall indicate the “STOP” and “RUN” positions;
(d) while opened, cause the audible device to sound (see 2.27.1.1.1); and
(e) conform to 2.26.4.3.

_Rationale: Editorial._
TN 02-2937

Proposed Changed Definitions:

**Entrance assembly**, elevator, dumbwaiter, or material lift: The protective assembly that closes the hoistway openings normally used for loading and unloading, including the door panel(s), gate(s), transom panel, fixed side panel, gib(s) / guides, sill / sill structure, header, frame, and entrance hardware assembly, if provided.

- Entrance assembly, horizontally sliding type: an entrance assembly in which the door(s) slide horizontally.
- Entrance assembly, swinging type: an entrance assembly in which the doors(s) swing around vertical hinges.
- Entrance assembly, vertically sliding type: an entrance assembly in which the door(s) slide vertically.

Entrance frame, applied: see applied frame entrance

**Entrance Hardware Assembly**: all components of an entrance, exclusive of the frame, door(s), and interlocks. The track(s), hangers, drive arms, pendant bolts, chains, belts, cables, sheaves, pulleys, hinges, vertically sliding guide shoes, and related hardware that are necessary to suspend and maintain the position of the doors within the entrance assembly.

Proposal – Modify requirement 2.11.15 as follows:

**2.11.15 Marking**

2.11.15.1 Labeling of Tested Entrance Assembly. In jurisdictions not enforcing the NBCC, a single label listing covered components included per 2.11.15.1.1, or separate labels on all individual components per 2.11.15.1.2 shall be provided. 2.11.15.1 and 2.11.15.2 apply.

2.11.15.1.1 Each entrance shall be labeled. Each label shall be permanently attached to the equipment and shall be readily visible after installation. The following data shall be on the label:

(a) certifying organizations name or identifying symbol;
(b) the name, trademark, or file number by which the organization that manufactured the product can be identified;
(c) statement of compliance with 8.3.4;
(d) a list of the component items found in the definition of Entrance Assembly that are covered by the label.

2.11.15.1.2 Labels, conforming to 2.11.15.1.1(a) and (b), shall be provided for each entrance as follows:

(a) One label shall be provided for each the door panel
(b) Each frame shall be labeled, except where frames are installed in masonry or concrete and the panel overlaps the wall in conformance with 2.11.11.5.1 and 2.11.11.5.2 or 2.11.12.4.4

1) One label shall be provided for each section of a frame, or for each piece of a knock down frame; or
2) A single label shall be provided for the entire frame where the label states that it includes both the fixed side panels, and the transom

One label shall be provided for the frame, except that no label is required where frames are installed in masonry or concrete and the panel overlaps the wall in conformance with 2.11.11.5.1 and 2.11.11.5.2 or 2.11.12.4.4.
(c) One label shall be provided for the frame and transom, provided that the label states that it includes both the frame, and the transom.

(d) Where entrance hardware components have not been tested in complete assembly, individually labeled hardware components that are designed to be compatible with the entrance assembly shall be provided. A single label may be provided for the entrance hardware where the entrance hardware components are equivalent to those tested in a complete assembly.

(e) A single label may be provided for the entire entrance assembly where components are equivalent to those tested as a complete assembly.

2.11.15.1.3 Where the entrance hardware assembly has been tested in a complete entrance assembly, a single label, conforming to 2.11.15.1.1, shall be provided for the entrance hardware assembly.

2.11.15.1.4 Where a component of the entrance hardware assembly has not been tested as part of the complete assembly, a label conforming to 2.11.15.1.1 shall be applied to the component.

2.11.15.2 Other Entrance Assemblies. In jurisdictions not enforcing the NBCC the following shall apply. Other entrance assemblies of the three basic types (see 2.11.14) shall qualify for labeling or listing / certification

(a) when composed of panel(s), frame, and hardware of the same type as tested and not exceeding the overall height and width of any panel and frame of the largest size tested; or

(b) when such panel(s), frame, and hardware are modified, and test or technical data demonstrates that the modifications will meet the performance requirements of the test procedure in 8.3.3

All other elements of the entrance assembly shall conform to all other applicable requirements of this Code.

Rationale: Add new rules for clarification of labeling requirements
TN 02-3067

Revise 2.27.3.3

2.27.3.3 Phase II Emergency In-Car Operation

The key shall only be removable in the “OFF” and “HOLD” position. The “OFF”, “HOLD”, and “ON” positions shall not change the mode of operation within Phase II Emergency In-Car Operation until the car is at a landing with the doors in the normal open position, except as required by 2.27.3.3.4. The three modes of operation within Phase II In-Car Operation (“OFF”, “HOLD”, and “ON”) are specified by 2.27.3.3.1 thru 2.27.3.3.4.

Revise Requirement 2.27.3.3.4

2.27.3.3.4 When the car is stopped with the doors are in the closed position, or in motion, and the “FIRE OPERATION” switch is placed in the “OFF” position, the elevator remains on Phase II Emergency In-Car Operation and the car shall return to the designated level in conformance with 2.27.1.6(a) through (m).

Reason: Phase II has three distinct modes of operation, OFF, HOLD, and ON. The phrase that is recommended for deletion is technically accurate, but can and does cause confusion with the other requirements of Phase II Emergency In Car Operation. As revised, this requirement accurately, and more succinctly, describes the operation of the elevator when the FIRE OPERATION switch is placed in the OFF (Phase II Recall) position under the described circumstances.
Revise 5.9.14.1 of A17.1 as follows:

**5.9.14.1 Car Top Access Panel.** A car top access panel shall be provided in the top of all elevator cars. Car top access panels shall conform to the following:

(a) Requirement 2.14.1.5 applies, except as modified by this rule. The car top access panel will substitute for the car top emergency exit panel.

(b) The car top access panel shall have an area of not less than 0.58 m² (900 in²) and shall measure not less than 635 mm (25 in.) on any side. The panel shall open outward or slide over the car top. It shall be hinged, be retained in a track, or securely attached with a chain, when in both the open and closed positions. If a chain is used, it shall be not more than 300 mm (12 in.) in length and have a factor of safety of not less than 5. The movable portion of the access panel, if hinged, shall be provided with means to counterbalance the panel and restrain it from closing when in the open position. The force required to open the access panel or prevent it from closing shall not exceed 45 N (10 lbf). When in the fully opened position, the access panel shall resist accidental closing. The movable portion of the access panel shall not reduce the running clearance. The access panel shall be openable without the use of tools or keys.

(c) The car top access panel shall be provided with a switch whose contacts are positively opened mechanically and their opening shall not be dependent on springs that will initiate a controlled slow down and stop when the access panel is opened. An **permanently mounted** emergency stop switch shall be located on top of the car, and adjacent to the access panel to secure the car prior to transferring to inspection operation.

**Rationale (b):** To establish a maximum closing and opening force to minimize strain to personnel who must manually open or close the car top access panel. To clarify that the closing speed of hinged access doors panels, (if provided) shall be limited to prevent sudden accidental closure possibly striking persons entering or exiting through the access opening. Also, any panel once fully opened should resist accidental closing so that persons accessing the elevator through the openings are protected from potential injury.

**Rationale (c):** To ensure that the emergency stop switch is conveniently accessible from the car top access panel.
TN 02-3391

2.16.3.2 (Rule 207.3b)

Information Required on Plates

2.16.3.2.1 Capacity plates shall indicate the rated load of the elevator in kilograms or pounds or both (see Nonmandatory Appendix X2 D), and, in addition, this plate or a separate plate shall indicate

(a) the capacity lifting one-piece loads where the elevator conforms to the requirements of Rule 207.2

(b) for freight elevators designed for Class C2 loading, the maximum load the elevator is designed to support while being loaded or unloaded [see Rule 207.2b(3)(c)].

2.16.3.2.2 Data plates shall indicate

(a) the weight of the complete car, including the car safety and all auxiliary equipment attached to the car;

(b) the rated load and speed, rated speed, and class of freight loading where applicable;

(c) the wire rope data required by Rule 212.2a;

(d) the name or trademark of the manufacturer and year manufactured; and

(e) rail lubrication instructions (see Rule 205.16).

Rationale: To add new information and clarify the required content for crosshead data plates. Edits shown are also updated according to A17.1-2004 code.
Proposed revision to ASME A17.1 – 2000 requirements 8.11 for test tags as follows:

8.11.1.6 Periodic Test Tags. A metal test tag with the test date, the requirement number requiring the test, the applicable code requirement(s) and date performed; and the name of the person or firm performing the test; shall be installed in the machine room or machine space for all Category 3 and 5 periodic tests for electric elevators and Category 1, 3, and 5 tests for hydraulic elevators.

8.11.2.3.1 Car and Counterweight Safeties.
(b) For Type A safeties .......
A metal tag shall be attached to the safety releasing carrier in a permanent manner, giving the date of the safety test, together with the name of the person or firm who performed the test.

8.11.2.3.3 Oil Buffers
(e) After completion of the test, a metal tag, indicating the date of the test, together with the name of the person or firm who performed the test, shall be attached to the buffer [Item 5.3.2(b)].

8.11.3.2.4 Flexible Hose and Fitting Assemblies.
Flexible hose and fitting assemblies shall be tested at the relief valve setting pressure for a minimum of 30 s. Any signs of leakage, slippage of hose fittings, damage to outer hose covering sufficient to expose reinforcement, or bulging, or distortions of the hose body is cause for replacement. A metal tag indicating the date of the test and the name of the person or firm who performed the test shall be attached to the hose assembly in a permanent manner (Item 2.17.2).

Caution: If the motor protection or motor overloads trip during this test do NOT change the adjustment or jumper the overloads. Damage to the motor can result from running the motor without adequate overload protection.

REASON: Clarification and consolidation of the requirements for periodic inspections and tests tags. There are no category 3 tests for electric elevators. The original intent was it to apply to category 1 and 3.
TN 02-3396

Revise 3.17.3.2 as follows:

3.17.3.2 **Means of Application.** A plunger gripper shall mechanically grip the plunger.

3.17.3.2.1 Hydraulic means are permitted to be used to hold the gripper in the retracted position. A loss of hydraulic pressure or fluid causing uncontrolled downward motion is permitted to be used to apply the plunger gripper.

3.17.3.2.2 When electrical means are used to actuate the gripper, the following shall apply:

(a) The plunger gripper shall be fully operational during a primary electrical system power failure.

(b) The elevator shall not be permitted to restart after a normal stop in the event of the failure within the electrical means used to actuate the gripper of any of the following:

(i) any a single mechanically operated switch

(ii) a single magnetically operated switch, contactor or relay

(iii) a single contactor, relay, solenoid

(iv) any a single solid-state device

(v) a software system failure

(vi) the occurrence of a single ground. The elevator shall not be permitted to restart after a normal stop.

**Rationale:** To clarify that we are only checking for failures of the electrical means of the gripper actuation circuitry.
TN 02-3399

Requirement 2.24.8.4 [Rule 208]

Means for Manual Release. Means shall be permitted for manual release of the driving machine brake. The means shall permit car movement in a gradual, controllable manner. Provision shall be made to prevent unintended actuation of the device. The manual release device shall be designed to be hand applied only with continuous effort. The brake shall reapply at its fully adjusted capacity in the absence of the hand-applied effort. Devices required in accordance with Section 2.19 are permitted to be temporarily disabled when the manual movement device is in use.

Rationale:
Rule 2.24.8.4 now allows a manual release of the normal service brake presumably to permit a mechanic to “move” the car to a landing in the event of power failure. This may include Mechanical, Electrical, Hydraulic or any combination of these means to perform the functions of manual release or movement of the car. If the ascending car protection or unintended motion protection device depends on power it must activate when the power fails. This means that the mechanic needs a way to manually disable this device as well, before he can “move” the car.
TN 02-3400

Revise 8.9.2 in A17.1-2000

The data plate shall be in plain view, securely attached to the main line disconnect or on the controller. An additional data plate shall be installed in the vicinity of the starting switch on the exterior of escalators and moving walks.

Rationale: Requirement 8.9.2 requires that the code data plate be attached to the main line disconnect or controller. Therefore, access to the interior of an escalator or moving walk is needed in the vast majority of the cases to see the data plate. The information on the data plate is needed during Routine/Periodic Inspections in order to properly conduct the inspection. However, during these inspections the inspector is alone and it is inappropriate/hazardous for an inspector to enter the interior of an escalator or moving walk without a mechanic present. Therefore, the information must be available on the exterior of an escalator or moving walk.
TRAVEL / RISE

This TR was opened to clear the confusion resulting from the two separately defined terms, ‘rise’ and ‘travel’ introduced in the harmonized code. Before the harmonized code only one term, ‘travel (rise)’ was defined.

1. Delete the definition of “travel”

RATIONAL:

Editorial clarification. The definition is redundant. It is used more than 200 times in the code having its dictionary meaning but never in the context of its definition. Deleting the definition and replacing the term ‘travel’ with ‘rise’, where appropriate, would clarify the intent.

2. Replace the word “travel” with “rise” in the following rules.

RATIONAL:

Editorial clarification. The term ‘rise’ is defined to mean the vertical distance between the top and bottom landings (a characteristic of the building) served by the elevator. The term ‘travel’ is replaced with ‘rise’ as it is more appropriate and clarifies the intent.

1 - 1.1.2 (v) and 1.1.2 (w)
2. – 2.12.3.1 (a)
3. – 2.12.3.1 (b)
4 – 2.24.1 (c)
5. – 2.27.1.1.4
6. – 2.27.1.2(4)
7. – 2.27.3
8. – 2.27.4 (a)
9. – 4.3.4
10 – 4.3.15 (two places)
11 - 5.3.1.1.2
12 - 5.3.1.1.3 (only in the first paragraph)
12- 5.5.1.26
13. – 5.6.1.4 (d)
14. – 5.6.1.25.3
15 – 7.1.12.1.1(b)
16 – 7.1.12.1.1(c)
17 – 7.1.12.4
18 – 7.4.2. (d)
19. – 8.7.2.17
20 – 8.7.2.17.1 (two places)
21 – 8.7.2.17.1 (b) (only the first two places)
22 – 8.7.2.17.1(c) (six places)
23. – 8.7.2.25.2 (four places)
24 – 8.7.3.22
25 – 8.7.3.22.1 (five places)
26 - 8.7.4.3.7 (two places)
27. – 8.10.2.3.2 (n)
28 – Appendix L

- Decrease in travel-rise
- Increase in travel-rise
- Travel Rise, increase or decrease in

29 – INDEX

- Rise (see Travel), definition of, Section 1.3
- Rise, escalator and moving walk, definition of, Section 1.3
- Travel, definition of, Section 1.3
Proposed to revise A17.1-2004, requirement 8.6.3.7.2 as follows:

8.6.3.7.2 Where a component in a listed/certified device is replaced, the replacement component shall be subject to the requirements of the applicable edition of CAN/CSA B44.1/ASME A17.5 and/or the engineering or type test in 8.3. Hoistway door interlocks, hoistway door combination mechanical lock and electric contact, and door or gate electric contact, shall conform to the type tests specified in 2.12.4.1. The component shall be included in the original manufacturer’s listed/certified device documentation or as a listed/certified replacement component (see 8.6.1.1). Each replacement component shall be plainly marked for identification in accordance with the certifying organization’s procedures. In jurisdictions not enforcing NBCC, door panels, frames, and entrances hardware shall be provided with the instructions required by 2.11.18.

NOTE (8.6.3.7): Devices that may fall under this requirement are included but not limited to: hoistway door locking devices and electric contacts, car door contacts and interlocks, hydraulic control valves, escalator steps, fire doors, and electrical equipment.

Reason: Some components cannot be labeled for identification due to size and configuration limitation.
Rationale: A17.2-Technical Corrections for Escalator and Moving Walk in A17.1, Requirement 8.10 and 8.11

8.10.3.3.2 ……

(p) Where an alteration consists of a change in operation control (8.7.3.31.7), tests shall be performed as specified in 8.10.3.2.1(a), (b), (c), (e) through (j), (q), (s), (t), 8.10.3.2.2(j), (l), (t), (u), (x), (y), 8.10.3.2.3(a), (c), (e), (f), (g), (cc), 8.10.3.2.4(b) through (g), (i), (j), 8.10.3.2.5(a), 8.10.3.2.5(e), and 8.10.3.2.6.

(q) Where an alteration is made that results in a new hoistway door, car door or car gate controller without any change to the operation or control [8.7.3.31.5(b)], tests shall be performed as specified in 8.10.3.3(l)(1), (1)(2), (1)(3), and (1)(5) 8.10.3.2.2(l)(1), (2), (3) and (5).

8.10.4.1.1 External Inspection and Tests…………

(i) Steps, Step Upthrust Device and Treadway…………

(1) Steps
   (a) Material and type (6.1.3.5.1)
   (b) Dimensions (6.1.3.5.2)
   (c) Clearance between steps (6.1.3.5.4)
   (d) Slotting of treads (6.1.3.5.4)
   (e) Slotting of risers (6.1.3.5.3)
   (f) Design load (6.1.3.9.4)
   (g) Flat steps (6.1.3.6.5)
   (b) Step upthrust device
(2) Treadways
   (a) Belt-type (6.2.3.6)
   (b) Pallet-type (6.2.3.5)
(j) Operating and Safety ………

(1) Starting switches (6.1.6.2 or 6.2.6.2)
(2) Emergency stop buttons (6.1.6.3.1 or 6.2.6.3.1)
(3) Automatic start and stopping (6.1.6.1.1 or 6.2.6.1.1)
(4) Tandem operation ………

(5) All stop switches, except those in machine space, and mainline disconnect switches shall be tested for proper operation (6.1.6.3.1 or 6.2.6.3.1).

(k) Handrail Entry Device ………

(m) Speed …………………

(n) Balustrades ……………

(1) Construction (6.1.3.3.1 or 6.2.3.3.1)
(2) Glass or plastic (6.1.3.3.3 or 6.2.3.3.3)
(3) Change in width [6.1.3.3.1(c) or 6.2.3.3.1(d)]
(o) Ceiling Intersection Guards (6.1.3.3.9 or 6.2.3.3.7) ……………

(p) Skirt Panels ………

(1) Clearance between skirt and steps [6.1.3.3.5 or 6.2.3.3.5(a), and 6.2.3.3.6(a)]
(2) Height above step [6.1.3.3.6(a) or 6.2.3.3.5(b), and 6.2.3.3.6(b)]
(3) Deflection [6.1.3.3.6(b) or 6.2.3.3.6(c)]
(4) Smoothness [6.1.3.3.6(c) or 6.2.3.3.6(d)]

(q) Outdoor Protection ……………

(r) Escalator and Moving Walk Well Guards ………

(s) Verification of Documentation for Type Tests, Certification, and Markings

(1) Escalator brake test (6.1.5.3.3)…………
(2) Step and pallet fatigue test ………
8.10.4.1.2 Internal Inspection and Tests………

(a) Response to Smoke Detectors. (Items 8.15 and 10.15). Where provided, smoke detector shutdown shall be tested for conformance with 6.1.6.8 and 6.2.6.7

8.11.4.1 Periodic Inspection and Test Requirements. Inspections shall ………..

(j) Operating and Safety Devices ………
(k) Skirt Obstruction Devices ………
(l) Handrail Entry Device ……………
(m) Egress Restriction Rolling Shutter Device ……………
(n) Speed ………
(o) Balustrades ………
(p) Ceiling Intersection Guards ………
(q) Skirt Panels ………
(r) Outdoor Protection ………
(s) Machinery Space Access, Lighting, Receptacle, and Condition (for remote machine rooms only) (Items 2.1 and 4.1);
(t) Additional Stop Switch(es) (Items 2.2 and 4.2);
(u) Controller and Wiring (Items 2.3 and 4.3); Machine Rooms where provided – Access, Lighting, Receptacle, Condition, Controller, Wiring and Condition;
(v) Code Data Plate (2.23.2) ………
Rationale: A17.2- Technical Corrections for Electric Elevators in A17.1, Requirement 8.10 and 8.11

SECTION 8.11
PERIODIC INSPECTIONS AND TESTS

8.11.2.2.2 Safeties
   (a) Examinations. All working parts of car and counterweight safeties shall be examined to determine that they are in satisfactory operating condition and that they conform to the applicable requirements and 8.7.2.14 through 8.7.2.28 (see 2.17.10 and 2.17.11; Division 112). Check the level of the oil in the oil buffer and the operation of the buffer compression-switch on Type C safeties.
   (b) Tests. Safeties shall be ……

8.11.2.6 Firefighters’ Emergency Operation. Firefighters’ emergency operation shall be tested to determine conformance with the applicable requirements (Division Part 6).

8.11.2.3.10 Emergency Stopping Distance. Counterweight traction elevators shall be tested for traction drive limits to ensure that
   (a) During an emergency stop initiated by any of the electrical protective device(s) listed in 2.26.2 (except 2.26.2.13), (except buffer switches for oil buffers used with Type C car safeties) at the rated speed in the down direction, with passenger elevators and freight elevators permitted to carry passengers carrying 125% of their rated load, or with freight elevators carrying their rated load, cars shall stop and safely hold the load; and
   (b) if either the car or the counterweight bottoms on its buffers or becomes otherwise immovable:
      (1) the ropes shall slip in the drive sheave and not allow the car or counterweight to be raised; or
      (2) the driving system shall stall and not allow the car or counterweight to be raised.
8.10.3.2.2 Machine Room
(d) Enclosure of Machine Space
(f) Ventilation and Heating
(i) Guarding of Exposed Auxiliary Equipment
(m) Hydraulic Machine (Power Unit) (Item 2.13.30)
(n) Relief Valves
(o) Control Valve
(p) Tanks
(q) Flexible Hydraulic Hose and Fitting Assemblies
(r) Supply Line and Shutoff Valve
(s) Hydraulic Cylinders
(t) Pressure Switch
(y) Governor, Overspeed Switch, and Seal (3.17.1)

8.10.3.2.3 Top of Car
(c) Top of Car Inspection Operating Device
(d) Top of Car Clearance, Refuge Space and Runbys (Item 3.4)
(e) Normal Terminal Stopping Devices
(f) Emergency Terminal Speed Limiting Reducing Devices
(g) Car Leveling and Anti-Creep Leveling Devices (Item 3.7)
(h) Crosshead Data Plate [3.16 and 8.10.2.2.3(k)]
(i) Top Emergency Exit [3.14 and 8.10.2.2.2(i)]
(k) Hoistway Construction (3.1)
(l) Hoistway Smoke Control [3.1 and 8.10.2.2.3(q)]
(n) Windows, Projections, Recesses and Setbacks [3.1 and 8.10.2.2.3(s)]
(o) Hoistway Clearances (3.5)
(p) Multiple Hoistways [3.1 and 8.10.2.2.3(u)]
(q) Traveling Cables and Junction Boxes [3.8 and 8.10.2.2.3(v)]
(r) Door and Gate Equipment. Use procedure in 8.10.2.2.3(w). (3.11, 3.12 and 3.13)
(s) Car Frame and Stiles (3.15)
(t) Guide Rails, Fastenings and Equipment
(u) Governor, Rope Safety, Ropes and Counterweights
(v) Governor Rope Releasing Carrier [3.17.1 and 8.10.2.2.3(aa)]
(w) Governor Rope [3.17.1 and 8.10.2.2.3(z)]
(x) Wire Rope Fastening and Hitch Plate [3.17.1 and 8.10.2.2.3(bb)]
(y) Suspension Rope [3.17.1, 3.18.1.2, 3.20 and 3.24.5]
(z) Slack Rope Device [3.17.1.1, 3.18.1.2.7 and 3.22.1.2]
(aa) Traveling Sheave [3.18.1.2.8 and 3.22.1.2]
(bb) Counterweight Ropes, Connections and Sheaves (3.20, 3.21 and 3.24.5)
(cc) Car Speed [2.28.1(k)]. The speed of the car shall

8.10.3.2.4 Outside Hoistway
(i) Emergency Doors in Blind and Access Hoistways Openings
(j) Standby or Emergency Power Selection Switch [3.26.10 and 8.10.2.2.4(l)]

8.10.3.2.5 Pit
(a) Pit Access, Lighting, and stop Switch and Condition
(b) Bottom Clearance, and Runby, and Minimum Refuge Space
(c) Hydraulic Jack Plunger and Cylinder
(d) Car Buffer [3.6.3, 3.6.4 and 3.22.1]
(e) Normal Terminal Stopping Devices (3.25.1)
(f) Traveling Cables [3.8; and NFPA 70 Section 620-11(c) or CSA-C22.1, Section 38-008]
(h) Guiding Members (3.15 and 3.23)
(i) Valve, Pressure, Supply, Piping, and Fitting

(j) Car Safety

(k) Governor Rope tension device

8.11.3.1 Inside the Car

(a) Door Reopening Device

(b) Stop Switches

(c) Operating Control Devices

(d) Sill and Car Floor and Landing Sill

(e) Car Lighting and Receptacles

(f) Car Emergency Signal

(g) Car Door or Gate

(h) Door Closing Force

(i) Power Closing of Doors or Gates

(j) Power Opening of Doors or Gates

(k) Car Vision Panels and Glass Car Doors

(l) Car Enclosure

(m) Emergency Exit

(n) Ventilation

(o) Signs and Operating Device Symbols

(p) Rated Load, Platform Area and Data Plate

(q) Standby or Emergency Power Operation

(r) Restricted Opening of Car or Hoistway Doors

(s) Car Ride

8.11.3.1.3 Top Of Car

(a) Top of Car Stop Switch

(b) Car Top Light and Outlet

(c) Top of Car Operating Device

(d) Top-of Car Clearance and Refuge Space

(e) Normal Terminal Stopping Device

(f) Emergency Terminal Speed Limiting Reducing Devices

(g) Car Leveling and Anti-Creep Leveling Devices

(h) Speed Test

(i) Top Emergency Exit

(j) Floor and Emergency Identification Numbering

(k) Hoistway Construction

(l) Hoistway Smoke Control

(m) Pipes, Wiring and Ducts

(n) Windows, Projections, Recesses and Setbacks

(o) Hoistway Clearances

(p) Multiple Hoistways

(q) Traveling Cables and Junction Boxes

(r) Door and Gate Equipment

(s) Car Frame, Guides and Stiles

(t) Guide Rails Fastening and Equipment

(u) Governor, Safety, Ropes and Counterweights

(v) Governor Rope Releasing Carrier

(w) Governor Rope (Item 3.22.1)

(x) Wire Rope Fastening and Hitch Plate

(y) Suspension Rope

(z) Slack Rope Device

(aa) Traveling Sheave

(bb) Counterweight and Counterweight Buffer

(cc) Crosshead Data Plate (Item 3.27)
8.11.3.1.5 Pit
(a) Pit Access, Lighting and Stop Switch, and Condition………………
(b) Bottom Clearance, and Runby and Minimum Refuge Space…………
(c) Plunger and Cylinder ……………
(d) Car Buffer ………
(e) Normal Terminal Stopping Devices …………
(f) Traveling Cables ………
(g) Car Frame and Platform ………
(h) Car Safeties and Guiding Members …………
(i) Supply Piping ………
(j) Car Safety (Item 5.10.1 2.29); and
(k) Governor Rope Tension Device ………

8.11.3.2.2 Hydraulic Cylinders. This test shall be performed after the relief valve

8.11.3.2.3 Additional Tests. The following tests shall also be performed:
(a) Normal and Final Terminal Stopping Devices (8.11.2.2.5) …………
(b) Governors, Overspeed Switch and Seal (8.11.2.2.3) …………
(c) Safeties ………
(e) Firefighters’ Emergency Operation (8.11.2.2.6) ………
(f) Standby or Emergency Power Operation (8.11.2.2.7) ………
(h) Emergency Terminal Speed Limiting Reducing Devices and Emergency Terminal Stopping Device (3.25.2) ………
Alterations - Criteria for Buffers

Revise 8.7.2.23 as follows:

8.7.2.23 Car and Counterweight Buffers and Bumpers. Where alterations are made to car and counterweight buffers or bumpers, they shall conform to 2.22. Existing buffers are not required to conform to 2.22.4.5(b), 2.22.4.7, 2.22.4.10, and 2.22.4.11, if:
(a) the buffer’s load rating and properties defining method of absorbing and dissipating energy has not been altered,
(b) the load rating of the buffer can be established by other means such as using original design data, original type testing data, marking plate, etc.,
(c) the conformance with 2.22.4.5(b) can be established by other means such as adding a buffer switch conforming to 2.26.2.22.

Revise 8.7.2.15.2 as follows:

8.7.2.15.2 Increase or Decrease in Deadweight of Car. Where an alteration results in an increase or decrease in the deadweight of the car that is sufficient to increase or decrease the sum of the deadweight and rated load, as originally installed, by more than 5%, the installation shall conform to the following requirements:
(a) requirement 2.15, except the car platform guard (apron) shall conform to 2.15.9 only to the extent the existing pit shall permit, but in no case less than the leveling or truck zone plus 75 mm (3 in.),
(b) requirement 2.16;
(c) requirement 2.17;
(d) requirement 2.18;
(e) requirement 2.20;
(f) requirement 2.21, except as covered by 8.7.2.22.2;
(g) requirement 2.22, except for 2.22.4.5(b), 2.22.4.7, 2.22.4.10, and 2.22.4.11 provided that conformance with
   (1) 2.22.4.10 is established otherwise; and
   (2) 2.22.4.5(b) can be established by other means such as adding a buffer switch conforming to 2.26.2.22;
(h) requirement 2.23
(i) requirement 2.24, except 2.24.1
(j) requirement 8.7.2.9

Rationale for 8.7.2.23:
For replacing “installation” with “buffers”: To clarify that this rule applies only to buffers and not to the elevator installation.

Conformance with 2.22.4.5(b) is not required provided that other equally effective safety solutions are implemented, such as adding buffer switch that the Code recognizes as effective measure for securing operational readiness in the case of “gas-return” and “type C safeties” buffers.

For keeping exception to 2.22.4.7 and adding (a) and (b): This exception from the buffer type test and certification requirement, should remain in exceptional cases, as noted. Providing a buffer, having no positively established load ratings, does not meet the intent of the code.

For deleting exception to 2.22.4.10: Alteration of a buffer should be aimed to the improvement of its safety function. If we do not apply this rule how do we know that its safety function is not downgraded by this alteration?
If we do not know the rating of the buffer, we must establish it after the alteration. Lack of the original marking plate is not good rationale for doing any alteration on the buffer without knowing the safety results of the alteration.

If anyone is performing the alteration of a buffer of unknown rating because there is reason to believe that the buffer does not meet 2.22.4.10 with respect to the car weight and rated load values that means that it is a wrong buffer and should be replaced with a new one of a known minimum and maximum load rating.

In any case the alteration to a buffer that changes its dampening properties should not be permitted. Only alterations to their electrical switches, bracing and similar features should be permitted.

For deleting exception to 2.22.4.11: When altering a buffer, the company must know what is being done and what is to be achieved respecting its ability perform. The data should be recorded on the marking plate.

**Rationale for 8.7.2.15.2**

Rationale for 2.22.4.5(b) is given above. Rule 2.22.4.10 must remain applicable and the load ratings of the buffer must be known to in order to verify that the buffer will be capable of withstanding the increased impact forces. In addition, 2.22.4.11 also must apply, because once we established compliance with 2.22.4.10, there is no justification for not stating related data on the marking plate.
A17.1 Rule -2.14.7.1.4, Car top lighting

2.14.7.1.4 Each elevator shall be provided with an electric light fixture on the car top. The lighting shall be permanently connected, fixed or portable or a combination thereof, to provide an illumination level of not less than 100 lx (10 fc) measured at the point of any elevator part or equipment, where maintenance or inspection is to be performed from the car top. All lighting shall be equipped with guards. The light switch shall be accessible from the landing when accessing the car top.

**Rationale:** Existing requirement is vague and consequently many car tops are not adequately lighted. The committee has chosen to use performance language to require adequate lighting either fixed or portable.
TN 02-3818

Revise A17.1 Requirement 8.4.11.2 as follows:

**8.4.11.2 Overspeed Valve and Plunger Gripper.** Hydraulic elevators not provided with car safeties complying with 3.17.2 shall be provided with:

a) an overspeed valve(s) conforming to 3.19.4.7, or
b) a plunger gripper(s) conforming to 3.17.3, except as modified by 8.4.11.2(b)(1) and (2).

1) Requirement 3.17.3.2 applies as modified. The primary actuation shall be mechanical or hydraulic. Electrical means are permitted as a secondary actuation means.

2) The plunger gripper shall be capable of withstanding inertia effects of the elevator masses without operational failure when subjected to seismic forces acting separately, of not less than those required to produce an acceleration as follows

   a) for Zone 3 or greater

      1) mass of plunger and gravity horizontally acting on the mass of the plunger; and

      2) 1/2 gravity vertically acting on mass of plunger with mass of car at rated load and ½ gravity vertically

   b) for Zone 2

      1) mass of plunger with ½ gravity horizontally acting on the mass of plunger; and

      2) ¼ gravity vertically acting on the mass of plunger with mass of car at rated load and ¼ gravity vertically

**Rationale:** Add requirements to allow plunger gripper under seismic conditions. For seismic conditions the intent is to require mechanical means as the primary method.
TN 02-3857

Revise 7.2.2.8 of A17.1-2000:

7.2.2.8 Requirement 2.15.9 does not apply. Applies only where inching devices or truck zoning devices are provided. Rule 203.9(b)(1) does not apply. The length shall not be less than 530 mm (21 in.). Leveling devices are not required. Guards shall be provided to close any opening to the hoistway above and below the car that occur when leveling or inching devices are operated with the hoistway door(s) in the open position.

7.2.2.8.1 The guards shall:
(a) be located on the entrance side of the car;
(b) extend the full width of the car; and
(c) be made of smooth metal plates of not less than 1.5 mm (0.059 in.) thick steel or material of equivalent strength, stiffness, and braced to the car.

7.2.2.8.2 The guards shall have a straight vertical face, extending not less than the following:
(a) for the car platform guard, the maximum length of the car travel in the up direction permitted by the car leveling or inching device as installed, plus 13 mm (0.5 in.).
(b) for car head guard, the maximum length of the car travel in the down direction permitted by the car leveling or inching device as installed, plus 13 mm (0.5 in.).

Rationale: To ensure that under leveling or inching operation a gap does not appear at the top or bottom of the car when the hoistway doors are open. In addition, the proposed language provides equivalent safety but is more appropriate to dumbwaiter operations and is written in performance language instead of a defined static dimension.
TN 02-3858

Revise 7.2.3.2 of A17.1-2000:

7.2.3.3 Data Plate

7.2.3.3.1 A data plate shall be located on the car crosshead, on the car top, or inside the car. If the information required on the data plate is provided on the capacity plate inside the car (see 7.2.3.2) then a separate data plate is not required on the car top or crosshead.

Rationale: To allow the capacity information to be either stand-alone or on a single plate that contains additional pertinent data. It is noted that most DW are inspected from outside the hoistway and therefore it is most convenient and safer to place the information in one location within the car.
TN 02-3859

Revise 7.2.12.4 of A17.1-2000 as follows:

7.2.12.4 Requirement 2.26.1.4 does not apply. Top-of-car operating devices are not required. Where provided, they shall conform to 7.2.12.4.1 and 7.2.12.4.2 and the installation shall also comply with 7.2.12.4.3.

7.2.12.4.1 Requirement 2.26.1.4.2 applies. Requirement 2.26.1.4.1(d)(2) applies except that it shall be subject to the electrical protective devices required by 7.2.12.

7.2.12.4.2 Safeties shall be provided in accordance with 7.2.4.

7.2.12.4.3 A hoistway access switch conforming to 7.1.12.4 shall be provided for access to the top of the car.

Rationale: The hoistway access switch provides a means of access to the top of the car when a car top operating station is provided.

Revise 7.1.12.4 of A17.1-2000 [Rule 700.12d] as follows:

7.1.12.4 Hoistway Access Switches.

Hoistway access switches shall be permitted at any the top and bottom landing. For dumbwaiters with a travel of 7.62 m (25 ft) or more, hoistway access switches shall be provided either at the top or bottom terminal landings.

Requirement 2.12.7 does not apply. Where hoistway access switches are provided, hoistway access switches, where provided, they shall conform to the following requirements:

(a) Requirement 2.12.7.2 applies, except 2.12.7.2.3 does not apply; and
(b) Requirements 2.12.7.3.1, 2.12.7.3.2, 2.12.7.3.4, and 2.12.7.3.5 apply. Requirement 2.12.7.3 applies except 2.12.7.3.3 does not apply. The means shall be key operated or behind a locked cover, the key shall be Group 1, Security (see 8.1).

Rationale: (for deletion of 25 ft. requirement) The wire rope inspection is better done from the machine location rather than from a landing. The purpose of the access switch for DW with a large travel was to permit inspection of the wire rope. However, further review has indicated that this is not necessary. In addition, door-unlocking devices are required and can serve an equivalent purpose. Remainders of the revisions are editorial reformatting.
Add new Requirement to A17.1:

Add the following requirement:

7.1.4.3 Where a top of car operating device is provided, a minimum vertical space shall be provided on the top of car when the car reaches its maximum limit of upward travel. The space shall comply with 7.1.4.3.1 and 7.1.4.3.2.

7.1.4.3.1 Horizontal unobstructed area on the car top of not less than 0.370 m² (570 in.²) and measured not less than 500 mm (20 in.) on one side, and

7.1.4.3.2 Vertical height of not less than 1100 mm (43 in.) measures vertically between the top of the car enclosure and the overhead structure or other obstruction.

**Rationale for 7.1.4.3:** To provide minimum clear space requirements when a top of car operating device is provided.
TN 02-3864

1) Revise 7.4.2 of A17.1:

7.4.2 Classification
Material Lifts without automatic transfer devices are classified as either Type A or Type B Material Lifts.

Type A Material Lifts shall conform to 7.4.

Type B Material Lifts shall conform to 7.4 and are limited as follows:

7.4.2.1 Type A Material Lifts shall be controlled from landing mounted operating devices only. Car mounted operating devices shall not be permitted. It is a materials only device and riders shall not be permitted.

7.4.2.2 Type B Material Lifts shall be permitted to carry one operator and be provided with in-car mounted operating devices, subject to the following limitations:
(a) Access to and usage of Type B Material Lifts is restricted to authorized personnel.
(b) The rated speed is not to exceed 0.15 m/s (30 ft/min).
(c) There is penetration of only one floor.
(d) Travel does not exceed 5 000 mm (200 in.).
(e) They are operated only by continuous-pressure control devices.
(f) They shall not be accessible to the general public.
(g) The upper limit of travel shall be
   (i) level with the penetrated floor; or
   (ii) level with the top landing where no floor is penetrated.
(h) They are permitted to serve one or more intermediate landings, provided that these landings have doors as required in 7.4.14.

Rationale: General reorganization for clarification.

2) Revise 7.4.5 of A17.1:

7.4.5 Location and Guarding of Counter-weights.
Requirement 2.3 applies only to Type A material lifts when the car rated speed exceeds 0.5 m/s (100 ft/min).

Where the car rated speed is 0.5 m/s (100 ft/min) or less, counterweight guards conforming to 2.3.2 shall not be required provided that the installation conforms to either 7.4.5.1 or 7.4.5.2.

7.4.5.1 A chain loop or equivalent shall be hung from the bottom of the counterweight to the bottom of the car.

7.4.5.2 Lightweight chains, approximately 600 mm (24 in.) in length shall be attached to the bottom of the counterweight. These chains shall be spaced at 150 mm (6 in.) intervals, except at the point of buffer (or bumper) engagement.

Rationale: Where there are counterweights exposed in servicing areas, they need to be guarded or warnings provided to a person in the path of the descending counterweight.

3) Revise 7.4.9 of A17.1:

7.4.9 Machine Rooms and Machinery Spaces
Type A Material Lifts shall conform to 2.7. Requirement 2.7 does not apply to Type B Material Lifts.

Rationale: Type A conformity to requirement 2.7 needs to be stated.
4) Revise 7.4.11 of A17.1:

**7.4.11 Machinery and Sheave Beams, Supports, and Foundations**

Requirement 2.9 does not apply to Type B Material Lifts. Type B Material Lifts shall conform to 2.9.1.1, 2.9.2.2, 2.9.3.2, 2.9.3.3 and 2.9.4.

**Rationale:** Type A conformity to requirement 2.9 needs to be stated and Type B support requirements listed. Note reference to 2.9.3.3 is with regard to TR 97-81 (MRL) added requirement.

5) Revise 7.4.12 of A17.1:

**7.4.12 Guarding of Equipment and Standard Railing**

Requirement 2.10 does not apply to Type B Material Lifts.

**Rationale:** Exposed moving equipment needs to be guarded.

5) Revise 7.5.3.4 of A17.1:

**7.5.3.4**

For Type B Material Lifts, Requirement 2.16.5 does not apply except as modified by 7.5.3.4.1 through 7.5.3.4.3.

**7.5.3.4.1** The following signs shall be provided

(a) at each control station in the hall: MAXIMUM LOAD _____ kg (lb) and NO RIDERS EXCEPT ONE OPERATOR OR FREIGHT HANDLER;

(b) at the control station in the lift: NO RIDERS EXCEPT ONE OPERATOR OR FREIGHT HANDLER;

(c) at each entrance or gate: AUTHORIZED PERSONNEL ONLY ON THIS MATERIAL LIFT.

**7.5.3.4.2** Signs shall comply with 2.16.5.2, except that the height of characters for the signs required by 7.5.3.4(a) shall be not less than 25 mm (1 in.).

**7.5.3.4.3** Signs for class of loading shall be provided in the lift and shall comply with 2.16.5.1.1.

**Rationale:** to make it clear that only one rider is allowed.
Revise A17.1, requirement 8.7.6.1.1 as follows:

8.7.6.1.1 General Requirements. Any alteration to an escalator shall comply with 6.1.6.1, 6.1.6.1.1, 6.1.6.2, 6.1.6.3.1, 6.1.6.3.5, 6.1.6.7, 8.7.1.1, and 8.7.1.2. A change in component parts that are interchangeable in form, fit, and function is not considered an alteration and need not comply with the requirements in this section. See 8.6.3.1.

The addition of a component or a device that was not part of the original design is an alteration and must conform to the requirements of 8.7.6.1 for that device or component.

When multiple driving machines per escalator are utilized, operating and safety devices required by 8.7.6.1 shall simultaneously control all driving machines.

The requirements of 6.1.3.6.5 do not apply to existing escalators that were not required to comply with this requirement at the time of the original installation.

Revise A17.1, requirement 8.7.6.1.9 as follows:

8.7.6.1.9 Trusses and Girders. Any alterations or welding, cutting, and splicing of the truss or girder shall conform to 8.7.1.4. Alterations shall result in the escalator’s conforming to 6.1.3.7, 6.1.3.9.1, and 6.1.3.10.1.

The installation of a new escalator into an existing truss shall conform to all of the requirements of 6.1.

The requirements of 6.1.3.6.5 do not apply to existing escalators that were not required to comply with this requirement at the time of the original installation.

Rationale:
The present requirements are unnecessarily restrictive. This proposal is to encourage the installation of devices that will enhance the safety of the escalator.

The allowance of less than two flat steps is more appropriate in the general requirement than 8.7.6.1.9, Trusses and Girders.
Add as sub-definition of “alteration”:

*alteration, as part of an:* A repair or replacement that is included with other work that is classified as an alteration.

*Rationale:* To clarify the term used in alteration section (8.7).
2.21.4 Compensation Means
Compensation means, such as compensating ropes or chains or other mechanical means and their
attachments (except for safety hooks, where used) to tie the counterweight and car together, shall be
capable of withstanding, with a factor of safety of 5, any forces to which the means is subjected with the
elevator at rest.

The maximum suspended weight of compensation means with car or counterweight at the top of its travel
and one half-total weight of tension sheave assembly, where used, shall be included.

The factor of safety for compensation means shall be based on the minimum proof load, breaking load, or
breaking force strength as appropriate to the tensile testing method, or test reports.

Rationale:
The wording “proof load” is related to steel chain used on compensation chains. Basing the factor of safety
on chain proof load will result in a factor of safety of 10 instead of 5 as requirement for compensation
means.

The wording “breaking load” has a definition on ASTM –E6-1994 (Standard Terminology Relating to
Methods of Mechanical Testing), which “covers the principal terms relating to methods of mechanical
testing of solids.”

The wording “minimum breaking force” had a definition in ASTM-A413/A 413M-93 (Standard
Specification for Carbon Steel Chain) and in ISO 4344-1983 (Steel wire rope for lifts). Also, the wording “minimum breaking force” is used in the new Proposed Standard (A17XX) for Suspension Means (new standards for Wire Ropes, Aramid Fiber Ropes for Elevators and Elastomeric
Coated Steel Belts for Elevators), which is in development.

Using the wording minimum braking load or braking force would satisfy the requirement to use a load or
force value which must be met or exceeded when a representative part sample of the compensation means
is submitted to a standard tensile test. Also, it would conform to other standards, which already have
definitions consistent with the above wording.

Using the required factor of safety of 5 for compensation means with the minimum breaking force, for
chain, agrees with an early recommendation “using 80% of the working load limit as criteria.” Working
load limit of chain has a ratio of 4:1 factor of safety in relation to its minimum breaking force and applying
80% on it will result exactly on 5 for the accumulated factor of safety, which agrees with the Code required
factor of safety of 5 for compensation means.
Combine A17.1, requirement 5.3.1.1.2 and 5.3.1.1.3 as follows:

**5.3.1.1.2** The enclosure shall be permitted to be omitted on the upper landing on continuous-pressure operation elevators serving only adjacent landings (one-floor travel), provided conforming to one of the following:

(a) The floor opening at the upper landing is protected by a partial enclosure and gate at least 910 mm (36 in.) high with openings that will reject a ball 25 mm (1 in.) in diameter and the gate is provided with a combination mechanical lock and electric contact.

**5.3.1.1.3** The enclosure shall be permitted to be omitted on the upper landing of elevators having continuous-pressure operation and serving only adjacent landings (one-floor travel), where

(b) The floor opening is provided with a vertically lifting hatch cover which is automatically raised and lowered vertically by the ascending and descending car, provided this cover meets the following requirements:

(a1) It is fitted with guides to ensure its proper seating.

(b2) It is designed and installed to sustain a total load of 3.6 kPa (75 lb/ft²) or 135 kg (300 lb) at any one point.

(c2) It is equipped with an electric contact that will prevent the upward travel of the car when a force of 90 N (20 lbf) is placed at any point on the top of the hatch cover.

Reason: Editorial and simplification between requirement 5.3.1.1.2 and 5.3.1.1.3.
TN 03-0117

Add to A17.1a-2002 A17.1b-2003:

8.10.2.2.2 (ff) AC Drives from a DC Source (Item 2.24): The person or firm that installed the AC drive from a DC source shall demonstrate compliance with 2.26.9.6 (Item 2.24.3)

Reason: Add requirement for testing AC drives from DC source during acceptance. These tests were included acceptance tests in the previous edition of the Code and inadvertently left out of the 2000 edition.
Revise ASME A17.1 Section 1.3 as follows:

**fire endurance**: a measure of the elapsed time during which a material or assembly continues to exhibit fire resistance under specified conditions of test and performance, expressed as a fire-resistance rating.

**fire barrier**: a fire-resistance-rated vertical or horizontal assembly of material designed to restrict the spread of fire in which the openings are protected.

**fire-protection rating**: a designation indicating the duration of the fire test exposure to which a fire door assembly (entrance) was exposed and for which it met all the acceptance criteria as determined in accordance with a recognized fire test standard. Ratings are stated in hours or minutes.

**fire-resistance rating**: a designation indicating the duration of the fire test exposure to which components of building construction (walls, floors, roofs, beams and columns) are exposed and for which it met all the acceptance criteria as determined in accordance with a recognized fire test standard. Ratings are stated in hours or minutes, the measured time in hours or fractions thereof that the material or construction will withstand fire exposure, as determined by fire tests conducted in conformity to recognized standards.

**fire-resistive construction**: a method of construction that prevents or retards the passage of hot gases or flames, as defined in the building code.

Revise ASME A17.1 requirement 2.1.1.1.2 as follows:

2.1.1.1.2 Partitions between hoistways and machine rooms having fire-resistive enclosures, that have a fire-resistance rating, shall be of noncombustible solid or openwork construction that meets the requirements of 2.1.1.2.2(c)(1), (2), and (3). Openwork construction shall reject a ball 25 mm (1 in.) in diameter, except where there are openings essential for ropes, drums, sheaves, and other elevator equipment.

Revise ASME A17.1 requirement 2.3.3.1 as follows:

2.3.3.1 The hoistway shall be fully enclosed and shall have a fire-resistive fire-resistance rating, conforming to 2.1.1.1 if it penetrates a fire barrier separate fire-resistive areas of the structure.

Revise ASME A17.1 requirement 2.7.1.1.2 as follows:

2.7.1.1.2 Openings in the machine room enclosure shall be protected with access doors having a fire-protection rating conforming to the requirements of the building code.

Revise ASME A17.1 requirement 2.7.8.1 as follows:

2.7.8.1 Ropes and sheaves leading to the remote machine room that penetrate separate fire-resistive areas of the structure fire barriers shall be fully enclosed, and the enclosures shall conform to 2.1.1.1.
Revise ASME A17.1 requirement 2.11.14.1(a) as follows:

(a) the fire-protection rating of entrances and doors shall be determined in accordance with the requirements specified in the NBCC (CAN4-S104);

Revise ASME A17.1 requirement 2.11.19 as follows:

2.11.19 Gasketing of Hoistway Entrances
Where gasketing material is applied to fire-resistive entrances with a fire-protection rating, it shall conform to 2.11.19.1 through 2.11.19.4.

Revise ASME A17.1 requirement 5.1.8.1 as follows:

5.1.8.1 Hoistway Door Vision Panels. Inclined elevators not required to have fire-resistive enclosures (see 5.1.2.2), hoistway door vision panels are not required to conform to 2.11.7. The hoistway entrances of such elevators may be provided with vision panels of larger size, including complete door panels, made of any materials conforming to 5.1.2.4 and ANSI Z97.1 or 16 CFR Part 1201 or CAN/CGSB-12.1, CAN/CGSB-12.11, and CAN/CGSB-12.12, whichever is applicable.

Revise ASME A17.1 requirement 5.3.1.7.1 as follows:

5.3.1.7.1 Where Required. Where a hoistway enclosure is required, landing openings shall be protected by swinging or sliding doors or gates. Landing openings in solid hoistway enclosures shall be protected the full height by solid swinging or sliding doors. Their fire-protection rating endurance shall not be less than required by the building code (see 1.3). The doors or gates shall be designed to withstand a force of 670 N (150 lbf) applied horizontally over an area, 100 mm by 100 mm (4 in. by 4 in.) in the center of the doors or gates without permanent displacement or deformation.

Revise ASME A17.1 requirement 5.8.1 as follows:

5.8.1.1 Hoistway Enclosures. The hoistway shall be entirely enclosed over all of its height by means of a continuous solid steel fire-resistive enclosure with an equivalent fire-resistance rating of one-hour 1 h as defined in the 1974 Amendment of SOLAS Regulation 3. Elevators with total travel within one compartment of the vessel may be enclosed with expanded metal having openings the maximum of 25 mm (1 in.). The hoistway enclosure shall be of sufficient strength to prevent contact between the enclosure and the car or counterweight when the enclosure is subjected to a force of 112 N (250 lbf) applied at right angles at any point over an area of 100 mm by 100 mm (4 in. by 4 in.).

5.8.1.2 Separate Counterweight Hoistways. The hoistway shall be entirely enclosed over all of its height by means of a continuous solid steel fire-resistive enclosure with an equivalent fire-resistance rating of 1 h as defined in the 1974 Amendment of SOLAS Regulation 3. Where a separate counterweight hoistway is provided on an elevator which has total travel within a single compartment of the vessel, it may be enclosed with expanded metal having openings the maximum of 25 mm (1 in.). The hoistway enclosure shall be of sufficient strength to prevent contact of the car or counterweight and its enclosure when the enclosure is subjected to a force of 112 N (250 lbf) applied at right angles at any point over an area of 100 mm by 100 mm (4 in. by 4 in.).

Revise ASME A17.1 requirement 7.1.1.2 as follows:
7.1.1.2 Requirement 2.1.2.1 does not apply. Where a hoistway extends into the top floor of a building, fire-resistant hoistway or machinery space enclosures, where required, shall be constructed in accordance with the requirements of the building code (see 1.3).

Revise ASME A17.1 requirement 7.9.1.1 as follows:

7.9.1.1 Requirement 2.1.1.1. Cutouts are permitted in doors for the accommodation of the automatic transfer device. Cutouts shall be of minimum area to accommodate the transfer mechanism, and if not substantially filled with a fire-resistive automatic transfer device when the hoistway doors are in the fully closed position, the cutout area shall be covered by a shield that will automatically seal the cutout area and maintain the fire-resistance protection rating of the hoistway entrance assembly.

Revise ASME A17.1 requirement 8.3(a)(4) as follows:

(4) entrance fire-type tests as required by 2.11 (see 8.3.4);

Revise ASME A17.1 requirement 8.10.2.2.2(a)(2) as follows:

(2) Door fire-protection rating (2.7.1.1)

Revise ASME A17.1 requirement 8.10.2.2.3(w)(3) as follows:

(3) Hoistway door fire-protection rating marking or labels (2.1.1.1.3 and 2.11.15.1)

REASONS:
1. Harmonize terminology with the building codes (IBC, NFPA – 5000, and NBCC).
2. Define term (fire-protection rating) currently used in the code.
3. Revise terminology to correlate with definitions.
2.2.4 Pit Access to Pits
Safe and convenient access shall be provided to all pits, and shall conform to 2.2.4.1 through 2.2.4.6.

2.2.4.1 Access shall be by means of the lowest hoistway door or by means of a separate pit access door.

2.2.4.2 There shall be installed in the pit of each elevator, where the pit extends more than 900 mm (35 in.) below the sill of the access door (lowest hoistway door or separate pit access door), a fixed vertical ladder of noncombustible material, located within reach of the access door. The ladder is permitted to be retractable or non-retractable. Non-retractable ladders, where provided, shall conform to 2.2.4.2.1 through 2.2.4.2.6. Retractable ladders, where provided, shall conform to 2.2.4.2.1 through 2.2.4.2.3 and 2.2.4.2.5 through 2.2.4.2.8. When in the extended position, retractable ladders shall conform to 2.2.4.2.4.

2.2.4.2.1 The ladder shall extend not less than 1 200 mm (48 in.) above the sill of the access door or handgrips shall be provided to the same height.

2.2.4.2.2 The ladder rungs, cleats, or steps shall be a minimum of 400 mm (16 in.) wide. When unavoidable obstructions are encountered, the width shall be permitted to be decreased to less than 400 mm (16 in.). The reduced width shall be as wide as the available space permits, but not less than 225 mm (9 in.).

2.2.4.2.3 The ladder rungs, cleats, or steps shall be spaced 300 mm (12 in.) ± 13 mm (0.5 in.) on center, shall be provided to no less than the height of access door sill and shall be designed to minimize slipping (e.g. knurling, dimpling, coating with skid resistant material, etc.)

2.2.4.2.4 A clear distance of not less than 180 mm (7 in.) from the centerline of the rungs, cleats, or steps to the nearest permanent object in back of the ladder shall be provided. When unavoidable obstructions are encountered, the distance shall be permitted to be reduced to 115 mm (4.5 in.).

2.2.4.2.5 Siderails Side rails, if provided, shall have a clear distance of not less than 115 mm (4.5 in.) from their centerline to the nearest permanent object. The nearest point of the ladder shall be within 1 000 mm (39 in.), measured horizontally from the means to unlock the egress door from the pit.

2.2.4.2.6 The ladder and its attachments shall be capable of sustaining a load of 135 kg (300 lb).

2.2.4.2.7 Retractable ladders that are in the line of movement of the car or counterweight when not fully retracted, shall operate a retractable ladder electrical device (see 2.26.2.38) that shall cause the power to be removed from the elevator driving machine motor and brake unless the ladder is in its fully retracted position.

2.2.4.2.8 Retractable ladders shall be capable of being extended, mechanically secured and unsecured, and retracted from the access door; and:
   (a) the force(s) required to extend a retractable ladder from the fully retracted position to the extended and mechanically secured position shall not exceed 220 N (50 lbf);
   (b) after being extended and mechanically secured, a retractable ladder shall remain secured in the extended position when subjected to a horizontal force not to exceed 2 220 N (500 lbf);
   (c) the force(s) required to retract a retractable ladder from its extended position to its fully retracted position, after being unsecured, shall not exceed 220 N (50 lbf);
   (d) the ladder shall be mechanically secured when in the retracted position.

2.2.4.3 Pit access by a ladder shall not be permitted when the pit floor is more than 3 000 mm (120 in.) below the sill of the access door except where there is no building floor below the bottom terminal landing, this height shall be permitted to be greater but not more than 4 200 mm (165 in.).
2.2.4.3.4 Pits shall be accessible only to elevator personnel.

2.2.4.4.5 Separate pit access door, when provided, shall be subject to the following requirements:
   (a) If the door swings into the pit, it shall be located so that it does not interfere with moving equipment.
   (b) If the door swings out, and the lowest structural or mechanical part, equipment, or device installed beneath the car platform, except guide shoes or rollers or safety jaw assemblies, projects below the top of the separate pit access door opening when the car is level with the bottom terminal landing
      (1) an electric contact conforming to 2.26.2.26 shall be provided to prevent operation of the elevator when the door is open; and
      (2) the door shall be provided with a vision panel(s) that is glazed with clear wired glass not less than 6 mm (0.25 in.) thick, will reject a ball 150 mm (6 in.) in diameter, and have an area of not more than 0.03 m² (47 in.²).
   (c) The door shall provide a minimum opening of 750 mm (29.5 in.) in width and 1 825 mm (72 in.) in height.
   (d) The door shall be equipped with a barrier conforming to 2.11.1.2(i), where the door sill is located more than 300 mm (12 in.) above the pit floor.
   (e) The door shall be self-closing and provided with a spring-type lock arranged to permit the door to be opened from inside of the pit without a key. Such doors shall be kept closed and locked. The key shall be of Group 1 Security (see 8.1).

2.2.4.6 Means to unlock the access door from inside the pit shall be provided. The means shall be located:
   (a) when no pit ladder is provided - not more than 1 825 mm (72 in.) vertically above the pit floor;
   or
   (b) when a pit ladder is provided - not more than 1 825 mm (72 in.) vertically above a rung, cleat or step. The minimum distance from the top rung, cleat or step to the top of the pit ladder or handhold shall not be less than 1200 mm (48 in.), (2.2.4.2.1) (See Appendix?, Fig. 2.2.4.6); and
   (c) with the door in the closed position, in a plane not more than 1 000 mm (39 in.) horizontally from a rung, cleat or step of the pit ladder (See appendix ?, Fig. 2.2.4.6).

2.26.2.38 Retractable ladder electrical device. An electric contact conforming to the following shall be provided where required by 2.2.4.2.7.
   (a) be positively opened by a device attached to and operated by the ladder;
   (b) not utilize mercury tube switches.
**REASON:** Clarification of pit access requirements, including requirements for egress from a pit.

Add requirements for retractable ladders and remove permission to provide reduced clearance behind the ladder rungs.

Add structural requirements based on OSHA.
2.8.2.3.4 Revise

2.8.2.3.4 In jurisdictions not enforcing the NBCC, when sprinklers are installed not more than 600 mm (24 in.) above the pit floor, requirements 2.8.2.3.4(a) and (b) apply to elevator electrical equipment and wiring in the hoistway located less than 1 200 mm (48 in.) above the pit floor, all electrical equipment, except earthquake protective devices conforming to 8.4.10.1.2(d), and on the exterior of the car at the point where the car platform sill and the lowest landing hoistway door sill are in vertical alignment located less than 1 225 mm (48 in.) above the pit floor, shall be

(a) Elevator electrical equipment shall be weatherproof (Type 4 as specified in NEMA 250.4). 

(b) Elevator wiring, except traveling cables, shall be identified for use in wet locations in accordance with the requirements in NFPA 70.

Add to Section 9.2

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National Electrical Manufacturers Association
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Rosslyn, VA 22209
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REASON: To clarify the requirements for electrical equipment on the car when sprinklers are provided in the pit.
Rule 2.12.2.4.6
The locking member shall not disengage when the door is subjected to a repetitive force of 450N (100lb) in the direction of opening and at a right angle.

Rule 2.12.3.4.5
The locking member shall not disengage when the door is subjected to a repetitive force of 450N (100lb) in the direction of opening and at a right angle.

Rationale: This requirement was added to B44 some 15 plus years ago in reaction to one interlock that is no longer in production. It became part of A 17 during harmonization. The requirement is not field verifiable, and no attempt to do so has ever been part of inspection procedures in Canada or the US, with no resultant reported incidents.

Any interlock that would violate this requirement or the current B44 requirement, which requires a force in any direction, would also not be in compliance with one or more of the following requirements:

1 - Section 1.3 – the definition of ‘Hoistway Door Interlock’
2 – 2.11.11.5.8 – means to prevent opening of locked doors
3 - 2.12.2.4.1 - ...Electrical contact bridging means shall withstand a separating force of 200N (45 lbs) in any direction...
4 - 2.12.2.4.3. - Interlock shall lock the door in the closed position with a minimum engagement of 7 mm......
5 – 8.3.3.4.5 – Misalignment Type Test
6 – 8.3.3.8 – Static Force Type test

In addition, since this requirement was added into B44, the Interlock Type Tests have been strengthened. They now require a minimum 7mm engagement between locking elements (8.3.3.4.10). The endurance tests for Interlocks have also been strengthened and now include the requirement 960,000 cycles (8.3.3.4.1).

Requirements 2.12.2.4.6 and 2.12.3.4.5 are being deleted as they are not verifiable, or enforceable, and do nothing to improve elevator safety.
TN 03-1127

Add the following NOTE at end of 2.27.3:

NOTE (2.27.3): When the structure (building, etc.) is located in a flood hazard area, the alternate and designated levels (See 8.12.1) should be above the base flood elevation.

Revise 2.27.3.1.6(l) as follows:

(l) Means used to remove elevators from normal operation, other than as specified in this Code, shall not prevent Phase I Emergency Recall Operation except:

(1) as specified in this Code;
(2) as controlled by elevator personnel;

Revise 2.27.3.3.1(i) as follows:

(i) Floor selection means shall be provided in the car to permit travel to all landings served by the car, and they shall be operative at all times, except as in 2.27.3.3.2 and 8.12.1. Means to prevent the operation of the floor selection means or door-operating buttons shall be rendered inoperative.

Revise 2.27.3.3.1(k) as follows:

(k) Means used to remove elevators from normal operation, other than as specified in this Code, shall not prevent Phase II Emergency In-Car Operation except:

(1) as specified in this Code;
(2) as controlled by elevator personnel;

Rationale:
1) Clarification of the requirements in 2.27.3.1.6(l) and 2.27.3.3.1(k) that service tools, etc. used by elevator personnel are not now addressed by these requirements.
2) Coordination with building code flood plane requirements. Elevator, even on Phase II, should not travel below base flood elevation when flooding is taking place.
3) See TN 02-02296 for proposed reference to Section 8.12, Flood Resistance.
Editorially revise:

2.21.4.1 Connections. The connections shall be provided between the car or counterweight and the compensation means. The connection shall be bolted or welded and shall conform to 2.15.7.3.

2.21.4.2 Tie-Down Compensation Means. For rated speeds greater than 3.5 m/s (700 ft/min), a tie-down compensation means device shall be provided and fastened to the building structure to limit the jump of the car or counterweight as a result of car or counterweight buffer engagement or safety application. The device components, compensation means, connection, building structural members, and fastenings, shall be capable of withstanding with a factor of safety of not less than 2.5 the maximum forces to which they are subjected due to car or counterweight buffer engagement or safety application with a factor of safety of not less than 2.5.

Rationale: Editorial.
Proposed revision to A17.1, requirement 8.7.6.1.5:

8.7.6.1.5 Construction Requirements

(a) Angle of Inclination. No alteration of an escalator shall change the angle of inclination, as originally designed, by more than 1 deg.

(b) Geometry. Any alteration to the geometry of the escalator components shall require conformance with 6.1.3.2.

(c) Balustrades. Any alteration to the balustrades shall require conformance with 6.1.3.3 for the altered components.

(d) Skirt Deflector Devices. The installation of a skirt deflection device shall not require any other alteration to the balustrades. Skirt deflector devices shall comply with 6.1.3.3.8. Any alteration or addition of skirt deflector devices shall conform to 6.1.3.3.10.

NOTE [8.7.6.1.5(c)]: The balustrade does not include the handrail.

NOTE [8.7.6.1.5(d)]: The vertical dimensions on existing skirt panels may not allow full compliance. See 1.2.

Reason: Clarification of the Committee’s original intent. [Note: The proposal is based on the approved TN 03-1505.]
Revise the following requirement of A17.1:

5.3.1.8.1 Car Enclosure

(a) Car Enclosure Required. Except at entrances, cars shall be enclosed on all sides and on the top. The enclosure shall be constructed of solid or of openwork material which will reject a ball 13 mm (0.5 in.) in diameter.

(b) Securing Enclosures. Car enclosures shall be secured in conformance with 2.14.1.2 and 2.14.1.3.

(c) Glass, Plastic, or Acrylics in Elevator Cars. Glass, plastic, or acrylics, where used in elevator cars, shall conform to the following:
   (1) if of glass, it shall meet the requirements of 2.14.1.8;
   (2) if of plastic or acrylic, it shall meet the requirements of ANSI Z97.1, 16 CFR Part 1201, or CAN/CGSB-12.1, CAN/CGSB-12.11, and CAN/CGSB-12.12, whichever is applicable.

(d) Car Top Mounted Machine or Controller. Where the machine or its enclosed controls are located on top of the car
   (1) they shall be protected by a solid noncombustible enclosure;
   (2) the car top enclosure shall be designed and installed in conformance with 2.14.1.6;
   (3) a top-of-car operating device shall be provided in conformance with 2.26.1.4.2;
   (4) access shall be provided to the machine or controls for maintenance. Access panels located in the car shall be provided with an electric contact and lock. The access panel shall be kept closed and locked. The electric contact shall be designed to prevent operation of the machine when the access panel is open. The lock shall not be operable by a key which will operate locks or devices used for other purposes.

(d) Access Panels for Elevator Equipment Outside of the Car. Equipment access panels in the car for access to equipment outside the car shall comply with 2.7.5.1.4.

Add requirement 5.3.1.16.2(j) to A17.1.

(j) Car Top Mounted Machine or Controller. Where the machine or its controls are located on top of the car:
   (1) they shall be protected by a solid noncombustible enclosure;
   (2) the car top enclosure shall be designed and installed in conformance with 2.14.1.6;
   (3) a top-of-car operating device shall be provided in conformance with 2.26.1.4.2;
   (4) access shall be provided to the machine or its controls for maintenance. Access panels shall conform to 5.3.1.8.1(d).

Rationale: To provide clarification and adequately address the panel requirements. Note, the reference to 2.7.5.1.4 is found in A17.1S-2005.
TN 03-1599

Add requirement 5.3.1.7.8 to A17.1.

5.3.1.7.8 Power Operation of Hoistway Doors and Gates. Power opening shall be permitted for hoistway doors and gates and shall conform to 2.13.2.2.1 and 2.13.2.2.2. Power closing shall be permitted for hoistway doors and gates and shall conform to 2.13.3.2 through 2.13.4 and 2.13.6.

Revise A17.1, requirement 5.3.1.8.2(a) as follows:

(a) Power Operation of Car Doors and Gates. Power opening, where used shall be permitted for car doors and gates, and shall conform to 2.13.2.1 and 2.13.6. Power closing, where used shall be permitted for car doors and gates, and shall conform to 2.13.3 through 2.13.6.

Rationale: To clarify the requirements for power door operation.
TN 03-1600

Add requirement 5.3.1.16.5

5.3.1.16.5 Traction machines. Traction machines shall be provided with a suspension means retainer or restraint on the drive sheave conforming to one of the following:

(a) Suspension Means Retainers: Suspension means retainers shall be continuous over not less than two-thirds of the arc of contact between the suspension means and its sheave or drum and shall be so located that not more than one sixth of the arc of contact is exposed at each end of the retainer. For double-wrap traction applications the arc of contact for sheaves or drums shall be that length of arc that is uninterrupted by the entry/exit of the suspension means leading to/from the car or counterweight.

(b) Suspension Means Restraints: One suspension means restraint, where the arc of contact is 30 degrees or less, shall be located at the midpoint of the arc of contact, or; where the arc of contact exceeds 30 degrees suspension means restraints shall be provided at intervals not exceeding 30 degrees of arc along the arc of contact and at each end of the arc of contact.

Rationale: To prevent suspension means disengagement.
Place the definition of "chain-hydraulic drive machine" under "drive machine, hydraulic.

**machine, driving:** the power unit that applies the energy necessary to drive an elevator or other equipment covered by the scope of this Code.

**driving machine, hydraulic:** a driving machine in which the energy is provided by a hydraulic machine and applied by a hydraulic jack.

**chain-hydraulic drive machine:** a hydraulic driving machine in which the drive member of the hydraulic jack is connected to the car by chains or indirectly coupled to the car by means of chains and sprockets.

Revise A17.1, requirement 5.3.1.16.2(a) as follows:

(7) chain-hydraulic (see requirement 5.3.2).

Revise A17.1, requirement 5.3.2.2 as follows:

5.3.2.2 Driving Machines, Sheaves, and Supports for Direct-Plunger, and Roped-Hydraulic and Chain-Hydraulic Driving Machines.

5.3.2.2.1 Direct-plunger, and roped-hydraulic and chain-hydraulic private residence elevator driving machines, valves, supply piping, fittings, and tanks shall conform to 3.18, 3.19, and 3.24, except as modified in 5.3.2.

5.3.2.3 Terminal Stopping Devices. Direct-plunger, and roped-hydraulic and chain-hydraulic private residence elevator terminal stopping devices shall conform to 3.25, except as specified in 3.25.2.

Rationale: Requirement 5.3.1.16.2 allows for chain drive but does not explicitly allow a chain in combination with a hydraulic drive.
Revise A17.1 requirements 8.7.3.23.1, 8.7.3.23.2 and 8.7.3.23.3 as follows:

**8.7.3.23.1 Hydraulic Jack.** Where the alteration involves the installation of a hydraulic jack, it is installed, altered or replaced it shall conform to 3.18.

**8.7.3.23.2 Plungers.** Where a new plunger is installed as part of an alteration or an existing plunger is altered, it shall conform to 3.18.1.2 and 3.18.2.

**8.7.3.23.3 Cylinders.** Where a cylinder is installed, replaced as part of an alteration, altered, or sleeved, it shall conform to 3.18.3. If the plunger is not equipped with a stop ring conforming to 3.18.4.1, the installation shall also conform to 3.18.1.2 and 3.18.2.

**Reason:**

Requirement 8.6.3.10 identifies replacement of jacks, plungers, and cylinders as an alteration and referred to 8.7.3.23. This proposed change clarifies the need to comply with existing requirements even though the replacement is not “part of an alteration”. (See new proposed definition in TN 02-3899 for “Alteration as part of – A repair and/or replacement that is included with other work that is classified as an alteration”)


Add New Definition to A17.1

manually (manual) reset, elevator:
a) type or feature of an elevator part or component which, when actuated, requires intervention of a person in order to reinstate it to its non-actuated state
b) type of action required to be taken by a person to reinstate an elevator part or component from an actuated state to its non-actuated state.

Rationale: As a result of Inquiry 01-16, this technical revision was opened to clarify the requirements with regard to “manual reset, elevators”, by developing a definition.
2.27.3 Firefighters’ Emergency Operation — Automatic Elevators
Firefighters’ Emergency Operation shall apply to all automatic elevators except
(a) where the hoistway or a portion thereof is not required to be fire-resistive construction (see 2.1.1.1),
the travel does not exceed 2,000 mm (80 in.), and the hoistway does not penetrate a floor;
(b) in jurisdictions enforcing the NBCC where the NBCC does not require Firefighters' Emergency Operation.
Where Firefighters’ Emergency Operation is provided voluntarily these requirements shall also apply.

2.27.3.2.2
In jurisdictions enforcing the NBCC, automatic Emergency Recall Operation shall be permitted when the following devices, smoke detectors, or, if applicable, the building fire alarm system (fire alarm initiating devices), used to initiate Phase I Emergency Recall Operation, shall be installed in conformance complying with the requirements in the NBCC, initiate the operation and shall be located in:
(a) smoke detectors installed in each elevator lobby, or the building fire alarm system; and smoke detectors installed in the elevator lobby at the designated level, if that floor area is not sprinklered throughout;
(b) smoke detectors installed in the elevator lobby at the designated level, if that floor area is not sprinklered throughout; and
(c) smoke detectors installed in the machine room if the machine room is sprinklered.

NOTE (2.27.3.2.2) Fire alarm initiating devices are referred to as fire detectors in the NBCC.

2.27.3.2.3 Phase I Emergency Recall Operation to the designated level shall conform to the following:
(a) No change
(b) The activation of a fire alarm initiating device specified in 2.27.3.2.1(b) or 2.27.3.2.2(c) shall cause all elevators having any equipment located in that machine room, and any associated elevators of a group automatic operation, to be returned nonstop to the designated level. If the machine room is located at the designated level, the elevator(s) shall be returned nonstop to the alternate level.
(c) In jurisdictions not enforcing NBCC, the activation of a fire alarm initiating device specified in 2.27.3.2.1(c) or, in jurisdictions enforcing NBCC, the initiation of a fire detector in the hoistway, shall cause all elevators having any equipment in that hoistway, and any associated elevators of a group automatic operation, to be returned nonstop to the designated level, except that initiating device(s) installed at or below the lowest landing of recall shall cause the car to be sent to the upper recall level.

Rationale: The B44 Committee reviewed proposed revisions to 2.27.3 and 2.27.3.2.2 at its 2003 Annual Meeting and voted to submit the proposals to the A17 Emergency Operations Committee to try to harmonize the requirements for mandatory Automatic Recall and Phase 2 operation.
TN 03-1856

Revise A17.1, requirement 5.3.1.1 as follows:

5.3.1.1 Construction of Hoistway and Hoistway Enclosures. The hoistway shall be solidly enclosed throughout its height without grillwork or openings other than for landing or access doors, except that any exterior windows within the hoistway shall be protected by metal grillwork. Grillwork shall reject a ball 76 mm (3 in.) in diameter and shall be securely fastened from the inside of the hoistway. Enclosures shall be of sufficient strength to support in true alignment the hoistway doors and gates and their locking equipment. The fire resistance rating shall be in accordance with the requirements of the building code.

Rationale: The current text does not include any criteria for the grillwork and the term is not defined anywhere in the standard.
TN 03-1858

Add the following requirement to A17.1:

5.3.1.7.9 Landing-Sill Guards. Where the elevator is equipped with a two-way leveling device or anti-creep device, and the hoistway landing sill projects into the hoistway a landing-sill guard shall be provided conforming to the following:

(a) It shall have a straight vertical face extending below the sill not less than the depth of the zone where the hoistway door is unlocked below the landing sill plus, 50 mm (2 in.).

(b) It shall extend the full width of the car sill exposed to the landing entrance; and

(c) It shall be securely braced and fastened in place to withstand a force of 670 N (150 lbf) applied horizontally over an area, 100 mm by 100 mm (4 in. by 4 in.) in the center of the guard without permanent displacement or deformation.

Rationale: When equipped with a two-way leveling device or anti-creep device, the elevator is allowed to re-level with the car door or gate open. This creates a possible shear hazard if the hoistway side door sill/wall are not smooth and continuous for the depth of the zone where the car can re-level below the landing sill.

Note: Requirement number is coordinated with TN 03-01599.
TN 03-1932

Proposed Revision to A17.1:

8.10.5.2 Private Residence Elevators and Lifts. Private residence elevators and lifts shall be subject ….

8.11.5.2 Private Residence Elevators and Lifts. Private residence elevators and lifts should be subject ….

Rationale: Private residence Lifts are now covered in ASME A18.1, not ASME A17.1.
Revise Section 8.1:

SECTION 8.1
SECURITY

8.1.1 General

Key(s) used to access or operate elevator, escalator, moving walk, dumbwaiter and material lift equipment shall conform to the following:

(a) Keys shall not operate any other device or lock in the building used to open any other lock in the building shall not access or operate the devices classified as Security Group 1, 2, 3, or 4.

(b) The same key shall be permitted to access or operate all of the devices within only one assigned group (Section 8.1.2, 8.1.3, 8.1.4, or 8.1.5), and not those in any other group except as indicated in Section 8.1.1(c).

(c) The keys for Group 1 devices shall also be permitted to operate Group 2, 3, and 4 devices. The keys for Group 2 devices shall be permitted to operate Group 3 and 4 devices.

(d) Keys shall be kept on the premises in a location readily accessible to the personnel in the assigned group, but not where they are accessible to the general public.

(e) Elevator personnel shall have access to all assigned groups.

8.1.2 Group 1: Restricted

Group 1 covers access or operation of equipment restricted to elevator personnel, except as noted. This key shall not be part of a master key system.

Note (8.1.2): See the following:

(a) Requirement 2.2.4.4(e), pit access doors
(b) Requirement 2.7.3.4.3(c), hoistway access doors
(c) Requirement 2.11.1.2(h), emergency access doors
(Shall also be made available to emergency personnel during an emergency)
(d) Requirement 2.12.6.2.4, hoistway door unlocking device operating means
(Shall also be made available to emergency personnel during an emergency)
(e) Requirement 2.12.7.2.2, hoistway access switch
(f) Requirement 2.12.7.3.3, hoistway access enabling switch or its locked cover
(g) Requirement 2.26.1.4.3(b), in-car inspection operation transfer switch
(h) Requirement 2.26.2.21, in-car stop switch or its locked cover
(i) Requirement 4.2.5.2, screw machine controllers located away from hoistway, machine room, or machinery space
(j) Requirement 4.2.5.5, screw machine access panels
(k) Requirement 5.1.10.1(b), inclined elevator hoistway access switch
(l) Requirement 5.1.11.1.2(d), inclined elevator uphill end emergency exit
(m) Requirement 5.7.8.3, access to hoistways 
(n) Requirement 7.1.12.4, power and hand dumbwaiters without automatic transfer devices hoistway access switch
(o) Requirement 7.9.2.15, electric material lifts with automatic transfer devices car-mounted operating devices
8.1.3 Group 2: Authorized Personnel

Group 2 covers access or operation of equipment by authorized and elevator personnel.

NOTE (8.1.3): See the following:
(a) Requirement 2.7.3.4.1(d), machine room access door
(b) Requirement 2.11.1.4, access openings for cleaning of car and hoistway enclosures
(c) Requirement 2.14.2.6(b), access openings for cleaning of car and hoistway enclosures
(d) Requirement 2.14.7.2.1(b), car light control switch or its locked cover
(e) Requirement 5.6.1.25.2(b), rooftop elevator keyed operation switch
(f) Requirement 6.1.6.2.1(d), escalator starting switch
(g) Requirement 6.1.7.3.3, escalator side access door to interior
(h) Requirement 6.2.6.2.1(d) moving walk starting switch
(i) Requirement 6.2.7.3.3, moving walk side access door to interior


Group 3 covers access or operation of equipment by firefighters and emergency, authorized, and elevator personnel. This key shall not be part of a master key system.

NOTE (8.1.4): See the following:
(a) Requirement 2.27.2.4.1 and 2.27.8, emergency or standby power access selector switch
(b) Requirement 2.27.3.1.1 and 2.27.8, Phase I emergency recall operation switch
(c) Requirement 2.27.3.3 and 2.27.8, Phase II emergency in-car operation switch
(d) side emergency exit doors on existing equipment

8.1.5 Group 4: Other

Group 4 covers access or operation of equipment not classified as Groups 1, 2, or 3.

Note (8.1.5): See the following:
(a) Requirement 5.3.1.18.3, private residence elevator key-operated switch for exterior operation
(b) Requirement 5.3.1.18.3, private residence inclined elevator keyed operation switch

Revise 2.2.4.4(e):

The door shall be self-closing and provided with a spring-type lock arranged to permit the door to be opened from inside the pit without a key. Such door shall be kept closed and locked. A key shall be required to unlock the lock from outside the hoistway. The key shall be of Group 1 Security (see 8.1).

Revise 2.12.6.2.4:

The operating means for hoistway door unlocking device shall be Group 1 Security (see 8.1). The operating means shall also be made available to emergency personnel during an emergency.

Revise 2.11.1.4:

Nonremoveable sliding or swinging panels … closed and locked. Keys used to unlock the access panels or doors shall be Group 2 Security (see 8.1).
RATIONALE:

(1) Section 8.1 only permits keys for access or operation of equipment. Combination locks do not provide equivalent security as the combination can easily be disseminated.

(2) There is no safety hazard if a key used for an elevator device also can open other locks in the building. In fact, it could be very helpful to maintenance or inspection personnel. The hazard is when a key used for other locks in the building can access or operate elevator devices.

(3) To indicate that more than one type of personnel can use the devices in Groups 2 and 3. Also, there is no definition of firefighters’ personnel but only emergency personnel is defined, which includes firefighters.

(4) To permit the use of sub-key and similar security systems. These systems are widely used by building owners and managers, offer excellent security by restricting access to certain security clearances, are flexible by allowing those with higher security clearance access to lower security areas but not the reverse, and restrict the copying of keys.

(5) To add security requirements for side emergency exits on existing elevators

(6) To clarify that higher security personnel can have access to lower security keys

(7) To specifically include locked covers for operating devices

(8) To standardize the lock requirements

(9) General clarification
TN 03-1934

Revise the definition of observation elevator:

_Elevator observation_: an elevator designed to that permits exterior viewing by passengers while the car is traveling.

RATIONALE:

Clarification
Propose that requirement 2.27.3.3.4 be modified as follows:

2.27.3.3.4 When the car is stopped with the doors in the closed position, or in motion, and the “FIRE OPERATION” switch is in the “OFF” position, the elevator remains on Phase II Emergency In-Car Operation and shall return to the designated recall level in conformance with 2.27.3.1.6(a) through (m) and 2.27.3.2.5.

Rationale: If Phase I had been activated by the fire alarm initiating device at the designated level, the car should not return to that level unless it was overridden by the fire recall switch(es).
SECTION 3.14, CAR ENCLOSURES, CAR DOORS AND, GATES, AND CAR ILLUMINATION

Car enclosures, car doors and gates, and car illumination shall conform to 2.14 except 2.14.2.3.3(b) does not apply where the elevator conforms to the requirements of 3.26.10.

Rationale: To exclude new requirements added to the hoistway section with regard to auxiliary power since auxiliary power issue is addressed for hydraulics under requirement 3.26.10
Revise A17.1, requirement 8.6.1.6.3 as follows:

8.6.1.6.3 Controllers, Wiring, and Wiring Diagrams

(d) When jumpers are used during maintenance, repairs, or testing, all jumpers shall be removed and the equipment tested prior to returning it to service. Jumpers shall not be stored in machine rooms, control rooms, hoistways, machinery spaces, control spaces, escalator/moving walk wellways, or pits (see also 8.6.1.6.1).

Note [8.6.1.6.3(d)]: See “Elevator Industry Field Employees’ Safety Handbook” for jumper control procedures.

Add the following to Part 9, Reference Documents:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Standard</th>
<th>Publisher</th>
<th>Applicable to</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Elevator Industry Field</td>
<td>Elevator World</td>
<td>US, CA</td>
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<tr>
<td></td>
<td>Employees’ Safety</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Handbook</td>
<td></td>
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</tr>
</tbody>
</table>

Reason: To provide a reference for control of jumpers.
Proposed Revision to A17.1, Requirement 6.1.6.7 Step Demarcation Lights (Delete this requirement):

6.1.6.7 Step Demarcation Lights. Green step demarcation lights located below the step shall be located at both landings in an area not to exceed 400 mm (16 in.) from the combplate. There shall be a minimum of two fluorescent lamp fixtures at each landing. The lamps shall be activated whenever the escalator is in operation.

Rationale: Step demarcation lights were required prior to requirement 6.1.3.5.6, which requires yellow demarcation strips at the back and sides of steps. As such, this requirement in conjunction with requirement 6.1.7.2 lighting of escalator steps offsets the need for the step demarcation lights altogether.
Note: This item was approved in LB #04-747 and this proposal only shows the editorial change for your consideration.

Proposed Revision to A17.1:

8.11.3.3.1 Unexposed Portions of Pistons. Piston rods of roped water hydraulic elevators shall be exposed, thoroughly cleaned, and examined for wear or corrosion. The piston rods shall be replaced if at any place the diameter is less than the root diameter of the threads (Item 5.11).

Rationale: To add the word “water”, which was mistakenly omitted during the publication of the A17.1-2000 edition.
Add requirement 8.6.4.18 to A17.1:

8.6.4.18 Compensation Sheaves and Switches

8.6.4.18.1 Suspension and compensation means shall be maintained to prevent the compensation sheave from reaching the upper or lower limit of travel and to prevent unintended actuation of compensation sheave switch(es) during normal operation.

Reason: To establish requirements to maintain proper vertical clearances between the compensating rope sheaves and their limits of travel.
TN 04-704

Revise the following requirements in A17.1:

5.2.1.12 **Hoistway Door Locking Devices and Electric Contacts, and Hoistway Access Switches.** Hoistway door locking devices, hoistway door and car door or gate electric contacts, and hoistway access switches shall conform to 2.12, except as modified by the following:

(a) Requirement 2.12.1.5 does not apply. Combination mechanical locks and electric contacts are not permitted.
(b) Requirement 2.12.2.3(a). Truck zoning devices are not permitted.
(c) Requirement 2.12.3 does not apply.
(d) Requirement 2.12.7.3.2. The car cannot be operated at a speed greater than 0.15 m/s (30 ft/min).
(e) Requirement 2.12.5. The dimension for the unlocking zone shall be not more than the straight vertical face of the platform guard minus 75 mm (3 in.).

5.2.1.13 **Power Operation of Hoistway Doors and Car Doors and Gates.** When provided, power operation, power opening, and power closing of hoistway doors and car doors and gates shall conform to 2.13, except as modified by 5.2.1.13.

(a) Requirement 2.13.1(b) is modified as follows: Power-operated swing hoistway doors shall be permitted with power-operated horizontally operated car doors.
(b) Requirement 2.13.2.2.3 does not apply.
(c) Requirement 2.13.3.4 does not apply.
(d) Requirement 2.13.6 does not apply.

5.2.2.4 **Car Enclosures, Car Doors and Gates, and Car Illumination.** Car enclosures, car doors and gates, and car illumination shall conform to 5.2.1.14.

Rationale: Car gates are not permitted by 5.2.1.14(f).
TN 04-788

Revise requirement 8.6.4.1.3 of A17.1:

8.6.4.1.3 Equal tension shall be maintained between individual ropes in each set. When suspension rope tension is checked or adjusted, an anti-rotation device conforming to the requirements of 2.20.9.8 shall be permitted.

Rationale:
The inclusion of anti-rotation devices is a very important requirement on suspension ropes. The need for this was not included in Code until the A17.1-1993 Codes, but required a single, continuous loop of wire rope. This technique created issues of the rope being tightened and moving the shackle/rope alignment out of plumb. Requirement 8.6.3.3.1(f) allows the performance-based language of requirement 2.20.9.8 as part of a replacement. This modification follows the performance-based language and includes it for re-tensioning of suspension ropes.
<table>
<thead>
<tr>
<th>Item No.</th>
<th>Proposed Revision</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Add to table in preface ABBREVIATIONS USED IN THIS CODE</td>
<td>Preface: Added units for SIL to abbreviations to cover new dimension in the new code.</td>
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<td></td>
<td><strong>Abbreviation</strong></td>
<td><strong>Unit</strong></td>
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<td>SIL</td>
<td>Safety Integrity Level</td>
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<td>2</td>
<td>Add to Definitions 1.3: electrical/electronic/programmable electronic system (E/E/PES): system for control, protection or monitoring based on one or more electrical/electronic/programmable electronic devices, including all elements of the system such as power supplies, sensors and other input devices, data highways and other communication paths, and actuators and other output devices. Ref: IEC 61508 - 4</td>
<td>Add 1.3: Added definitions derived from IEC 61508 that are relevant to an understanding of the text used in the new code.</td>
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<tr>
<td>3</td>
<td>Add to Definitions 1.3: electrical/electronic/programmable electronic (E/E/PE) based on electrical (E) and/or electronic (E) and/or programmable electronic (PE) technology NOTE - The term is intended to cover any and all devices or systems operating on electrical principles. EXAMPLE Electrical/electronic/programmable electronic devices include - electromechanical devices (electrical); - solid-state non-programmable electronic devices (electronic); - electronic devices based on computer technology (programmable electronic). Ref: IEC 61508 - 4</td>
<td>Add 1.3: Added definitions derived from IEC 61508 that are relevant to an understanding of the text used in the new code.</td>
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<td>4</td>
<td>Add to Definitions 1.3: safety integrity level (SIL): discrete level (one out of a possible four) for specifying the safety integrity requirements of the safety functions to be allocated to the E/E/PE safety-related system, where safety integrity level 4 has the highest level of safety integrity and safety integrity level 1 has the lowest. Ref: IEC 61508 - 4</td>
<td>Add 1.3: Added definitions derived from IEC 61508 that are relevant to an understanding of the text used in the new code. In reference to Safety Integrity Level (SIL) included are all causes of failures (both random hardware failures and systematic failures), which lead to an unsafe state, for example hardware failures, software induced failures and failures due to electrical interference.</td>
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<td>Item No.</td>
<td>Proposed Revision</td>
<td>Rationale</td>
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<td>5</td>
<td><strong>Add to Definitions 1.3:</strong> mode of operation</td>
<td>Add 1.3: Added definitions derived from IEC 61508 that are relevant to an understanding of the text used in the new code.</td>
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<td>way in which a safety-related system is intended to be used, with respect to the rate of demands made upon it, which may be either</td>
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<td><strong>low demand mode:</strong> where the frequency of demands for operation made on an electrical safety function is no greater than one per year and no greater than twice the proof-test frequency;</td>
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<td><strong>high demand or continuous mode:</strong> where the frequency of demands for operation made on a safety-related system is greater than one per year or greater than twice the proof-test frequency.</td>
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<td>NOTE - High demand or continuous mode covers those safety-related systems that implement continuous control to maintain functional safety. Ref: IEC 61508 – 4</td>
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<td>6</td>
<td>Add a second paragraph to 2.12.7.3.2:</td>
<td>Added requirement for redundant speed monitoring consistent with the requirement for leveling and releveling and the requirement of 2.26.9.3( c)</td>
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<td>For elevators with static control, an independent means shall be provided to limit the speed of the car on hoistway access to a maximum of 0.75 m/s (150 ft/min), should the normal means to control this speed (mechanical, electrical, or solid state devices) fail to do so.</td>
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<td>7</td>
<td><strong>2.19.1.2 (a)(1)(b)</strong> the occurrence of a single ground, or the failure of any mechanically operated switch that does not meet the requirements of 2.26.4.3.1, any single magnetically operated switch, contactor, or relay, or any single solid-state device, or a failure of a software system, failure not conforming to 2.26.4.3.2, shall not render the detection means inoperative. <strong>2.19.2.2 (a)(1)(b)</strong> the occurrence of a single ground, or the failure of any mechanically operated switch that does not meet the requirements of 2.26.4.3.1, any single magnetically operated switch, contactor, or relay, or any single solid-state device, or a failure of a software system, failure not conforming to 2.26.4.3.2, shall not render the detection means inoperative.</td>
<td>Revised to recognize the application of SIL rated devices. The added new wording in the proposals (underlined), exempts Electrical/Electronic/Programmable Electronic Systems (E/E/PES) used for elevator safety that are SIL rated, certified/listed and labeled/marketed in compliance with A17.1/B44 from the requirements of “not render(ing) the detection means inoperative”. The reason for the exemption is that the SIL rating of the safety device/function already covers this requirement by assuring the</td>
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<td>Rationale</td>
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<td>reliability of the device. If the device/circuitry is certified/labeled and if it is applied in accordance with the Safety Integrity Level (SIL) as indicated for the devices in A17.1, Table 2.26.4.3.2, then such a device is designed to “not render the detection means inoperative” during the service life of the elevator, by meeting the required SIL value as required by A17.1. The SIL value is more stringent than the current A17.1 prescriptive language. SIL’s not only address the requirements for redundancy but also component reliability, common mode failure, and diagnostic coverage not addressed by the current code. See the appended SIL Evaluation Example A and the example in IEC 61508-6 Annex B for further insight.</td>
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<td>8</td>
<td><strong>Add a second paragraph to requirement 2.26.1.4.1(d)(1):</strong> For elevators with static control, an independent means shall be provided to limit the inspection speed to a maximum of 0.75 m/s (150 ft/min), should the normal means to control this speed (mechanical, electrical, or solid state devices) fail to do so.</td>
<td>Added requirement for redundant speed monitoring consistent with the requirement for leveling and releveling and the requirement of 2.26.9.3(c).</td>
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<td>9</td>
<td><strong>2.26.4.3</strong> The devices covered by 2.26.2 shall meet the requirements of either 2.26.4.3.1 or 2.26.4.3.2:** 2.26.4.3.1 They shall have contacts that are positively opened mechanically; their opening shall not be solely dependent on springs. Exceptions are devices described by 2.26.2.4, 2.26.2.19, 2.26.2.29, and 2.26.2.30; and 2.26.2.12 and 2.26.2.16 where magnetically operated, optical, or static-type switches are used.</td>
<td><strong>2.26.4.3.1:</strong> New subparagraph to 2.26.4.3. Same as present requirements in 2.26.4.3.</td>
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<td>10</td>
<td><strong>2.26.4.3.2</strong> They shall be listed/certified and labeled/marked to a SIL rating in accordance with the applicable requirements of IEC 61508-2 and IEC 61508-3 with a SIL rating equal to or greater than the SIL indicated for the applicable device shown in Table 2.26.4.3.2. The detection of a dangerous fault (e.g. with diagnostic tests, proof-tests or by any other means) in SIL rated E/E/PES that can tolerate a single fault shall cause the elevator to revert to a known fail-safe condition. Where necessary, to maintain the integrity of the SIL rated E/E/PES and maintain the fail-safe condition prior to a second fault that could lead to a dangerous condition, a manual reset shall be required to remove the SIL rated E/E/PES from the fail-safe condition.</td>
<td><strong>2.26.4.3.2:</strong> IEC 61508 has been conceived with a rapidly developing technology in mind; the framework is sufficiently robust and comprehensive for future developments. Computer-based systems (generically referred to as programmable electronic systems (ELECTRICAL/ELECTRONIC/PROGRAMMABLE ELECTRONIC SYSTEMS) are being used for elevator design to perform non-safety functions and, increasingly, are being used to perform safety functions. IEC 61508 sets out a generic approach for all safety lifecycle activities (e.g. from initial concept, through design, implementation, operation and...</td>
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<td>Item No.</td>
<td>Proposed Revision</td>
<td>Rationale</td>
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<td>11</td>
<td>2.26.8.2 Two means devices shall be provided to independently remove power from the brake. The electrical protective devices required by 2.26.2 shall control both means, except that leveling shall be permitted to take place with power opening of doors and gates in conformance with 2.13.2.1.1 and 2.13.2.2.1. One of the means shall be either a contactor, or an E/E/PES with a SIL of no less than the highest SIL of the function for the electrical protective devices involved with removing power from the brake and shall be listed/certified and labeled/marked for compliance with the applicable requirements of IEC 61508-2 and IEC 61508-3. This means is not required to remove power from the driving machine motor. If the brake circuit is ungrounded, all power feed lines to the brake shall be opened. Power shall be interrupted at all power feed lines to the brake.</td>
<td>maintenance to end of life) for systems comprised of electrical and/or electronic and/or programmable electronic components (E/E/PESs) that are used to perform safety functions. Measures for demonstration of SIL rating are prescribed in Parts 2 and 3 of IEC 61508. Typically elevator safety is achieved by a number of protective systems, which rely on many technologies (e.g. mechanical, hydraulic, pneumatic, electrical, electronic, programmable electronic). Therefore safety strategies for such devices as EPD’s must consider not only the elements within it (e.g. sensors, controlling devices and actuators), but also all the safety-related systems making up the total combination of safety related systems. IEC 61508 uses safety integrity levels (SILs) for specifying the target level of safety integrity for safety functions to be implemented (e.g. EPD’s) by the E/E/PES safety-related systems. Default to fail-safe state where an internal fault is diagnosed is specified. 2.26.8.2: To properly locate the requirements for the brake circuit in rules 2.26.9.5 and 2.26.9.6 and permit the application of E/E/PES (also see rationale for 2.26.9.3(a).</td>
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<tr>
<td>Item No.</td>
<td>Proposed Revision</td>
<td>Rationale</td>
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<tr>
<td>12</td>
<td><strong>2.26.9.3</strong> The occurrence of a single ground or the failure of any single</td>
<td><strong>2.26.9.3:</strong> To address the application of E/E/PES in control and operating circuits</td>
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<td>magnetically operated switch, contactor, or relay, or any single device that</td>
<td>including related wiring (see also rationale for 2.26.9.4). The safety</td>
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<td>limits the leveling or truck zone, or any single solid-state device not a part</td>
<td>integrity level of these circuits must be at least as high as the highest SIL rating of</td>
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<td>of a software system; or a failure of a software system failure in circuits not</td>
<td>any of the requirements in Table 2.26.4.3 applied to those circuits irrespective of</td>
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<td>in conformance with 2.26.9.4(b), shall not</td>
<td>whether or not an E/E/PES electrical</td>
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<td>protective device is actually used in that circuit. Also see Diagram 1 of the</td>
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<td>Committee Record. Application of the measures of IEC 61508 already takes into account</td>
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<td>failure modes and design process / requirements, including redundancy, necessary to assure</td>
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<td>within a confidence level the required reliability and safety integrity of E/E/PES</td>
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<td>components. The SIL rating addresses the failure requirements for the software</td>
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<td>system. A software system in conformance with the proposed</td>
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<td>requirements will be certified to meet performance requirements for reliability.</td>
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<td>not presentably called for by the present code. This new requirement assures the</td>
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<td>intent of 2.26.9.3 is met by a software system for both failure mode and</td>
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<td>intended reliability. The purpose of the</td>
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<td>risk analysis used was to establish the required reliability and replace the</td>
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<td>prescriptive requirements in the current code with performance based</td>
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<td>requirements.</td>
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<td>See also 7.6.2.10 of IEC 61508-1</td>
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<td>“7.6.2.10 For an E/E/PE safety-related</td>
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<td>system that implements safety functions of different safety integrity levels, unless</td>
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<td>it can be shown there is sufficient</td>
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<td>independence of implementation between</td>
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<td>these particular safety functions, those parts of the safety-related hardware and</td>
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<td>software where there is insufficient</td>
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<td>independence of implementation shall be</td>
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<td>treated as belonging to the safety function with the highest safety integrity level.</td>
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<td>Therefore, the requirements applicable to the highest relevant safety integrity level</td>
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<td>shall apply to all those parts.”</td>
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<td>(a) render any electrical protective device ineffective (see 2.26.2)</td>
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<td>(b) permit the car to move beyond the leveling or truck zone if any hoistway-door</td>
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<td>interlock is unlocked or if any hoistway door or car door or gate electric</td>
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<td>contact is not in the closed position (see 2.26.1.6);</td>
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<td>(c) permit speeds in excess of those specified in 2.12.7.3.2, 2.26.1.4.1(d)(1),</td>
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<td>2.26.1.5.10(b), and 2.26.1.6.6;</td>
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<td>(d) permit the car to revert to normal operation when the electrical contact</td>
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<td>required by 2.7.5.2.1(b)(3) is in the open position, or the electrical device</td>
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<td>as permitted in 2.7.5.5(b) is activated, or on hoistway access switch operation</td>
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<td>(see 2.12.7.3) or on inspection operation (see 2.26.1.4) or on bypass operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(see 2.26.1.5); and</td>
<td></td>
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<tr>
<td></td>
<td>(e) continue to make ineffective any hoistway-door interlock or car-door or</td>
<td></td>
</tr>
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<td></td>
<td>gate electric contact when either a hoistway access switch (see 2.12.7.3) or a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“BYPASS” switch (see 2.26.1.5) is turned to the “OFF” position.</td>
<td></td>
</tr>
<tr>
<td>Item No.</td>
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<td>Rationale</td>
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</tr>
<tr>
<td>2.26.9.4</td>
<td>Methods used to satisfy 2.26.9.3 shall be checked prior to each start of the elevator from a landing, when on automatic operation. When a single ground or failure, as specified in 2.26.9.3 occurs, the car shall not be permitted to restart. Methods implemented using software systems are permitted, provided that (a) the removal of power from the driving-machine motor and brake is not solely dependent on software-controlled means, or (b) the software system and related circuits are listed/certified and labeled/marketed for compliance with the applicable requirements of IEC 61508-2 and IEC 61508-3. This software system and its related circuits shall have a SIL of not less than the highest SIL value of the safety function(s) in Table 2.26.4.3.2 used in the circuit. Redundant devices used to satisfy 2.26.9.3 in the determination of the occurrence of a single ground, or the failure of any single magnetically operated switch, contactor or relay, or of any single solid state device, or any single device that limits the leveling or truck zone, or a software system failure, shall be checked prior to each start of the elevator from a landing, when on automatic operation. When a single ground or failure, as specified in 2.26.9.3 occurs, the car shall not be permitted to restart. Implementation of redundancy by a software system is permitted, provided that the removal of power from the driving-machine motor and brake is not solely dependent on software-controlled means.</td>
<td><strong>2.26.9.4:</strong> To clarify the term “redundant devices”, which is intended to refer to any method that is used to satisfy the requirements of 2.26.9.3. A Safety Integrity Level is assured by addressing both the failure modes and reliability of the design. The term redundancy only addressed failure mode. <strong>2.26.9.4(b)</strong> Application of the measures of IEC 61508 takes into account failure modes and design process / requirements, including redundancy, necessary to assure within a confidence level the required reliability and safety integrity of E/E/PES components. The SIL rating addresses the failure requirements for the software system. A software system in conformance with the proposed requirements will be certified to meet performance requirements for reliability not presentably called for by the present code. This new requirement assures the intent of 2.26.9.4 is met by a software system for both failure mode and intended reliability. The purpose of the risk analysis used was to establish the required reliability and replace the prescriptive requirements in the current code with performance based requirements. The Risk assessment used in the TG work to establish equivalent safety for the E/E/PES used in elevators, determined the appropriate SIL requirement for each safety function up to and including the control and operating circuits and related wiring, connectors, etc. where the function’s final action is the removal of power from the motor and brake. Also see Diagram 1 of the Committee Record.</td>
</tr>
<tr>
<td>13 2.26.9.5</td>
<td>Except for elevators employing alternating-current hoist motors driven from a direct-current source through a static inverter (see 2.26.9.6), elevators with driving motors employing static control without motor-generator sets shall conform to 2.26.9.5.1 through 2.26.9.5.64.</td>
<td><strong>2.26.9.5:</strong> Sub-clauses referenced renumbered (Editorial Ballot)</td>
</tr>
<tr>
<td>Item No.</td>
<td>Proposed Revision</td>
<td>Rationale</td>
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<tr>
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</tr>
<tr>
<td>2.26.9.5.1</td>
<td>Two means devices shall be provided to remove power independently from the driving machine motor. At least one device shall be conform to either 2.26.9.5.1(a) or 2.26.9.5.1(b).</td>
<td>2.26.9.5.1: Permit E/E/PES Safety Related Circuits to be applied (see 2.26.9.5.1 b).</td>
</tr>
<tr>
<td>(a) An electromechanical contactor arranged to:</td>
<td></td>
<td>2.26.9.5.1(a)(2): To harmonize with the EN-81 code.</td>
</tr>
<tr>
<td>2.26.9.5.2</td>
<td>(1) The contactor shall be arranged to open each time the car stops, or</td>
<td>2.26.9.5.1(b): The risk assessment used in the TG work to establish equivalent safety for the E/E/PES used in elevators, determined the appropriate SIL requirement for each EPD function up to and including the control and operating circuits where the function’s final action is the removal of power from the motor and brake. Also see Diagram 1 of the Committee Record dated 05/23/05.</td>
</tr>
<tr>
<td>(2) open, at the latest, each time the car reverses direction, except for releveling, and it has been verified at each stop that there is no current flow exceeding normal leakage current through the other means.</td>
<td></td>
<td>2.26.9.5.2: Deleted. Now covered by 2.26.9.5.1</td>
</tr>
<tr>
<td>(b) An E/E/PES, with a SIL of no less than the highest SIL value of the applicable function as shown in Table 2.26.4.3.2 for the electrical protective devices involved and shall be listed/certified and labeled/marked for compliance with the applicable requirements of IEC 61508-2 and IEC 61508-3.</td>
<td></td>
<td>2.26.9.5.3: Renumbered (Editorial Ballot), also see rationale for 2.26.9.5.1</td>
</tr>
<tr>
<td>2.26.9.5.32</td>
<td>The contactor means used for conformance to 2.26.9.5.1 shall cause power to be removed from the driving-machine brake circuit to open.</td>
<td>2.26.9.5.4: Deleted and requirement moved to 2.26.8.2, also see rationale for 2.26.8.2</td>
</tr>
<tr>
<td>2.26.9.5.4</td>
<td>An additional contactor shall be provided to also open the driving-machine brake circuit. This contactor is not required to have contacts in the driving-machine motor circuit.</td>
<td>2.26.9.5.5: Renumbered. The term “means” used to permit the application of E/E/PES (also see rationale for 2.26.9.5.1b).</td>
</tr>
<tr>
<td>2.26.9.5.53</td>
<td>The electrical protective devices required by 2.26.2 shall control the solid state device and both contactors means, except that leveling shall be permitted to take place with power opening of doors and gates in conformance with 2.13.2.1.1 and 2.13.2.2.1.</td>
<td>2.26.9.5.6: Renumbered, also see rationale for 2.26.9.5.1(a)(2)</td>
</tr>
<tr>
<td>2.26.9.5.64</td>
<td>Where contactors are used to satisfy 2.26.9.5.1 and 2.26.8.2 or both, After each time the contactor is required to open in conformance to 2.26.9.5.1(a) and 2.26.9.5.2 or both elevator stop, the car shall not respond to a signal to start unless the both contactor(s) is are in the de-energized position. After each stop in conformance to 2.26.9.5.1(a)(2), the car shall not respond to a signal to start if current flow exceeding normal leakage current through the other means is detected.</td>
<td>Also, to make clear that this requirement is still applicable where contactors are used.</td>
</tr>
<tr>
<td>14</td>
<td>Elevators employing alternating-current driving motors driven from a direct-current power source through a static inverter shall conform to 2.26.9.6.1 through 2.26.9.6.6-4.</td>
<td>2.26.9.6: Same rationale as provided for section 2.26.9.5</td>
</tr>
<tr>
<td>Item No.</td>
<td>Proposed Revision</td>
<td>Rationale</td>
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<tr>
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</tr>
<tr>
<td>2.26.9.6.1</td>
<td>Two separate means shall be provided to independently inhibit the flow of alternating-current through the solid state devices that connect the direct-current power source to the alternating-current driving motor. At least one of the means shall be an electromechanical relay conform to either 2.26.9.6.1(a) or 2.26.9.6.1(b). (a) An electromechanical relay arranged to: (1) open each time the car stops, or (2) open, at the latest, each time the car reverses direction, except for releveling, and it has been verified at each stop that there is no current flow exceeding normal leakage current through the other means. (b) An E/E/PES, with a SIL of no less than the highest SIL value of the applicable function as shown in Table 2.26.4.3.2 for the electrical protective devices involved and shall be listed/certified and labeled/marked for compliance with the applicable requirements of IEC 61508-2 and IEC 61508-3.</td>
<td>2.26.9.6: Same rationale as provided for section 2.26.9.5</td>
</tr>
<tr>
<td>2.26.9.6.2</td>
<td>The relay shall be arranged to open each time the car stops.</td>
<td>2.26.9.6: Same rationale as provided for section 2.26.9.5</td>
</tr>
<tr>
<td>2.26.9.6.23</td>
<td>The means relay used for conformance to 2.26.9.6.1(a) or 2.26.9.6.1(b) shall cause the power to be removed from the driving-machine brake circuit to open.</td>
<td>2.26.9.6: Same rationale as provided for section 2.26.9.5</td>
</tr>
<tr>
<td>2.26.9.6.4</td>
<td>An additional contactor shall be provided to also open the driving-machine brake circuit. This contactor is not required to have contacts in the driving machine motor circuit.</td>
<td>2.26.9.6: Same rationale as provided for section 2.26.9.5</td>
</tr>
<tr>
<td>2.26.9.6.53</td>
<td>The electrical protective devices required by 2.26.2 shall control both the means that inhibit the flow of alternating current through the solid state devices and the contactors in the brake circuit, except that leveling shall be permitted to take place with power opening of the doors and gates as restricted by 2.13.2.1.1 and 2.13.2.2.1.</td>
<td>2.26.9.6: Same rationale as provided for section 2.26.9.5</td>
</tr>
<tr>
<td>2.26.9.6.64</td>
<td>Where relays are used to satisfy 2.26.9.6.1(a) and contactors are used to satisfy 2.26.8.2, after each elevator time the relay is required to open in conformance to 2.26.9.6.1(a) or the contactor is required to open in conformance to 2.26.9.6.2, the car shall not respond to a signal to start unless the relay that inhibits the flow of alternating current through the solid state devices, as well as the contactors in the brake circuit, are in the de-energized position. After each stop in conformance to 2.26.9.6.1(a)(2), the car shall not respond to a signal to start if current flow exceeding normal leakage current through the other means is detected.</td>
<td>2.26.9.6: Same rationale as provided for section 2.26.9.5</td>
</tr>
<tr>
<td>15</td>
<td>The following notes are part of Table 2.26.4.3.2, see Item 19. Note 1. For the purpose of this standard, the SIL represents the requirement for a device operating in the low demand mode and the probability of failure to perform its safety function on demand (see IEC 61508-1 Table 2). However, where the device is used for continuous control to</td>
<td>Table 2.26.4.3.2 and Notes: For a detailed explanation of the hazard-based approach that was used for the determination of SIL’s and how numerical target failure measures for E/E/PES Safety-related systems are linked to SIL’s requirements, refer to:</td>
</tr>
<tr>
<td>Item No.</td>
<td>Proposed Revision</td>
<td>Rationale</td>
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<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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<td></td>
<td>maintain functional safety, for example when the use of a stop switch solely prevents an elevator controller from operating in automatic operation, the SIL shall represent the requirement for a device considered operating in the high demand mode and the dangerous failure rate of the device (see IEC 61508-1 Table 3 and definitions). Note 2. For the purposes of this standard, SIL refers to SIL rating of a E/E/PES to the applicable requirements of IEC 61508 – 2 and IEC 61508 – 3. Note 3: The SIL values specified in Table 2.26.4.3.2 are based on a proof-test frequency of no more than half the rate of demand on the safety function. The inspection frequencies provided in Appendix N serve as a reference to this proof-test interval and are addressed in the Maintenance Control Program. See requirement 8.6.1.2.1(a)(1). Note 4: It is possible to use several lower safety integrity level systems to satisfy the need for a higher safety integrity level function provided that the implementation is certified. Note 5: A SIL 4 rated or less device cannot fulfill this function. Note 6: The summary of functions described in the ‘Safety Function’ column are for reference only. The referenced Code item in the ‘Requirement’ column must be used to determine the safety function of the item in the ‘Device Name’ column.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>8.6.1.2.1(a)(1) by adding a new sub rule (f) as follows: 8.6.1.2.1(a) (1)(f) the manufacturer’s recommendations for any SIL rated devices or circuits Add the following to “General Maintenance Requirements (8.6.1.2)”: 8.6.1.2.1(c) Procedures for tests, periodic inspections, maintenance, replacements, adjustments, and repairs for all SIL rated E/E/PES electrical protective devices and circuits shall be incorporated into and made part of Maintenance Control Program. See 2.26.4.3.2, 2.26.9.4 (b), 2.26.9.5.1(b), and 2.26.9.6.1(b).</td>
<td>Committee Record dated 05/23/05. SIL values in the table were developed according to the process for SIL development outlined in IEC 61508-5. The resulting SIL values were then also harmonized where possible to the highest value between A17.1/B44 risk assessment results and independent work completed by CEN for CEN-EN 81 Amendment 1 and ISO/TC178/WG8. See Committee Record dated 05/23/05. In the Table 2.26.4.3.2, requirement 2.26.2.20, no risk assessment performed due to obsolete technology. Notes 1,2,3,4,5,6 under Table 2.26.4.3.2 clarify relevant information with respect to SIL values provided in the table. Testing methods are needed to maintain the integrity of any safety system. This section addresses any special instructions for maintaining the integrity of this new technology. <em>Same as proposed new A17.X/B44.X performance code (2.12.3). Finds a home for written checkout procedures called for in 8.10.2.2.7 &amp; 8.11.2.2.10.</em></td>
</tr>
</tbody>
</table>
## Acceptance Inspection and Tests, Section 8.10

### New rule:

8.10.2.2.7 Functional Safety of Electrical/Electronic/Programmable Electronic Systems (E/E/PES). Verify that the E/E/PES electrical protective devices (2.26.4.3.2) and the E/E/PES control and operating circuits (2.26.9), where provided, are listed/certified and labeled/marked with a SIL equal to or greater than the values indicated for the devices in Table 2.26.4.3.2 and requirement 2.26.9 as applicable.

The person or firm installing the equipment shall provide a written checkout procedure and demonstrate that all E/E/PES electrical protective devices operate as intended.

### Periodic Inspections & Tests Section 8.11

Add new paragraph:

8.11.2.2.10 The person or firm maintaining the equipment shall provide a written checkout procedure and demonstrate that all E/E/PES electrical protective devices operate as intended.

The person or firm installing the equipment is responsible to create the necessary documentation for the installation and maintenance of the safety system.

## Add to Section 9.1

<table>
<thead>
<tr>
<th>Designation</th>
<th>Standard</th>
<th>Publisher</th>
<th>Applicable to</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO/TS 14798: 2000</td>
<td>Risk Assessment</td>
<td>ANSI</td>
<td>US, Canada</td>
</tr>
</tbody>
</table>

### Section 9.1

To add the appropriate reference standard for the application of (E/E/PES).
Add new Table 2.26.4.3.2 and Notes.

**Table 2.26.4.3.2**

SIL for Electrical Protective Devices and Other Electrical Safety Functions

See Notes (1,2,3,4,5,6)

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Device Name</th>
<th>Safety Function</th>
<th>SIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.12.7.3.3(a)</td>
<td>Hoistway Access Switches</td>
<td>Check enable hoistway access operation</td>
<td>3</td>
</tr>
<tr>
<td>2.26.1.4.1(b)</td>
<td>Inspection switch</td>
<td>Check on enable of inspection operation</td>
<td>3</td>
</tr>
<tr>
<td>2.26.1.5</td>
<td>Bypass switches</td>
<td>Check Bypass device for bypassing landing and car door device(s)</td>
<td>3</td>
</tr>
<tr>
<td>2.26.1.6</td>
<td>Car leveling or Truck Zoning Device</td>
<td>Check on leveling (re-leveling) with car and hoistway doors not in the closed position</td>
<td>2</td>
</tr>
<tr>
<td>2.26.2.1</td>
<td>Slack-rope switch</td>
<td>Check the tension of winding drum machine ropes</td>
<td>2</td>
</tr>
<tr>
<td>2.26.2.2</td>
<td>Motor generator running switch</td>
<td>Check that MG is switched for the running condition</td>
<td>1</td>
</tr>
<tr>
<td>2.26.2.3</td>
<td>Compensating-rope sheave switch</td>
<td>Check the position limits of compensating-rope sheave</td>
<td>2</td>
</tr>
<tr>
<td>2.26.2.4</td>
<td>Motor field sensing means</td>
<td>Check for current flow in the motor shunt field</td>
<td>1</td>
</tr>
<tr>
<td>2.26.2.5</td>
<td>Emergency stop switch</td>
<td>Check Stop Switch is actuated</td>
<td>3</td>
</tr>
<tr>
<td>2.26.2.6</td>
<td>Broken rope, tape, or chain switches</td>
<td>Check for a failure of a rope, tape or chain</td>
<td>2</td>
</tr>
<tr>
<td>2.26.2.7</td>
<td>Stop switch in pit</td>
<td>Check Stop Switch is actuated</td>
<td>3</td>
</tr>
<tr>
<td>2.26.2.8</td>
<td>Stop switch on top of car</td>
<td>Check Stop Switch is actuated</td>
<td>3</td>
</tr>
<tr>
<td>2.26.2.9</td>
<td>Car-safety mechanism switch</td>
<td>Check on the operation of the car safety mechanism</td>
<td>1</td>
</tr>
<tr>
<td>2.26.2.10</td>
<td>Speed governor overspeed switch</td>
<td>Check on Overspeed</td>
<td>2</td>
</tr>
<tr>
<td>2.26.2.11</td>
<td>Final terminal stopping devices</td>
<td>Check the car has passed a terminal landing</td>
<td>1</td>
</tr>
<tr>
<td>2.26.2.12</td>
<td>Emergency terminal speed limiting devices</td>
<td>Check on retardation in the case of reduced stroke buffers</td>
<td>2</td>
</tr>
<tr>
<td>2.26.2.13</td>
<td>Buffer switches for oil buffers used with type C car safeties</td>
<td>Check on the return to normal Extended position of buffer</td>
<td>1</td>
</tr>
<tr>
<td>2.26.2.14</td>
<td>Hoistway-door interlocks and hoistway door electric contacts</td>
<td>Check on locked and/or closed position of landing doors</td>
<td>3</td>
</tr>
<tr>
<td>2.26.2.15</td>
<td>Car-door and gate electric contacts</td>
<td>Check on closed position of car door Note: for the application of a SIL 3 ELECTRICAL/ELECTRONIC/PROGRAMMABLE ELECTRONIC SYSTEMS device for freights and cars with swing hoistway doors, an independent monitoring of the closed car door gate position by the elevator control is required to prevent the car from moving if the car/gate door is open.</td>
<td>3</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td>Check</td>
<td>Notes</td>
</tr>
<tr>
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<td>---------------------------------------------</td>
</tr>
<tr>
<td>2.26.2.16</td>
<td>Emergency terminal stopping devices</td>
<td>Check on stopping at terminal landings</td>
<td></td>
</tr>
<tr>
<td>2.26.2.18</td>
<td>Car top-emergency-exit electrical device</td>
<td>Check on the closed position of the car top exit</td>
<td></td>
</tr>
<tr>
<td>2.26.2.19</td>
<td>Motor generator overspeed protection</td>
<td>Check on overspeed of DC driven motor generator sets.</td>
<td></td>
</tr>
<tr>
<td>2.26.2.20</td>
<td>Electric contacts for hinged car platform sills</td>
<td>Check on the retraced Position of car platform sill. Obsolete Technology.</td>
<td>SIL rated device not permitted.</td>
</tr>
<tr>
<td>2.26.2.21</td>
<td>In-car stop switch</td>
<td>Check Stop Switch is actuated</td>
<td></td>
</tr>
<tr>
<td>2.26.2.22</td>
<td>Buffer switches for gas spring-return oil buffers</td>
<td>Check on the return to normal extended position of buffer</td>
<td></td>
</tr>
<tr>
<td>2.26.2.23</td>
<td>Stop switch in remote machine and control rooms</td>
<td>Check Stop Switch is actuated</td>
<td></td>
</tr>
<tr>
<td>2.26.2.24</td>
<td>Stop switch in overhead machinery space in the hoistway</td>
<td>Check Stop Switch is actuated</td>
<td></td>
</tr>
<tr>
<td>2.26.2.25</td>
<td>Blind hoistway emergency door locking device</td>
<td>Check on the locked position of blind hoistway door</td>
<td></td>
</tr>
<tr>
<td>2.26.2.26</td>
<td>Pit access door electric contact</td>
<td>Check on the closed position of pit access doors</td>
<td></td>
</tr>
<tr>
<td>2.26.2.27</td>
<td>Stop switch in remote counterweight hoistways</td>
<td>Check Stop Switch is actuated</td>
<td></td>
</tr>
<tr>
<td>2.26.2.28</td>
<td>Car-door interlock</td>
<td>Check on locking and closed position of car doors</td>
<td></td>
</tr>
<tr>
<td>2.26.2.29</td>
<td>Ascending car overspeed Protection device</td>
<td>Check on the ascending car overspeed protection means</td>
<td></td>
</tr>
<tr>
<td>2.26.2.30</td>
<td>Unintended car movement device</td>
<td>Check on unintended car movement with doors open</td>
<td></td>
</tr>
<tr>
<td>2.26.2.31</td>
<td>Car access panel locking device</td>
<td>Check on locked position of car access panel</td>
<td>SIL rated device not permitted. (see note 5)</td>
</tr>
<tr>
<td>2.26.2.32</td>
<td>Hoistway access opening locking device</td>
<td>Check on locked position of hoistway access openings</td>
<td>SIL rated device not permitted. (see note 5)</td>
</tr>
<tr>
<td>2.26.2.33</td>
<td>Firefighter’s stop switch</td>
<td>Check Stop Switch is actuated</td>
<td></td>
</tr>
<tr>
<td>2.26.2.34</td>
<td>Unexpected car movement device</td>
<td>Check on actuation of unexpected car movement means</td>
<td></td>
</tr>
<tr>
<td>2.26.2.35</td>
<td>In-car equipment access panel device</td>
<td>Check on closed position of access panel in the car</td>
<td></td>
</tr>
<tr>
<td>2.26.2.36</td>
<td>Working platform electrical device</td>
<td>Check on fully retracted position of working platform</td>
<td></td>
</tr>
<tr>
<td>2.26.2.37</td>
<td>Retractable stop electrical device</td>
<td>Check on fully retracted position of retractable stops</td>
<td></td>
</tr>
</tbody>
</table>
editorial change to requirement 2.26.9.5.4 and 8.6.1.2.1(e) in TN 04-811.

**2.26.9.5.4** Where contactors are used to satisfy 2.26.9.5.1 or and 2.26.8.2 or both, after each time the contactor is required to open in conformance to 2.26.9.5.1(a) or and 2.26.9.5.2 or both, the car shall not respond to a signal to start unless the contactor(s) is in the de-energized position. After each stop in conformance to 2.26.9.5.1(a)(2), the car shall not respond to a signal to start if current flow exceeding normal leakage current through the other means is detected.

Add the following to “General Maintenance Requirements (8.6.1.2)”: 8.6.1.2.1(a)(3) 8.6.1.2.1(e) Procedures for tests, periodic inspections, maintenance, replacements, adjustments, and repairs for all SIL rated E/E/PES electrical protective devices and circuits shall be incorporated into and made part of Maintenance Control Program. See 2.26.4.3.2, 2.26.9.4 (b), 2.26.9.5.1(b), and 2.26.9.6.1(b).

Rationale: Clarification and correction of location of requirement.
TN 04-957

2.8.1.2 Only such electrical wiring, raceways, and cables, coaxial wiring, and antennas used directly in connection with the elevator, including wiring for signals, for communication with the car, for lighting, heating, air conditioning, and ventilating the car, for fire detecting systems, for pit sump pumps, and for heating and lighting the hoistway and/or machine room shall be permitted to be installed inside the hoistway.

Rationale: To recognize that coaxial wiring and antennas used only for communication in elevators are permitted to be located in the hoistway.
2.27.3.1.1 A three-position key-operated switch that will not change position without a deliberate action by the user, shall be

(a) provided only at the designated level for each single elevator or for each group of elevators;
(b) labeled “FIRE RECALL” and its positions marked “RESET,” “OFF,” and “ON” (in that order), with the “OFF” position as the center position. The “FIRE RECALL” letters shall be a minimum of 5 mm (0.25 in.) high in red or a color contrasting with a red background;
(c) located in the lobby within sight of the elevator or all elevators in that group and shall be readily accessible.

2.27.3.1.2 An additional key-operated “FIRE RECALL” switch, with two-positions that will not change position without a deliberate action by the user, marked “OFF” and “ON” (in that order), shall be permitted only at the building fire control station.

2.27.3.3 Phase II Emergency In-Car Operation. A three position (“OFF,” “HOLD” and “ON” in that order) key-operated switch that will not change position without a deliberate action by the user, shall be labeled “FIRE OPERATION”; provided in an operating panel in each car; and shall be readily accessible. The label “FIRE OPERATION” lettering shall be minimum of 5 mm (0.25 in.) high in red or color contrasting with a red background. It shall become effective only when Phase I Emergency Recall Operation is in effect and the car has been returned to the recall level. The switch shall be rotated clockwise to go from “OFF” to “HOLD” to “ON.”

The key shall only be removable in the “OFF” and “HOLD” position. The “OFF,” “HOLD,” and “ON” positions shall not change the mode of operation within Phase II Emergency In-Car Operation until the car is at a landing with the doors in the normal open position, except as required by 2.27.3.3.4.

Rationale: To clarify that the Phase I and II Fire Service key switches cannot be spring loaded
TN 04-970

Revise Section 9.1 as follows:

ANSI Z97.1-1994 (R1994)

NOTE: This document is currently being revised. Public review is complete and ANSI approval is pending.

NBCC-1995

ANSI Z535.2-2002 (latest edition)

CAN/CSA-Z321-96 (R2001) (Same as CSA Z321)

ANSI A14.3-1994

NFPA 13-1985

NFPA 70-2002 (latest edition)

NOTE: This document is currently being revised. The 2005 edition should be available this fall.

NFPA 80-1986

NOTE: The current edition is 1999. The reference is being updated by another TN.

UL 10B-2001 (latest edition)

NFPA 252-1994

ANSI/UL 1784-1995

ASTM E84-03b (latest edition)

ANSI/UL 723-2003 (latest edition)

CAN/ULC-S102.2-M8803

NFCC-1995 National Fire Code of Canada NRCC Canada

CSA C22.2 No. 141-M1985(R1992)02

NFPA 255-2002 Fire Test for Evaluating Room Fire Growth Contribution of Textile Wall Covering NFPA US, Canada


Revise Section 9.2 as follows:

GSA General Service Administration
Revise 2.11.19.2 as follows:

2.11.19.2 The gasketing … defined by ANSI/UL 1784 standard …

Revise 2.14.2.1.1 as follows:

2.14.2.1.1 Materials in ….ASTM E84, ANSI/UL 723, NFPA …. 

Revise 2.14.2.1.3 as follows:

2.14.2.1.3 Napped, tufted … NBCC and National Fire Code or Canada NFCC, whichever is …. 

Revise 8.3.7.3 as follows:

8.3.7.3 Apparatus. Except as …Federal Test Method Standard FED-STD 191A, Method 5903.1 (revised method 5902) or….

REASON: Updating Hoistway Committee reference documents to current editions and to conform to ASME policy.
Revised requirement 8.7.3.19:

8.7.3.19 Carrying of Passengers on Freight Elevators.
Where the alteration consists of a change in type service from a freight elevator to a freight elevator permitted to carry passengers, the elevator shall conform to 2.16.43.16.4.

Reason: To provide the correct reference for hydraulic elevators and eliminate confusion regarding complying with the 125% load requirement that only applies to electric elevators.
TN 04-1286

Add the following requirement:

3.18.6 Marking of Hydraulic Jack. The exposed portion of each hydraulic jack after installation shall be plainly marked in a permanent manner with the following:
(a) the name or trademark by which the organization that manufactured the hydraulic jack can be identified
(b) the manufacturer’s designation of the type or model
(c) year of manufacture

Rationale: This information is important to ensure proper component replacement when repairing the hydraulic jack. It also helps to ensure that replaced parts are of the equivalent material, strength and design.
Revise A17.1, requirement 5.3.1.1.1 as follows:

5.3.1.1.1 The enclosure shall be permitted to be omitted on the lowest landing served, provided the elevator:
   (a) unless it does not open directly into a garage;
   (b) provided has continuous-pressure operation
   (c) the car platform is equipped with a device that, if the platform is obstructed in its downward travel by a force of 18 N (4 lbf) or more applied anywhere on its lower surface, will open an electric contact in the control circuit and thus stop the downward travel of the car within the range of the free suspension of the car and not exceeding 75 mm (3 in.). The stroke of the device shall be not less than the stopping distance of the platform. Switches operated by this device shall be of a type that will not reset unless it has been returned to its normal position. The lift-elevator shall be permitted to operate in the up direction away from the obstruction.

Rationale:
All other unenclosed private residence elevators operate by continuous-pressure except those that are unenclosed at the lowest level.
Proposed revision to A17.1a-200X, requirement 5.3.1.7.9(b):

5.3.1.7.9 Landing-Sill Guards. Where the elevator is equipped with a two-way leveling device or anti-creep device, and the hoistway landing sill projects into the hoistway a landing-sill guard shall be provide conforming to the following:

(a) It shall have a straight vertical face extending below the sill not less than the depth of the zone where the hoistway door is unlocked below the landing sill plus, 50 mm (2 in.).
(b) It shall extend not less than the full width of the clear car sill opening exposed to the landing entrance sill; and
(c) It shall be securely braced and fastened in place to withstand a force of 670 N (150 lbf) and applied horizontally over an area, 100 mm by 100 mm (4 in. by 4 in.) in the center of the guard without permanent displacement or deformation.

Rationale: To clarify the Committee’s intent that the car sill is the clear car opening.

Note: This revision is based on A17.1a-200X.
TN 04-1403

Current Requirement: When operated by a designated attendant in the car, except hospital service:

2.27.5.2(a) elevators parked at the recall level shall conform to 2.27.3.1.6(h), 2.27.3 without delay; elevators parked at a floor other than the recall level shall conform to 2.27.3.1.6(h). At the completion of a time delay of not less than 10 s and not more than 30 s, elevators parked at a floor away from the recall level shall conform to 2.27.3.

Rationale: If a car is parked with open doors at the recall level on independent service, and a firefighter puts the system on Phase I via the Phase I switch in the lobby, and then immediately gets in the car and turns the Phase II key switch to the ON position and enters a car call prior to the expiration of the 10-30 second time delay, according to the way the Code is currently written, once the doors are closed the car will begin to move away from the recall level. Once the car begins to move away from the landing, the control system will immediately bypass independent service and the car will then go into Phase I recall operation. The control system will not recognize the activation of the Phase II switch until the doors have fully opened at the recall floor. This operation is inelegant at best confusing, and might serve to make the firefighter think twice about using the elevator. If a car that is on designated-attendant operation is already at the recall floor when the Phase I switch is activated, there is no reason to allow a call to be entered, the doors to close and the car to begin to move away from the floor before putting the car into Phase I operation.
Revised A17.1, Requirement 8.10.2.2.1(j)(1):

*Power Opening of Doors (2.13.2).* Determine that power opening of car and hoistway doors only occurs when the car is at rest at the landing, or in the landing zone, except in the case of static control, check that the power shall not be applied until the car is within 300 mm (12 in.) of the landing. Check that the leveling zone does not exceed the maximum allowable distance. Check that the leveling speed does not exceed 0.75 m/s (150 ft/min). For static control elevators, the person or firm installing or maintaining the equipment shall provide a written checkout procedure and demonstrate that the leveling speed with the doors open is limited to a maximum of 0.75 m/s (150 ft/min) and that the speed limiting (or speed monitor) means is independent of the normal means of controlling this speed (Item 1.10.2(b)).

Revised A17.1, Requirement 8.10.2.2.1(j)(2):

*Leveling Zone and Leveling Speed (2.16.1.6.3).* Check that the leveling zone does not exceed the maximum allowable distance. Check that the leveling speed does not exceed 0.75 m/s (150 ft/min). In addition, for static control elevators, the person or firm installing the equipment shall provide a written checkout procedure and demonstrate that the leveling speed with the doors open is limited to a maximum of 0.75 m/s (150 ft/min) and that the speed limiting (or speed monitor) means is independent of the normal means of controlling this speed.

**Rationale:**

1. Editorial. Requirements in 8.10.2.2.1(j)(1) are either duplicated in 8.10.2.2.1(j)(2) or belong in 8.10.2.2.1(j)(2).
2. Added the testing requirements for power door opening that were inadvertently omitted.
Proposed revision to A17.1-2004, requirement 8.7.6.2.1:

8.7.6.2.1 General Requirements. Any alteration to a moving walk shall comply with 6.2.6.2.1, 6.2.6.3.1, 6.2.6.3.5, 6.2.6.3.6, 6.2.6.6, 6.2.7.2, 8.7.1.1, and 8.7.1.2. A change in component parts that are interchangeable in form, fit, and function is not considered an alteration and need not comply with the requirements in this section. See 8.6.3.1.

The addition of a component or a device that was not part of the original design is an alteration and must conform to the requirements of 8.7.6.2 for that device or component.

When multiple driving machines per moving walk are utilized, operating and safety devices required by 8.7.6.2 shall simultaneously control all driving machines.

Reason: This proposal is to encourage the installation of devices that will enhance the safety of the moving walks.
TN 04-1570

Revise Requirement 2.1.2.3 (c) as follows:

(c) compensation up-pull load where compensation tie-down is applied (see 2.17.17 2.21.4.2)

Revise Requirement 2.4.6.2(d)(1) as follows:

(d) ½ the gravity stopping distance, based on:
(1) 115% of the rated speed where oil buffers are used, or 115% of the reduced striking speed when emergency terminal speed-limiting devices meeting the requirements of 2.25.4 are used and no compensating rope tie-down device in conformance with 2.17.17 (See 2.21.4.2) is provided (see 8.2.5 for gravity stopping distances); or

Revise Requirement 2.4.6.2(e) as follows:

(e) the distance to which the compensating rope tiedown device, if provided (see 2.17.17 2.21.4.2) limits the jump of the car when the counterweight strikes the buffers at speeds specified in 2.4.6.2(d).

RATIONALE: Editorially updating cross-references that were overlooked when revisions were made to the original requirement.
Proposed revision to A17.1-2004, Requirement 6.1.3.5.6 Step Demarcation:

6.1.3.5.6 Step Demarcation. There shall be demarcation lines on the step tread along the back of the step to delineate the division between steps. These lines shall be marked by a yellow strip a minimum of 38 mm (1.5 in.) in width and a maximum of 50 mm (2 in.). [See 6.1.3.5.1(b).]

There shall be demarcation lines on the step tread along the sides of the step. These side lines shall be yellow and at least 13 mm (0.5 in.) wide and shall not exceed 50 mm (2 in.). [See 6.1.3.5.1(b).]

Rationale: The rule states “There shall be demarcation lines on the sides of the step”. In the broad literal sense, this could include both the side along the tread and side along the riser. While this is not prohibited and is done in some cases, it has not always been the practice, nor intention, to require demarcation along the step side riser. The rule is reworded to clarify that the requirement applies to the step tread rather than the riser.
TN 04-1594

Proposed Revision to Section 9.1:


Revise the designation for NFPA 72 (latest edition) to "NFPA 72 - 2002".

Reason: To conform to ASME policy of referencing a specific edition and to correct the title of a reference standard.
TN 04-1597

Proposed Revision to A17.1, Requirements 2.27.3.3 and 2.27.3.3.2:

2.27.3.3 Phase II Emergency In-Car Operation.

First paragraph to remain unchanged:

Revise second paragraph as follows:

The key shall only be removable in the “OFF” and “HOLD” position. For elevators with power-operated doors, the “OFF,” “HOLD,” and “ON” positions shall not change the mode of operation within Phase II Emergency In-Car Operation until the car is at a landing with the doors in the normal open position, except as required by 2.27.3.3.4.

Add a third paragraph to 2.27.3.3:

For elevators with manual doors, after the car and hoistway doors have been opened at least once at the recall level, the “OFF,” “HOLD,” and “ON” positions shall then change the mode of operation in accordance with 2.27.3.3.1 through 2.27.3.3.4.

2.27.3.3.2

Revise as follows:

For elevators with power-operated doors, when the car is at a landing, with the doors open, and the “FIRE OPERATION” switch is in the “HOLD” position, the car shall remain at the landing with the doors open. The door close buttons shall be inoperative, and the car calls shall not be registered.

Add a second paragraph to 2.27.3.3.2 as follows:

For elevators with manual doors, when the car is at a landing and the “FIRE OPERATION” switch is in the “HOLD” position, the car shall remain at the landing and car calls shall not be registered.

Rationale: The existing Code does not currently address the special case of manual doors on Fire Phase II operation. It might be awkward in some cases for the firefighters to hold open a self-closing car gate and a swing hoistway door, for example, and try to operate the Phase II switch at the same time, which is what the current Code requires in order for the Phase II switch to be effective (except for the “OFF” position, per 2.27.3.3.4). This proposal would permit the firefighters to allow the doors to close once they have entered the car at the recall landing, and the Phase II switch would still be effective. Also, this proposal allows the firefighters to put a car on “HOLD” and remove the key before opening the door at a floor away from the recall landing, which might be more convenient for them.
INSPECTION AND TESTS OF ELECTRIC ELEVATORS (ACCEPTANCE & PERIODIC)
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(ACCEPTANCE)
8.10.2.2.2 Inside Car

(v) Machinery space / control space (8.10.2.2.2)

(w) Working areas in the car (2.7.5.1)
   (1) Means to prevent unexpected movement (2.7.5.1.1).
   (2) Unexpected Car Movement Device (2.26.2.34).
   (3) Operating instructions for Unexpected Car Movement Device (8.6.10.6)
   (4) Operating instructions for egress and re-entry procedure (8.6.10.7)

(x) Equipment access panel electrical device (2.26.2.35)

(ACCEPTANCE)
8.10.2.2.2 Machine Room/Spaces, Control Room/Spaces

Note: A machinery space outside the hoistway containing an electric driving machine and a motor controller is a machine room. (2.7)

(a) Location of rooms/spaces (2.7.6.1 and 2.7.6.2)

(b) Location of equipment (2.7.6.3)

(c) Equipment exposure to weather (2.7.6.6)

(d) (a) Means of Access to Machine Space (Item 2.1)

(e) (b) Headroom (2.7.4) (Item 2.2)

(f) Means necessary for tests (2.7.6.4)

(g) Inspection & Test Panel (2.7.6.5)

(h) (c) Lighting and Receptacles (Item 2.3)
   (1) Lighting (2.7.95.1)
   (2) Receptacles [NFPA 70 Article 620 Section 620-23(c) and 620-085 or CSA-C22.1, Section 38-052(4)]

(i) (d) Enclosure of Machine Room/Spaces, Control Room/Spaces (Item 2.4)
   (1) Floors (2.1.3) (2.7.1.3)
   (2) Enclosure (2.7.1 and 2.8.1 2.7.2.1)

(j) (e) Housekeeping (2.8.1) (2.7.2.1) (Item 2.5)

(k) (f) Ventilation and Heating (2.7.95.2) (Item 2.6)

(l) (g) Fire Extinguisher (8.6.1.6.5) (Item 2.7)
### INSPECTION AND TESTS OF ELECTRIC ELEVATORS (ACCEPTANCE & PERIODIC)

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| (m) | Pipes, Wiring, and Ducts (2.8) (Item 2.8) |
| (n) | Guarding of Exposed Auxiliary Equipment (2.10.1) (Item 2.9) |
| (o) | Numbering of Elevators, Machines, and Disconnect Switches [2.29.1(a) through (f)] (Item 2.10) |
| (p) | Maintenance Path and Maintenance Clearance (2.7.2) |
| (q) | Stop Switch (2.7.3.5 and 2.26.2.24) |
| (r) | Disconnecting Means and Control (2.26.4.1, and NFPA 70 Article 620 Section 620.5 or CSA-C22.1, Section 38.38-034) (Item 2.11) |
| (s) | Controller Wiring, Fuses, Grounding, Etc. (Item 2.12) |
| (t) | Machinery Supports Overhead Beam and Fastenings (2.9.1 and 2.9.3) (Item 2.14) |
| (u) | Braking System. For passenger elevators and all freight elevators, the brake shall be tested for compliance with applicable requirements. Place the load as shown in Table 8.11.2.3.4 in the car and run it to the lowest landing by normal operating means. The driving machine shall safely lower, stop, and hold the car with this load. Freight elevators of class C-2 loading shall sustain and level the elevator car. (2.16.6) (Item 2.15) |
| (v) | Drive Machines (2.24.1, 2.24.4, 2.24.5, and 2.24.9) (Item 2.16) |
| (w) | Gears, Bearings, and Flexible Connections (2.24.6, 2.24.7, and 2.24.10) (Item 2.17) |
| (x) | Winding Drum Machine (Item 2.18) |
| (y) | Belt- or Chain-Drive Machine (2.24.9) (Item 2.19) |
| (aa) | Motor Generator (2.26.9.7) (Item 2.20) |
| (bb) | Absorption of Regenerated Power (2.26.10) (Item 2.21) |
| (cc) | Traction Sheaves (Item 2.23) |
| (dd) | Secondary and Deflector Sheaves (2.24.2) (Item 2.24) |
| (ee) | Rope Fastenings (2.9.3.3, 2.20.5, and 2.20.9) (Item 2.25) |
| (ff) | Terminal Stopping Devices (Item 2.26). The following tests are performed with an empty car in the up direction and the car loaded with rated load or 125% of rated load in the down direction (see 2.16.8) |
| (gg) | Machine Room Operation Operating Devices |
| | (1) Machine room-Inspection operation (2.26.1.4.4) |
| | (2) Inspection operation with open door circuits (2.26.1.5) |
| | (3) Additional operation devices (2.26.1.3) |
| (hh) | Governor, Overspeed Switch, and Seal (Item 2.28) |
| | (1) The tripping speed of the governor and the speed at which the governor overspeed switch operates shall be tested to determine conformance with 2.18.2 and 2.18.4; |
| | (2) The governor rope pull-through and pull-out forces shall be tested to determine conformance with 2.17.15 and 2.18.6. If adjustments are made to the governor it shall be sealed immediately following the test |
| | (3) The adjustable means shall be sealed (2.18.3) |
| | (4) A marking plate conforming to 2.18.9 shall be attached at the governor. |
| | (5) Access and securing of car if applicable (2.7.6.3.4) |
| (ii) | Car and Counterweight Safeties (Item 2.29) |
| (jj) | Ascending Car Overspeed, and Unintended Car Motion Protection |
| (kk) | Speed. The speed of the car shall be verified with and without rated load, in both directions (2.16.3.2) |
| (ll) | Code Data Plate (8.9) (Item 2.30) |
| (mm) | Emergency brake (2.19.3) |
| (nn) | Wiring diagrams (8.6.1.6.3) |

(PERIODIC)
**INSPECTION AND TESTS OF ELECTRIC ELEVATORS (ACCEPTANCE & PERIODIC)**  
Based on A17.1S-2005

### 8.11.2.1.2 Machine Room/Spaces, Control Room/Spaces

(a) Equipment exposure to weather (2.7.6.6)

(b) Means of Access to Machine Space (Item 2.1);

(c) Headroom (Item 2.2);

(d) Means necessary for tests (2.7.6.4)

(e) Inspection & Test Panel (2.7.6.5)

(f) Lighting and Receptacles (Item 2.3);

(g) Enclosure of Machine Space (Machine Room/Spaces, Control Room/Spaces (Item 2.4);

(h) Housekeeping (Item 2.5);

(i) Ventilation (Item 2.6);

(j) Fire Extinguisher (Item 2.7);

(k) Pipes, Wiring, and Ducts (Item 2.8);

(l) Guarding of Equipment (Item 2.9);

(m) Numbering of Elevators, Machines, and Disconnect Switches (Item 2.10);

(n) Maintenance Path and Maintenance Clearance (2.7.2)

(o) Stop Switch (2.7.3.5 and 2.26.2.24)

(p) Disconnecting Means and Control (Item 2.11);

(q) Controller Wiring, Fuses, Grounding, etc. (Item 2.12);

(r) Static Control (Item 2.13);

(s) Machinery Supports Overhead Beam and Fastenings (Item 2.14);

(t) Drive Machine Brake (Item 2.15);

(u) Traction Drive Machines (Item 2.16);

(v) Gears, Bearings, and Flexible Connections (Item 2.17);

(w) Winding Drum Machine (Item 2.18);

(x) Belt- or Chain-Drive Machine (Item 2.19);

(y) Motor Generator (Item 2.20);

(z) Absorption of Regenerated Power (Item 2.21);

(aa) Traction Sheaves (Item 2.23);

(bb) Secondary and Deflector Sheaves (Item 2.24);

(cc) Rope Fastenings (Item 2.25);

(dd) Terminal Stopping Devices (Item 2.26);

(ee) Machine Room Operation (Operating Devices

(ff) Governor, Overspeed Switch, and Seal (Item 2.28); and

(gg) Car and Counterweight Safeties (Item 2.29);

(hh) Code Data Plate (8.6.1.3).

(ii) Emergency brake (2.19.3)

(jj) AC Drives from a DC Source (Item 2.22);

(kk) Slack Rope Devices (Item 2.27);

(ll) Wiring diagrams (8.6.1.6.3)

### (ACCEPTANCE)

#### 8.10.2.2.3 Top-of-Car

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<td>(gg) Equipment exposure to weather (2.7.6.6)</td>
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<td>(hh) Machinery Supports and Fastenings (2.9.1 and 2.9.3)</td>
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<td>(m) Means necessary for tests (2.7.6.4)</td>
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<td>(n) Inspection &amp; Test Panel (2.7.6.5), Inspection Operation</td>
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<td>(2.26.1.4.1) and Inspection Operation with Open Door Circuits</td>
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<td>(o) Equipment exposure to weather (2.7.6.6)</td>
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<td>(o) Equipment exposure to weather (2.7.6.6)</td>
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</table>
## INSPECTION AND TESTS OF ELECTRIC ELEVATORS (ACCEPTANCE & PERIODIC)

Based on A17.1S-2005

### (ACCEPTANCE)

#### 8.10.2.2.5 Pit

| (f) Traveling Cables (Item 5.6) | 2.8.2 and NFPA 70 Article 620 Section 620-11(c) or CSA-C22.1, Section 38-008; |
| (k) Machinery space / control space |  |
| (l) Working areas in the pit | 2.7.5.2 |

(1) Means to prevent unexpected movement (2.7.5.2.1(a) or (b)).
(2) Unexpected Car Movement Device (2.26.2.34).
(3) Operating instructions for Unexpected Car Movement Device (8.6.10.6)
(4) Operating instructions for egress and re-entry procedure (8.6.10.7)

(m) Equipment exposure to weather (2.7.6.6)
(n) Machinery Supports and Fastenings (2.9.1 and 2.9.3)
(o) Guarding of Exposed Auxiliary Equipment (2.10.1)
(p) Pit inspection operation (2.26.1.4.4)

### (PERIODIC)

#### 8.11.2.1.5 Pit

| (k) Machinery space / control space | 8.11.2.1.2 |
| (l) Working areas in the pit | 2.7.5.2 |

(1) Means to prevent unexpected movement (2.7.5.2.1(a) or (b)).
(2) Unexpected Car Movement Device (2.26.2.34).
(3) Operating instructions for Unexpected Car Movement Device (8.6.10.6)
(4) Operating instructions for egress and re-entry procedure (8.6.10.7)

(m) Equipment exposure to weather (2.7.6.6)
(n) Machinery Supports and Fastenings (2.9.1 and 2.9.3)
(o) Guarding of Exposed Auxiliary Equipment (2.10.1)
(p) Pit inspection operation (2.26.1.4.4)

### (ACCEPTANCE)

#### 8.10.2.2.7 Working Platforms

| (a) Working platforms (2.7.5.3 and 2.7.5.4) |  |
| (b) Retractable stops (2.7.5.5) |  |

(c) Inspection operation (2.26.1.4.4)

### (PERIODIC)

#### 8.11.2.1.7 Working Platforms

<p>| (a) Working platforms (2.7.5.3 and 2.7.5.4) |  |
| (b) Retractable stops (2.7.5.5) |  |</p>
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<td>(c) Inspection operation (2.26.1.4.4)</td>
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## INSPECTION AND TESTS OF HYDRAULIC ELEVATORS (ACCEPTANCE & PERIODIC)

### Based on A17.1S-2005

## (ACCEPTANCE)

### 8.10.3.2.1 Inside car

- **(v)** Machinery space / control space (8.10.3.2.2)
- **(w)** Working areas in the car [3.7 and 2.7.5.1]
  - (1) Means to prevent unexpected movement (2.7.5.1.1).
  - (2) Unexpected Car Movement Device (2.26.2.34).
  - (3) Operating instructions for Unexpected Car Movement Device (8.6.10.6)
  - (4) Operating instructions for egress and re-entry procedure (8.6.10.7)
- **(x)** Equipment access panel electrical device (3.26.1 and 2.26.2.35)

## (PERIODIC)

### 8.11.3.1.1 Inside the Car

- **(v)** Machinery space / control space (8.11.3.1.2)
- **(w)** Working areas in the car (3.7 and 2.7.5.1)
  - (1) Means to prevent unexpected movement (2.7.5.1.1).
  - (2) Unexpected Car Movement Device (2.26.2.34).
  - (3) Operating instructions for Unexpected Car Movement Device (8.6.10.6)
  - (4) Operating instructions for egress and re-entry procedure (8.6.10.7)
- **(x)** Equipment access panel electrical device (3.26.1 and 2.26.2.35)

## (ACCEPTANCE)

### 8.10.3.2.2 Machine Room /Spaces, Control Room/Spaces

Note: A machinery space outside the hoistway containing a hydraulic machine and a motor controller is a machine room.

- **(a)** Location of rooms/spaces (3.7.1)
- **(b)** Location of equipment (3.7.1)
- **(c)** Equipment exposure to weather (3.7.1)
- **(d)** Means of Access to Machine Space [3.7.1 and 8.10.2.2.2(d)(a)] (Item 2.1)
- **(e)** Headroom [3.7.1 and 8.10.2.2.2(e)(b)] (Item 2.2)
- **(f)** Means necessary for tests (3.7.1)
- **(g)** Inspection & Test Panel (3.7.1)
- **(h)** Lighting and Receptacles [3.7.1, 3.8, and 8.10.2.2.2(h)(e)] (Item 2.3)
- **(i)** Enclosure of Machine Space Machine Room/Spaces, Control Room/Spaces [3.1, 3.7.1, and 8.10.2.2.2(i)(d)] (Item 2.4)
- **(j)** Housekeeping [3.8 and 8.10.2.2.2(j)(e)] (Item 2.5)
- **(k)** Ventilation and Heating [3.7.1 and 8.10.2.2.2(k)(d)] (Item 2.6)
- **(l)** Fire Extinguisher (8.6.1.6.5) (Item 2.7)
- **(m)** Pipes, Wiring, and Ducts (3.8) (Item 2.8)
- **(n)** Guarding of Equipment [3.10 and 8.10.2.2.2(n)(d)] (Item 2.9)
- **(o)** Numbering of Elevators, Machines, and Disconnect Switches [3.29 and 8.10.2.2.2(o)(d)] (Item 2.10)
- **(p)** Maintenance Path and Maintenance Clearance (3.7.1)
INSPECTION AND TESTS OF HYDRAULIC ELEVATORS (ACCEPTANCE & PERIODIC)
Based on A17.1S-2005

(q) Stop Switch (3.7.1 and 3.26.1)
(r) Controller Wiring, Fuses, Grounding, etc. (Item 2.12)
(t) Hydraulic Machine (Power Unit) (Item 2.13) (3.24.1). The working pressure shall be checked and the pressure on the data plate verified (3.24.1.1).
(u) Relief Valves (Item 2.14). The relief valve shall be tested to determine conformance with 3.19.4.2.
(v) Control Valve (Item 2.15)
(w) Hydraulic Machine (Power Unit) (Item 2.13) (3.24.1). The working pressure shall be checked and the pressure on the data plate verified (3.24.1.1).
(x) Flexible Hydraulic Hose and Fitting Assemblies (3.19.3.3) (Item 2.17)
(y) Supply Lines and Shutoff Valves (Item 2.18). Data from the pipe, fitting, and valve manufacturers shall be provided to verify that the pressured rating of all components complies with pressure rating requirements (Item 2.18.3).
(z) Hydraulic Cylinders (Item 2.19). For plunger stops [Item 3.4.3(a)], verify that a stop ring has been provided provided as required by 3.18.4.1.
(aa) Pressure Switch (Item 2.20). Where cylinders are installed with the top of the cylinder above the top of the tank, a test shall be made to determine conformance to 3.26.8.
(bb) Recycling Operation (3.26.7). Where recycling operation is provided for multiple or telescoping plungers, tests shall be made for conformance with 3.26.7.
(cc) Static Control Elevator. The person or firm installing a static control elevator shall demonstrate conformance with 3.25.2.2.5(b).
(dd) Code Data Plate (8.9)

(ee) Machine Room Operation Operating Devices [8.10.2.2.2(gg)zz]
   (1) Machine Inspection Operation (2.26.1.4.4)
   (2) Inspection Operation with Open Door Circuits (2.26.1.5, 3.26.1, and 3.26.2)

(ff) Governor, Overspeed Switch, and Seal (3.17.1) (Item 2.21)
   (1) Access and securing of car if applicable (2.7.6.3.4)

(gg) Wiring diagrams (8.6.1.6.3)

(PERIODIC)

8.11.3.1.2 Machine Room/Spaces, Control Room/Spaces

(a) Equipment exposure to weather (3.7.1)
(b) Means of Access to Machine Space (Item 2.1.1);
(c) Headroom (Item 2.2.1);
(d) Means necessary for tests (3.7.1)
(e) Inspection & Test Panel (3.7.1)
(f) Lighting and Receptacles (Item 2.3.1);
(g) Enclosure of Machine Space Machine Room/Spaces, Control Room/Spaces (Item 2.4.1);
(h) Housekeeping (Item 2.5.1);
(i) Ventilation and Heating (Item 2.6.1);
(j) Fire Extinguisher (Item 2.7.1);
(k) Pipes, Wiring, and Ducts (Item 2.8.1);
(l) Guarding of Equipment (Item 2.9.1);
(m) Numbering of Elevators, Machines, and Disconnect Switches (Item 2.10.1);
(n) Maintenance Path and Maintenance Clearance (3.7.1)
(o) Stop Switch (3.7.1 and 3.26.1)
(p) Disconnecting Means and Control (Item 2.11.1);
### INSPECTION AND TESTS OF HYDRAULIC ELEVATORS (ACCEPTANCE & PERIODIC) Based on A17.1S-2005

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<tr>
<th>Item</th>
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<td>(q)</td>
<td>Controller Wiring, Fuses, Grounding, etc. (Item 2.12.1);</td>
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<td>Hydraulic Power Unit (Item 2.13.1);</td>
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<td>(t)</td>
<td>Control Valve (Item 2.15.1);</td>
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<td>(aa)</td>
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<td>(bb)</td>
<td>Governor, Overspeed Switch and Seal (Item 2.21); and</td>
</tr>
<tr>
<td>(cc)</td>
<td>Wiring diagrams (8.6.1.6.3)</td>
</tr>
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### ACCEPTANCE

**8.10.3.2.3 Top of car**

- (b) Car Top Light and Outlet [3.14 and 8.10.2.2.2(e)] (Item 3.2)
- (i) Top Emergency Exit [3.14 and 8.10.2.2.2(s)] (Item 3.9)
- (ee) Machinery space / control space (8.10.3.2.2)

**Working areas on the car top (3.7.1)**

1. Means to prevent unexpected movement (2.7.5.1.1).
2. Unexpected Car Movement Device (2.26.2.34).
3. Operating instructions for Unexpected Car Movement Device (8.6.10.6).
4. Operating instructions for egress and re-entry procedure (8.6.10.7).

**Equipment exposure to weather (3.7.1)**

- (gg) Equipment exposure to weather (3.7.1)

**Machinery Supports and Fastenings (2.9.1 and 2.9.3)**

**Guarding of Equipment (2.10.1)**

### PERIODIC

**8.11.3.1.3 Top of Car**

- (cc) Machinery space / control space (8.11.3.1.2)

**Working areas on the car top (3.7.1)**

1. Means to prevent unexpected movement (2.7.5.1.1).
2. Unexpected Car Movement Device (2.26.2.34).
3. Operating instructions for Unexpected Car Movement Device (8.6.10.6).
4. Operating instructions for egress and re-entry procedure (8.6.10.7).

**Equipment exposure to weather (3.7.1)**

- (gg) Equipment exposure to weather (3.7.1)

**Machinery Supports and Fastenings (2.9.1 and 2.9.3)**

**Guarding of Equipment (2.10.1)**

### ACCEPTANCE

**8.10.3.2.4 Outside Hoistway**
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<td>(k) Location of equipment (3.7.1)</td>
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<td>(l) Means necessary for tests (2.7.6.4, 3.7.1.8, 3.7.1.9 and 3.7.1.10)</td>
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<td>(m) Inspection &amp; Test Panel (3.7.1) and (2.7.6.5), Inspection Operation (2.26.1.4.1) and Inspection Operation with Open Door Circuits (2.26.1.5)</td>
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<tr>
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<td>(l) Means necessary for tests (2.7.6.4, 3.7.1.8, 3.7.1.9 and 3.7.1.10)</td>
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<td>(m) Inspection &amp; Test Panel (3.7.1 and 2.7.6.5), Inspection Operation (2.26.1.4.1) and Inspection Operation with Open Door Circuits (2.26.1.5)</td>
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<tr>
<td>(1) retractable stop electrical device (2.26.2.37)</td>
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<tr>
<td>(c) Inspection operation (3.26.2)</td>
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</table>
Revise the ASME A17.1 Preface as follows:

APPLICATION OF REQUIREMENTS TO NEW TECHNOLOGY

With the advent of new technologies, materials and processes in the mechanical, structural, electronic and optic fields, and the analytical capabilities now available, the need for flexibility to introduce products into the marketplace using these technical developments is desirable. Previous editions of the ASME A17.1 had long standing provisions, in Section 1.2 that suggested that Authorities Having Jurisdiction should recognize safety equivalent to that required by the Codes. This edition of ASME A17.1 recognizes ASME A17.X/CSA B44.X provides a structured method for establishing the safety of designs and products and that compliance with ASME A17.X/CSA B44.X is equivalent to compliance with the requirements in ASME A17.1.

ASME ELEVATOR PUBLICATION

Add the following:

ASME A17.X/CSA B44.X Performance-Based Safety Code for Elevators and Escalators. This American National Standard performance-based safety code covers the design, construction, installation, operation, testing, maintenance, alteration, and repair of elevators, dumbwaiters, escalators, moving walks, and material lifts.

Revise ASME A17.1, requirement 1.1.1 as follows:

1.1.1 Equipment Covered by this Code

This Code covers the design, construction, operation, inspection, testing, maintenance, alteration, and repair of the following equipment and its associated parts, rooms, spaces, and hoistways, where located in or adjacent to a building or structure (see 1.2):

(a) hoisting and lowering mechanisms, equipped with a car, which move between two or more landings. This equipment includes, but is not limited to elevators (see 1.3).

(b) power-driven stairways and walkways for carrying persons between landings. This equipment includes, but is not limited to escalators and moving walks (see 1.3).

(c) hoisting and lowering mechanisms equipped with a car which serves two or more landings and is restricted to the carrying of material by its limited size or limited access to the car. This equipment includes, but is not limited to dumbwaiters and material lifts (see 1.3).

Revise ASME A17.1, Section 1.2 as follows:

SECTION 1.2
PURPOSE AND EXCEPTIONS

1.2.1 Purpose

The purpose of this Code is to provide for the safety of life and limb, and to promote the public welfare. Compliance with this Code shall be achieved by:

(a) conformance with the requirements in ASME A17.1; or,

(b) conformance with some of the requirements in ASME A17.1 and for systems, sub-systems, components or functions that do not conform with certain requirements in ASME A17.1, conform with the applicable requirements in ASME A17.X/CSA B44.X; or

(c) conformance with the requirements in ASME A17.X/CSA B44.X.

1.2.2 Exceptions to ASME A17.1
The provisions of this Code are not intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety to those prescribed by this Code, provided that there is technical documentation to demonstrate the equivalency of the system, method, or device.

1.2.2.1 The specific requirements of this Code shall be permitted to be modified by the authority having jurisdiction based upon technical documentation or physical performance verification to allow alternative arrangements that will assure safety equivalent to that which would be provided by conformance to the corresponding requirements of this Code.

1.2.2.2 This Code contains requirements that are also covered in the National Building Code of Canada (NBCC). Reference to the NBCC is recognition that said requirements are not within the scope of this Code in Canada. In jurisdictions not enforcing the NBCC, the use of the NBCC is not intended.

1.2.2.3 Exceptions shall be based on the requirements of 1.2.2.1.

**REASON:** To recognize within ASME A17.1 that compliance with ASME A17.X/CSA B44.X is equivalent to compliance with ASME A17.1.
TN 05-27

Proposed revision to A17.1 Requirements 6.1.7.3.2 and 6.2.7.3.2:

6.1.7.3.2 Access plates at the top and bottom landings shall be securely fastened by a mechanical means.

6.2.7.3.2 Access plates at the top and bottom landings shall be securely fastened by a mechanical means.

Rationale: Gravity alone is not viewed as a secure means of fastening the access plate.
TN 05-39

Proposal for Revision to ASME A17.1 - 2004 Safety Code for Escalators and Elevators:

Revise the following requirements as shown:

8.10.2.2.2 (c) (2) receptacles [NFPA 70 or CSA-C22.1, as applicable. ]

8.10.2.2.2 (k) Disconnecting Means and Control (2.26.4.1, and NFPA 70 or CSA-C22.1, as applicable. ] (Item 2.11)

8.10.2.2.2 (l) (3) grounding (2.26.1 and NFPA 702 or CSA-C22.1, as applicable. )

8.10.2.2.2 (l) (6) clearances (NFPA 70 or CSA-C22.1, as applicable. )

8.10.2.2.3 (v) Traveling Cables and Junction Boxes (2.8.1 and NFPA 70 or CSA-C22.1, as applicable. ) (Item 3.16)

8.10.2.2.5 (f) Traveling Cables (Item 5.5) [2.8.1 NFPA 70 or CSA-C22.1, as applicable. ]

8.10.3.2.2 (k) (1) general (2.26.4.1, 2.26.4.5, and 3.26.1; and NFPA 70 or CSA-C22.1, as applicable. )

8.10.3.2.2 (k) (3) auxiliary contacts [NFPA 70 or CSA-C22.1, as applicable. ]

8.10.3.2.2 (l) (5) clearances (NFPA 70 or CSA-C22.1, as applicable. )

8.10.3.2.2 (l) (8) grounding (2.26 and NFPA 70 or CSA-C22.1, as applicable. )

8.10.3.2.5 (f) Traveling Cables [3.8; and NFPA 70 or CSA-C22.1, as applicable. ] (Item 5.5)

Rationale: To delete references to specific code requirements that are under the jurisdiction of another consensus committee and subject to change at their whim. This also coordinates with a similar approved revision to ASME A17.2.
TN 05-41

Proposed to revision A17.1, requirement 5.9.17.6:

5.9.17.6 Requirement 2.17.17.2.21.4.2 does not apply.

Reason: Editorial.
TN 05-59

Revise as follows:

3.17.3.6.2 Leaf and roller chains, if provided in the construction of the plunger gripper, shall conform to ASME B29 or ASME B29.100 or ASME B29.8.


3.19.3.1 Connections. All piping connections shall be of the welded, grooved, threaded, or bolted flange type. Threads of valves, piping, and fittings shall conform to the requirements of ASME B1.20.1 or ASME B1.20.3 or ASME B1.20.4. Hydraulic tube fittings shall conform to SAE J514.

Rationale: To update reference, ASME B1.20.4 obsolete reference (metric translation of B1.20.3).

Revise Editions specified in Section 9 as follows:

B29.100-2002
B29.8-2002
B1.20.1 (latest edition)
B1.20.3 (latest edition)

Rationale: For B1.20.1 and B1.20.3, in the case of pipe threads, what would be purchased in any supply house would be material developed per the latest edition, therefore in these cases latest edition is the correct reference.
TN 05-172

Proposal: (from 17.1s-200x)
2.7.1.3.1 Difference in Floor Levels.

Differences in levels of floors shall be avoided where practicable. Where there is a difference in level exceeding 400 mm (16 in.), a standard railing conforming to 2.10.2 shall be provided. [see also 2.7.3.3.1 and 2.7.3.3.2]

Note: Differences in levels of floors should be avoided where practicable.

Rationale: It is not enforceable language.
Proposed Editorial Revision to A17.1-2004, Requirement 8.10.2.2.5(h)(3):

(h) Compensating Chains, Ropes, and Sheaves (Item 5.10)
   (1) fastenings (2.21.4)
   (2) sheave switches (2.26.2.3 and 2.26.4.3)
   (3) tie-down (2.17.17 2.21.4.2)

Rationale: Editorially updating cross-references that were overlooked when revisions were made to the original requirement. Requirement 2.17.17 was removed in A17.1a-2002 and its revised requirements were put into requirement 2.21.4.2. This editorial revision is an A17.1-2004 reference to code requirement 2.17.17, which no longer exists.
Proposed editorial revision to A17.1 Requirements 6.1.3.3.9:

6.1.3.3.9(c)(2) ≤ 0.25 when a skirt deflector device complying with the requirements of 6.1.3.3.8 and 6.1.3.3.10 is provided

Rationale: To update reference when 6.1.3.3.8 was renumbered 6.1.3.3.10, because of the addition of dynamic skirt requirements.
TN 05-330

*ASME A17.1 - 2004:*

2.2.8 Access to Underside of Car

Where the distance from the pit floor to the underside of the plank channels or slings exceeds 2100mm (83 in.), with the car at the lowest landing, a means shall be permanently installed or permanently stored in the pit to provide access to the equipment on the underside of the car. When access is provided by means of a working platform it shall conform to the requirements of 2.7.5.3.2 through 2.7.5.3.6.

*Rationale:* To coordinate with new requirements in A17.1S-2005.
2.11.1.3 Telephone as Alternative to Emergency Doors. Where an elevator is installed in a single blind hoistway, and there are no landings from which to gain access through an emergency door, a means of two-way conversation conforming to 2.27.1.2 shall be provided.

NOTE: Examples are pulp mills, grain elevators, dams, or similar locations.

RATIONALE: Editorial correction to reference which was updated in A17.1a-2002.
2.14.7.1.3 Each elevator shall be provided with auxiliary lighting having its power source located on the car. It shall conform to the following:

(a) The intensity of auxiliary lighting illumination shall be not less than 2 lux (0.2 fc), measured approximately at any point between 1225 mm (48 in) and 890 mm (35 in.) above the car floor and approximately 300 mm (12 in) centered horizontally in front of a car operating panel containing any of the following:
   (1) car operating device(s);
   (2) door open button;
   (3) rear or side door open button;
   (4) door close button;
   (5) rear or side door close button;
   (6) “HELP” button and operating instructions or
   (7) "ALARM" switch;

(b) Illumination is not required in front of additional car operating panels where the devices listed in 2.14.7.1.3(a) are duplicated.

(c) Auxiliary lights shall be automatically turned on in all elevators in service after normal car lighting power fails.

(d) The power system shall be capable of maintaining the light intensity specified in 2.14.7.1.3(a) for a period of at least 4h.

(e) Not less than two lamps of approximately equal wattage shall be used

(f) Battery-operated units, where provided shall:
   (1) comply with CSA C22.2 No.141 (see Section 4);
   (2) have a 4 h rating minimum;
   (3) be permanently connected to the car light branch circuit; and
   (4) have an output rating that includes the auxiliary lights and if connected, the emergency signaling device [see 2.27.1.1.3].

Rationale: According to ICC/ANSI A117.1 and CSA/B44 Appendix E, emergency control buttons are required to be located a minimum of 890 mm (35 in.) above the car floor. In most cases floor buttons are permitted to be 1220 mm (48 in.) above the car floor. The auxiliary lighting should illuminate the car operating panel with the minimum illumination over this entire area.
Revise 2.1.6 as follows:

2.1.6 Projections, Recesses, and Setbacks in Hoistway Enclosures

Hoistway enclosures shall have flush surfaces on the hoistway side, subject to the requirements of 2.1.6.1 and 2.1.6.2.

2.1.6.1 On sides for loading and unloading, landing sills, hoistway doors, door tracks, and hangers shall be permitted to project inside the hoistway enclosure. Sills shall be guarded as required by 2.11.10.1.

2.1.6.2 On sides not used for loading and unloading

(a) recesses, except those necessary for installation of elevator equipment, shall not be permitted

(b) beams, floor slabs, or other building construction making an angle less than 75 deg with the horizontal shall not project more than 100 mm (4 in.) inside the hoistway enclosure unless the top surface of the projection is beveled at an angle not less than 75 deg with the horizontal

(c) separator beams between adjacent elevators are not required to have bevels

(d) where recesses or setbacks exceeding 100 mm (4 in.) occur in the enclosure wall, the top of the recess or setback shall be beveled at an angle of not less than 75 deg with the horizontal

(e) bevels are not required if the projections, recesses and setbacks are covered with material conforming to the following:

(1) it shall be equal to or stronger than 1.110 mm (0.0437 in.) wire

(2) it shall have openings not exceeding 25 mm (1 in.)

(3) it shall be supported and braced such that it will not deflect more than 25 mm (1 in.) when subjected to a force of 4.79 kPa (100 lbf/ft²) applied horizontally at any point.

REASON: It is unclear what was intended by the terms "recess" vs. "setback" when the requirement was originally developed in the 1950's. Some dictionaries define a recess as a set back. There is no safety reason to prohibit a recess when a setback is permitted, provided the recess complies with the same requirements as a setback. This TN is limited to the issue or recesses and does not address the current beveling requirements.
TN 05-347

Modify the note at the beginning of section 2.27 as follows:

Note (2.27): Additional requirements, including those for firefighters’ communications systems, may be found in the building code.

Rationale: Remind users of this code to look at additional requirements in other codes.
Editorially revise A17.1, requirements 8.7.2.17.2(b)(5) and 8.7.3.15.3:

8.7.2.17.2(b)(5) The car safety, the counterweight safety (where provided), and the governor shall conform to 2.17 and 2.18, except that the pitch diameters of speed governor sheaves and governor tension sheaves are not required to conform to 2.18.7. Where the new rated speed is greater than 3.5 m/s (700 ft/min), compensating rope tie-down shall be provided in compliance with 2.17.172.21.4.2.

8.7.3.15.3 Where any alterations are made to existing car or counterweight safeties, the affected safeties and guide rails shall conform to 3.17, 3.23, and 3.28, except for cross-referenced 2.17.10 through 2.17.14, 2.17.16, and 2.17.172.21.4.2.

Rationale: Editorially updating cross-references that were overlooked when revisions were made to the original requirements.
Delete “Overlay” from the A17.1, Appendix L.

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Rationale: Reference is not appropriate as the term ‘Overlay’ is not defined nor used anywhere in A17.1 except in this appendix.
Editorially revised A17.1, requirement 8.7.2.27.6.

8.7.2.27.6 Change in Type of Operation Control.
Where there is a change in the type of operation control, the installation shall conform to the following:
(a) The protection of the hoistway landing openings shall conform to 2.11.1 through 2.11.13, 2.12, and 2.13.
(b) Car enclosures and car doors or gates shall conform to 2.14, except that where existing car enclosures and/or car doors or gates are retained, conformance with the following requirements is not required:
   (1) requirements 2.14.1.3, 2.14.1.5.1, and 2.14.1.8
   (2) requirements 2.14.2.1, 2.14.2.3, and 2.14.2.4
   (3) requirement 2.14.3
   (4) requirement 2.14.4.3 and 2.14.4.6
(c) The car safety, the counterweight safety (where provided), and the governor shall conform to 2.17 and 2.18, except that the pitch diameter of speed governor sheaves and governor tension sheaves are not required to conform to 2.18.7.
(d) The capacity and loading shall conform to the 2.16.
(e) The terminal stopping devices shall conform to 2.25.
(f) The operating devices and control equipment shall conform to 2.26. The requirements of 2.26.4.2, 2.26.4.3, and 2.26.4.4 shall not apply to electrical equipment unchanged by the alteration.
(g) Emergency operation and signaling devices shall be provided and shall conform to 2.27.

Reason: Editorial
Add the following requirements to A17.1:

**8.7.2.27.8 Electrical Protective Devices.** Where there is an alteration to or addition of an electrical protective device, it shall conform to 2.26.2 for that device.

**8.7.3.31.11 Electrical Protective Devices.** Where there is an alteration to or addition of an electrical protective device, it shall conform to 3.26.4 for that device.

Rationale: To ensure that any Electrical Protective Devices added or altered meet the requirements of A17.1 for the Electrical Protective Device.
TN 05-621

Modify A17.1, Requirement 2.27.8 as follows:

2.27.8 Switch Keys
The key switches required by 2.27.2 through 2.27.5 for all elevators in a building shall be operable by the same key. The keys shall be Group 3 Security (see 8.1). There shall be a key for each switch provided. These keys shall be kept on the premises in a location readily accessible to firefighters and emergency personnel, but not where they are available to the public. This key shall be of a tubular, 7 pin, style 137 construction and shall have a bitting code of 6143521. The key shall be coded “FEO-K1”. The possession of the “FEO-K1” key shall be limited to elevator personnel, emergency personnel and elevator equipment manufacturers.

Where provided, a lock box, including its lock and other components, shall conform to the requirements of UL 1037 (see Part 9).

NOTE (2.27.8): Local authorities may specify additional requirements for a uniform keyed lock box and its location to contain the necessary keys.

Rationale:
To address the concern raised by the firefighters at the workshop on the use of elevators in fire and other emergencies.

The requirements of tubular, 7 pin, style 137 construction adequately describe the basic parameters of the key. Key manufacturers recognize and know what this is, and it is the basic elements for the Connecticut BFD-1 key as well. The key code name will be linked to an actual bitting code for the key itself. The bitting code indicates the location, of which there are seven possible, and depth of the "slots" in the key. ASME should obtain this bitting code and associated key code name can be gotten from CompX who are the number 1 US supplier of tubular keys and the owner of the original design of the style 137 key. They assign the bitting code and reserve it to the designated key code.

Key similar to the Massachusetts and New York City are easily copied and are difficult to fit in a shallow car operating panel especially given the requirements for a locked cover in front of the Phase II controls. The proposed key is more compact and not easily duplicated.

The requirements for the implementation of a common key will assist local jurisdictions who have voiced a need for a common key. The experience of firefighters in jurisdictions with a common key finds that response times to emergency events are significantly reduced.
TN 05-830

Proposed revision to A17.1, Requirement 2.2.4.2:

2.2.4.2 There shall be installed in the pit of each elevator, where the pit extends more than 900mm (35 in.) below the sill of the pit access door, a fixed vertical ladder of noncombustible material, located within reach of the access door. The ladder shall extend not less than 1 200 mm (48 in.) above the sill of the access door. The rungs, cleats, or steps shall be a minimum of 400 mm (16 in.) wide. When unavoidable obstructions are encountered, the width shall be permitted to be decreased to less than 400 mm (16 in.). The reduced width shall be as wide as the available space permits, but not less than 225 mm (9 in.). The rungs, cleats, or steps shall be spaced 300 mm (12 in.) on center. A clear distance of not less than 180 mm (7 in.) 115 mm (4.5 in.) from the centerline of the rungs, cleats, or steps to the nearest permanent object in back of the ladder shall be provided. When unavoidable obstructions are encountered, the distance shall be permitted to be reduced to 115 mm (4.5 in.). Siderails, if provided, shall have a clear distance of not less than 115 mm (4.5 in.) from their centerline to the nearest permanent object. The nearest point of the ladder shall be within 1 000 mm (39 in.), measured horizontally from the means to unlock the egress door from the pit.

Pit access by a ladder shall not be permitted when the pit floor is more than 3 000 mm (120 in.) below the sill of the access door, except where there is no building floor below the bottom terminal landing, this height shall be permitted to be greater but not more than 4 200 mm (165 in.).

Rationale: The 4.5 inch dimension behind the ladder has withstood the test of time and is acceptable. This is also in agreement with OSHA 1926.1053(a)(13).
Proposed Revision to A17.1:

2.27.1 Car Emergency Signaling Devices

2.27.1.1 Emergency Communications

2.27.1.1.1 A two-way communications means between the car and a location in the building, that is readily accessible to authorized and emergency personnel staffed by authorized personnel shall be provided.

2.27.1.1.2 When the two-way communications location in the building is not staffed 24 h a day, by authorized personnel who can take appropriate action, the means of two-way communications shall automatically be directed within 30 s to an additional on- or offsite location, staffed by authorized personnel, where an appropriate response can be taken.

2.27.1.1.3 The two-way communication means within the car shall comply with the following requirements:

(a) In jurisdictions enforcing NBCC, Appendix E of CAN/CSA B44, or in jurisdictions not enforcing NBCC, ICC/ANSI A117.1.

(b) A push button to actuate the two-way communication means shall be provided in or adjacent to a car operating panel. The push button shall be visible and permanently identified as “HELP.” The identification shall be on or adjacent to the “HELP” button. When the push button is actuated, the emergency two-way communication means shall initiate a call for help and establish two-way communications.

(c) A visual indication on the same panel as the “HELP” push button shall be provided, which is activated by authorized personnel, to acknowledge that two-way communications link has been established. The visual indication shall be extinguished when the two-way communication link is terminated.

(d) The two-way communication means shall provide on demand to authorized personnel, information that identifies the building location and elevator number and that assistance is required.

(e) After the call acknowledgement signals are sent [2.27.1.1.3(c)], the two-way voice communications shall be available between the car and authorized personnel.

(f) The two-way communications, once established, shall be disconnected only when authorized personnel outside the car terminate the call.

(g) The two-way communication means shall not use a handset in the car.

(h) The two-way communications shall not be transmitted to an automated answering system. The call for help shall be answered by authorized personnel.

(i) Operating instructions shall be incorporated with or adjacent to the “HELP” button.

2.27.1.1.4 Where the elevator travel is 18 m (60 ft) or more, a two-way voice communication means within the building accessible to emergency personnel shall be provided and comply with the following requirements:

(a) The means shall enable emergency personnel within the building to establish two-way voice communications to each car individually. Two-way voice communication shall be established without any intentional delay and shall not require intervention by a person within the car. The means shall override communications to outside of the building.

(b) Two-way voice communications, once established, shall be disconnected only when emergency personnel outside the car terminates the call.

(c) Once the two-way voice communication has been established, the visual indication [see 2.27.1.1.3(c)] within the car shall illuminate. The visual indication shall be extinguished when the two-way communication is terminated.

(d) Operating instructions shall be incorporated with or adjacent to the two-way voice communication outside the car. Instructions shall conform to 2.27.7.3.
2.27.1.5 If the emergency communication means is normally connected to the building’s main power supply, it shall automatically transfer to an alternate source(s) of power when normal power supply fails. The alternate source(s) of power (standby, emergency, etc.) shall be capable of providing power for illumination of the visual indication [see 2.27.1.3(c)] within the car, and the means of emergency communications for at least 4 h; and the audible signaling device (see 2.27.1.2) for at least 1 h.

2.27.1.2 Emergency Stop Switch Audible Signal.
When an emergency stop switch (2.26.2.5) is provided, an audible signaling device shall be provided. The audible signaling device shall
   (a) have a rated sound pressure rating of not less than 80 dBA nor greater than 90 dBA at 3 m (10 ft)
   (b) respond without delay after the switch has been activated
   (c) be located inside the building and audible inside the car and outside the hoistway
   (d) for elevators with a travel greater than 30 m (100 ft), be duplicated as follows:
      (1) one device shall be mounted on the car
      (2) a second device shall be placed at the designated level

Rationale: Clarification that emergency communications should be directed to a location on or off site where an appropriate response can be taken. Clarification that when communication from within the building to an elevator car is required, that the communication means in the building be available to emergency personnel.
TN 05-980

Revised figure 2.27.9 as follows:

**Rationale:** Clarification of the committee’s original intent.

[Image of figure 2.27.9 Elevator Corridor Call Station Pictograph]
5.2.1.1.2 Requirement 2.1.3 applies only when a floor is provided at the top of hoistway.

(a) Requirement 2.1.3.1.1. Elevator machines and sheaves shall be permitted to be located inside the hoistway enclosure at the top or bottom without intervening enclosures or platforms. If a floor is provided at the top of the hoistway, it shall comply with 5.2.1.1.2(c). If a floor is provided, it shall be permitted to be of wood.

(b) Requirement 2.1.3.2 does not apply.

(ceb) Requirement 2.1.3.3 does not apply. The floor shall be designed in accordance with other floors in the building. Where the machine is to be supported by the machine room floor, the floor shall be designed in accordance with 2.9.4 and 2.9.5.

(ceb) Requirement 2.1.3.4. The floor shall be permitted to be of wood.

Rationale: Provisions for elevator machines and sheaves to be located in the hoistway are addressed in the supplement.

Updated the references to coincide with the A17.1S-2005.

5.2.1.4.1 Bottom Car Clearance. Elevators shall conform to 2.4.1 or 5.2.1.4.2.

5.2.1.4.2 Alternative to Bottom Car Clearance Requirements. When the car rests on its solid bumper or fully compressed buffer, no part of the car or any equipment attached thereto shall strike the pit or any part of the equipment located therein.

5.2.1.4.2.1 Where a machine machinery space or control space is not located in the pit, a Nonremovable means shall be provided to mechanically hold the car above the pit floor to provide an area in the pit for maintenance and inspection, conforming to the following:

(a) It shall hold the car at a height of not less than 900 mm (35 in.) nor more than 2,000 mm (79 in.) above the pit floor and not less than 300 mm (12 in.) above the bottom landing sill, as measured from the underside of the car platform.

(b) The means shall be so designed and constructed as to stop and hold the car at governor tripping speed with rated load in the car.

(c) It shall not cause the stresses and deflections in car frame and platform members and their connections to exceed the limits specified in 2.15.10 and 2.15.11.

(d) If the means does not automatically activate when the lowest hoistway door is opened with the car not at the landing

(1) it shall be capable of being operated without complete bodily entry into the pit.

(2) a sign conforming to ANSI Z35.1, or CAN/CSAZ321, whichever is applicable (see Part 9), shall be conspicuously displayed inside the hoistway, which shall include a warning that there is an insufficient bottom car clearance and instructions for operating the device. The letters shall be not less than 25 mm (1 in.) in height.

5.2.1.4.2.2 Where a machine machinery space or control space is located in the pit, requirement 2.7.5.2 applies.

Rationale: To address where a machine machinery space or control space is located in the pit and alternative to bottom car clearance requirement is provided.

5.2.1.7 Machinery Spaces, Machine Rooms and Control Spaces, and Control Rooms. Machinery Spaces. Machinery spaces, machine rooms, and machinery, control spaces, and control rooms shall conform to 2.7, except as modified by 5.2.1.7.1 through 5.2.1.7.12. Equipment shall be permitted to
be located in elevator machine rooms, rooms containing other equipment essential to the operation of the building, or the hoistway.

Note: See 5.2.1.1.2 for floors of machine room and machinery spaces over or at the top of hoistway.

5.2.1.7.1 Requirement 2.7.1.1 applies only where a separate machinery space is provided.

5.2.1.7.2 Requirement 2.7.1.2 applies only where a separate machinery space is provided. When provided, it shall be enclosed to a height of not less than 2,000 mm (79 in.).

5.2.1.7.3 Elevator machine and control equipment shall be permitted to be located in a room or space containing other machinery and equipment essential to the operation of the building, provided that they are separated from the other machinery or equipment by substantial metal grille enclosure not less than 2,000 mm (79 in.) high with a self-closing and self-locking door and openable from the inside without a key. The grille enclosure shall be of a design that will reject a ball 50 mm (2 in.) in diameter.

5.2.1.7.4 Requirement 2.7.2 does not apply. Where a machine is located at the bottom of the hoistway, the control equipment shall be located outside the hoistway or in a cabinet on the inside surface of the access door.

5.2.1.7.5 Requirement 2.7.3.3 applies only where a separate room is provided for machine and control equipment. A permanent stair or ladder is not required when the machinery space is within the hoistway.

5.2.1.7.6 Requirement 2.7.3.4.1 applies only where a separate machine room is provided and complete bodily entry is necessary.

5.2.1.7.7 Access openings in elevator hoistway enclosures shall be provided with an electric contact conforming to 2.12.4 and 2.14.4.2.1 through 2.14.4.2.3 that will cause interruption of power to the motor and brake when the access door is open.

5.2.1.7.8 Requirement 2.7.4.1 does not apply. The minimum headroom shall be 2,000 mm (79 in.).

5.2.1.7.9 Requirement 2.7.5.2 applies only when a separate machine room is provided.

5.2.1.7.10 Requirement 2.7.6 does not apply. Where the machine is located in the hoistway and access to the pit is required for maintenance, a permanent manual or automatic means shall be provided to stop the car from descending more than 2,000 mm (79 in.) above the pit floor.

5.2.1.7.11 Requirement 2.7.7 does not apply to machine rooms in hoistways.

5.2.1.7.12 Where elevator machines are located inside the hoistway and complete bodily entry is required for inspection or maintenance
(a) a permanent metal, concrete, or wood platform below or level with the machine beams shall be provided
(b) the platform shall extend the full width and depth of the hoistway
(c) the strength of the platform shall conform to 2.13.3
(d) if the platform is of openwork construction, the openings shall reject a ball 25 mm (1 in.) in diameter
(e) a clear headroom of not less than 2,000 mm (79 in.) shall be provided from the top of the platform to the underside of the hoistway ceiling

Rationale: Previous requirements are addressed in A17.1S-2005.

5.2.1.8 Electrical Equipment, Wiring, Pipes, and Ducts in Hoistways, Machinery Spaces, and Machine Rooms, Control Spaces, and Control Rooms. Electrical equipment, wiring, pipes, and ducts in hoistways and machinery spaces, machine rooms, control spaces, and control rooms shall comply with Section 2.8.
5.2.1.27 Emergency Operations and Signaling Devices. Emergency operation and signaling devices shall conform to 2.27, except 2.27.3 through 2.27.8 do not apply. However, if firefighters’ emergency operation service is provided, it shall conform to 2.27.

Rationale: Editorial.

5.2.2 Hydraulic Limited-Use/Limited-Application Elevators.

5.2.2.1 Hoistways and Related Construction. Hoistways and related construction hydraulic limited-use/limited-application elevators shall conform to 5.2.1, except as modified by 5.2.2.2 through 5.2.2.15.

5.2.2.21 Bottom and Top Clearances and Runbys. Bottom and top clearances and runbys for cars and counterweights shall conform to 3.4, except as follows:

(a) Bottom car clearances shall conform to 3.4.1 or 5.2.1.4.2.
(b) Requirement 3.4.2.1 does not apply. The bottom car runby shall not be less than 50 mm (2 in.).
(c) The top car clearances shall conform to 3.4.4 or 5.2.1.4.4.

5.2.2.2 Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms. Machinery spaces, machine rooms, control spaces, and control rooms shall comply with 3.7, except as modified by 5.2.1.7.

5.2.2.3 Mechanical Equipment Car Frames and Platforms. Mechanical equipment car frames and platforms shall conform to 3.14.15 through 3.17 and 3.21 through 3.23, except as modified by 5.2.2.4, 5.2.2.5, 5.2.2.6, 5.2.2.9, and 5.2.2.10.5.2.1.15.2.

5.2.2.4 Car Enclosures, Car Doors and Gates, and Car Illumination. Car enclosures, car doors and gates, and car illumination shall conform to 5.2.1.14.

5.2.2.5 Platform Guards. The platform guard shall have a straight vertical face, extending below the floor surface of the platform of not less than the depth of the unlocking zone plus 75 mm (3 in.).

5.2.2.64 Capacity, and Loading, Speed, and Rise. The capacity, and loading, speed, and rise shall conform to 5.2.1.16 except as modified by 5.2.1.16.1 and 5.2.1.16.2. Requirement 5.2.1.16.3 does not apply.

5.2.2.75 Alternative to Speed Governor for Roped-Hydraulic Elevators. Car and Counterweight safeties and Plunger Gripper shall conform to 3.17 except as modified by 5.2.2.5.1 and 5.2.2.5.2.

Note: See also 5.2.1.18.

5.2.2.75.1 The safeties on roped-hydraulic elevators shall be operated by a speed governor or shall be permitted to be operated by inertia where an overspeed valve conforming to 3.19.4.7 is provided.

5.2.2.75.2 Upon the parting of the suspension ropes, the safeties shall apply without appreciable delay and their application shall be independent of the location of the break in the ropes and shall be permitted to be accomplished by the use of restrained compression springs or by the action of gravity, or by both, or by positive mechanical means.

5.2.2.86 Hydraulic Jacks and Sheaves. Hydraulic jacks and sheaves shall conform to 3.18. The reference in 3.18.1.2.1 and 3.18.1.2.2 to 2.20 shall be modified by 5.2.1.20. The reference in 3.18.1.2.3 to 3.18.1.2.5 and 5.2.2.20.2.24.2 shall be modified by 5.2.1.24.2 and 5.2.1.24.3.

5.2.2.9 Valves, Pressure Piping, and Fittings. Valves, pressure piping, and fittings shall conform to 3.19. Requirement 5.2.1.28 does not apply.

5.2.2.8 Counterweights. Counterweights shall conform to 3.21.

5.2.2.10 Buffers and Bumpers. Buffers and Bumpers shall conform to 3.22 except as modified by 5.2.1.22.1. Elastomeric bumpers capable of absorbing the energy of a fully loaded car shall be permitted to be used. The average deceleration shall be less than 9.81 m/s² (32.2 ft/s²) with any load between 61 kg (135 lb) and rated load.

5.2.2.11 Guide Rails, Guide-Rail Supports, and Their Fastenings. Guide rails, guide-rail supports, and their fastenings shall conform to 2.23, except as modified by 3.23 and 5.2.1.23.2.

5.2.2.12 Hydraulic Machines and Tanks. Hydraulic machines and tanks shall conform to 3.24.1, 3.24.2, 3.24.3, and 3.24.4. Requirement 5.2.1.24 does not apply, except as modified by 5.2.2.6.

Rationale: Editorial clarification changes based on ASME A17.1-2005

5.2.2.13 Operating Devices and Control Equipment. Requirement 5.2.1.26 does not apply. Operating devices and control equipment shall conform to 3.26.

5.2.2.14 Emergency Operations and Signaling Devices. Requirement 5.2.1.27 does not apply. Emergency operations and signaling devices shall conform to 3.27, except firefighters’ emergency operations (2.27.3 through 2.27.8) does not apply. When firefighters’ emergency operation is provided, it shall conform to 3.27.1 through 3.27.4.

5.2.2.15 Layout Data. Requirement 5.2.1.29 does not apply. The information provided on layout data shall conform to 3.28.

5.2.2.17 Identification. Identification shall conform to 5.2.1.31, as applicable.

Rationale: To clarify the requirements of 5.2.1 apply to electric and hydraulic limited-use/limited-application elevators.
Revise A17.1-2004 (including A17.1a-2005), requirements 8.7.2.1.3 and 8.7.2.1.4 as follows:

8.7.2.1.3 Construction at Top of Hoistway. Any alteration to the construction at the top of the hoistway shall conform to 2.1.2.1, 2.1.2.2, and 2.1.3. See also 8.7.2.4.

Rationale: Specified requirement is not related to construction at the top of the hoistway and should be deleted.

8.7.2.1.4 Construction at Bottom of Hoistway. Any alteration to the construction at the bottom of the hoistway shall conform to 2.1.2.2, 2.1.2.3 and 2.2. See also 8.7.2.4.

Rationale: Specified requirement is related to construction at the bottom of the hoistway and should be included.
TN 05-1265

Proposed Revision to A17.1, Requirement 2.8.3.3.2:

2.8.3.3.2 In jurisdictions not enforcing the NBCC, where elevator equipment is located or its enclosure is configured such that application of water from sprinklers could cause unsafe elevator operation, means shall be provided to automatically disconnect the main line power supply to the affected elevator and any other power supplies used to move the elevator upon or prior to the application of water.

Rationale: To clarify that power shall be removed and the elevator shall not move.
Proposed Revision to requirement 6.1.3.3.1(a)(1), 6.1.3.3.1(a)(2), and 1.3 as follows:

Revise 6.1.3.3.1(a)(1):

Escalators not equipped with dynamic skirts panels, the balustrade on the step side shall have no areas or moldings depressed or raised more than 6.4 mm (0.25 in.) from the parent surface, except as permitted in 6.1.3.3.10

Revise 6.1.3.3.1(a)(2):

Escalators equipped with dynamic skirts panels, the balustrade…. 

Add to 1.3 after escalator skirt:

**Escalator, skirt, dynamic:** see skirt panel, dynamic.

Rationale:

1. The correct term is “dynamic skirt panels” not “dynamic skirts”.
2. 6.1.3.3.1(a)(1) is being interpreted as prohibiting skirt deflectors.
3. The definition of dynamic skirt panels should be listed with skirt panels and the other escalator definitions for ease of reference.
2.26.5 System to Monitor and Prevent Automatic Operation of the Elevator With Faulty Door Contact Circuits

Means shall be provided to monitor the position of power-operated car doors that are mechanically coupled with the landing doors while the car is in the landing zone, in order

(a) to prevent the automatic operation of the car if the car door is not closed (see 2.14.4.11), regardless whether the portion of the circuits incorporating the car door contact or the interlock contact of the landing door coupled with the car door, or both, are closed or open, except as permitted in 2.12.7, 2.26.1.5 and 2.26.1.6

(b) to prevent, except as permitted in 2.26.1.5, the power closing of the doors during automatic operation if the car door is fully open and any of the following conditions exist:

1. the car door contact is closed or the portion of the circuit incorporating this contact is bypassed
2. the interlock contact of the landing door that is coupled to the opened car door is closed or the portion of the circuit incorporating this contact is bypassed
3. the car door contact and the interlock contact of the door that is coupled to the opened car door are closed, or the portions of the circuits incorporating these contacts are bypassed

Rationale: The door position monitoring requirements were only intended to prevent automatic operation, and not constant pressure operation (as indicated in the heading for this section). This should be made clear in the body of the requirement (and not just the heading). Since 2.12.7 and 2.26.1.5 do not permit automatic operation of the car, these references should be deleted. Also, there are some minor editorial items that need to be addressed (i.e., a missing article and two extraneous commas).
To revise 5.3.2.2.1 as follows:

5.3.2.2 Driving Machines, Sheaves, and Supports for Direct-Plunger and Roped-Hydraulic Driving Machines

5.3.2.2.1 Direct-plunger and roped-hydraulic private residence elevator driving machines, sheaves, valves, supply piping, fittings, and tanks shall conform to 3.18, 3.19, and 3.24, except as modified by 5.3.1.16.2 and 5.3.2

5.3.2.2.2 A pressure switch shall be provided to remove power from the pump motor and the control valve unless there is positive pressure at the control valve.

Rationale: To clarify the references.
TN 05-1609

Editorially revise requirement 2.22.4.10.3 and Index as follows:

2.22.4.10.3 When compensating rope tie-down is present, the increase in load shall be taken into account (see 2.17.17 2.21.4.2).

Index

Compensating rope and chain
attachment to counterweight, 2.21.4
earthquake protection, 8.4.6.1
switch, 2.26.2
switch, definition of, Section 1.3
tie down, 2.17.17 2.21.4.2

Rationale: Editorially updating cross-references that were overlooked when revisions were made to the original requirement (2.17.17).
Proposed Revision to A17.1, move the second sentence in Section 7.1 to the scope of Part 7 and remove that sentence from all the other sections (7.1, 7.2, 7.3) in Part 7:

SCOPE

Part 7 applies to dumbwaiters and material lifts.

Note: See also Part 8 for additional requirements that apply to dumbwaiters and material lifts.

Where the term “elevator” is used in a referenced requirement, it shall mean “dumbwaiter” or “material lift.”

SECTION 7.1
POWER AND HAND DUMBWAITERS WITHOUT AUTOMATIC TRANSFER DEVICES

Requirement 7.1 applies to all power and hand dumbwaiters without automatic transfer devices. Where the term “elevator” is used in a referenced requirement, it shall mean dumbwaiter.

SECTION 7.2
ELECTRIC AND HAND DUMBWAITERS WITHOUT AUTOMATIC TRANSFER DEVICES

Requirement 7.2 applies to electric and hand dumbwaiters without automatic transfer devices. Where the term “elevator” is used in a referenced requirement, it shall mean “dumbwaiter.”

SECTION 7.3
HYDRAULIC DUMBWAITERS WITHOUT AUTOMATIC TRANSFER DEVICES

Requirement 7.3 applies to hydraulic dumbwaiters without automatic transfer devices. Where the term “elevator” is used in a referenced requirement, it shall mean “dumbwaiter.”

Rationale: this sentence should apply to all of part 7, not just sections 7.1, 7.2 or 7.3.
TN 06-09

See Attached pages
Fig. 8.4.8.2-1  12 kg/m (8 lb/ft) Guide-Rail Bracket Spacing
Fig. 8.4.8.2-2  16.5 kg/m (11 lb/ft) Guide-Rail Bracket Spacing
Fig. 8.4.8.2-3  18 kg/m (12 lb/ft) Guide-Rail Bracket Spacing
Fig. 8.4.8.2-4  22.5 kg/m (15 lb/ft) Guide-Rail Bracket Spacing
FIG. 8.4.8.2-5  27.5 kg/m (18.5 lb/ft) Guide-Rail Bracket Spacing
Fig. 8.4.8.2-6  33.5 kg/m (22.5 lb/ft) Guide-Rail Bracket Spacing
Fig. 8.4.8.2-7  44.5 kg/m (30 lb/ft) Guide-Rail Bracket Spacing
new Table 2.26.4.3.2 and Notes.

Table 2.26.4.3.2
SIL for Electrical Protective Devices and Other Electrical Safety Functions
See Notes (1,2,3,4,5,6)

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Device Name</th>
<th>Safety Function</th>
<th>SIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.26.2.30</td>
<td>Unintended car movement device</td>
<td>Check on unintended car movement with doors open</td>
<td>2</td>
</tr>
<tr>
<td>2.26.2.36</td>
<td>Working platform electrical device</td>
<td>Check on fully retracted position of working platform</td>
<td>4</td>
</tr>
</tbody>
</table>

Rationale:
Table 2.26.4.3.2 For a detailed explanation of the hazard-based approach that was used for the determination of SIL’s and how numerical target failure measures for E/E/PES Safety-related systems are linked to SIL’s requirements, refer to: Committee Record dated 05/23/05.

SIL values in the table were developed according to the process for SIL development outlined in IEC 61508-5. The resulting SIL values were then also harmonized where possible to the highest value between A17.1/B44 risk assessment results and independent work completed by CEN for CEN-EN 81 Amendment 1 and ISO/TC178/WG8. See Committee Record dated 05/23/05.

Changes were made to these SIL values based upon comments received on LB 05-1114 for TN 04-811.
CAN/CSA-B44.1/ASME A17.5 Elevator and Escalator Electrical Equipment. This Code contains requirements for obtaining, labeling, and listing of drive machine controllers, logic controllers, and operating devices for starting, stopping, regulating, controlling, or protecting electric motors, generators, and all other electrical equipment, for elevators, escalators, moving walks, dumbwaiters, material lifts, platform wheelchair lifts, and stairway lifts.

2.26.4.2 Drive machine controllers, logic controllers, and operating devices accessory thereto for starting, stopping, regulating, controlling, or protecting electric motors, generators, or other Electrical equipment shall be listed/certified and labeled/marked. to the requirements of CAN/CSA-B44.1/ASME A17.5 defines the scope and applicable requirements for this listing/certification.

5.3.1.18.4 Electrical Equipment and Wiring
(a) All electrical equipment and wiring shall conform to NFPA 70 or CSA-C22.1, whichever is applicable.
(b) Drive machine controllers, logic controllers, and operating devices accessory thereto, for starting, stopping, regulating, controlling, or protecting electric motors, generators, or other Electrical equipment shall be listed/certified and labeled/marked. to the requirements of CAN/CSA-B44.1/ASME A17.5 defines the scope and applicable requirements for this listing/certification.
(c) The installation of capacitors or other devices, the operation or failure of which will cause an unsafe operation of the elevator, is prohibited.

6.1.7.4.2 Driving-machine controllers, logic controllers, and operating devices accessory thereto, for starting, stopping, regulating, controlling, or protecting electric motors, generators, or other Electrical equipment shall be listed/certified and labeled/marked. to the requirements of CAN/CSA-B44.1/ASME A17.5 defines the scope and applicable requirements for this listing/certification.

6.2.7.4.2 Driving-machine controllers, logic controllers, and operating devices accessory thereto, for starting, stopping, regulating, controlling, or protecting electric motors, generators, or other Electrical equipment shall be listed/certified and labeled/marked. to the requirements of CAN/CSA-B44.1/ASME A17.5 defines the scope and applicable requirements for this listing/certification.

7.3.11.5.2 Electrical equipment shall be listed/certified and labeled/marked. to the requirements of CAN/CSA-B44.1/ASME A17.5 defines the scope and applicable requirements for this listing/certification.

Rationale: Changes are considered to be editorial to make the applicable A17.1 requirements agree with scope of A17.5 and to make the language in A17.1 consistent.
TN 06-368

Revised A17.1, requirement 8.4.13.2 as follows:

### 8.4.13.2 For application to building code of Canada:

Where required, in jurisdictions enforcing NBCC, the following values of $Z_v$ (velocity-related seismic zone) will determine the applicable seismic zone:

<table>
<thead>
<tr>
<th>Zone(s)</th>
<th>Peak Horizontal Ground Acceleration, $Z_v$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\geq 3$</td>
<td>$Z_v \geq 4$</td>
</tr>
<tr>
<td>$2 \leq Z_v &lt; 4$</td>
<td></td>
</tr>
</tbody>
</table>

Note: For $Z_v$ values, see “Design Data for Selected Locations in Canada” in NBCC – 1995 Appendix C.

RATIONALE: Revised to harmonize with NBCC requirements.
**TN 06-457**

Editorially revised 8.6.1.4.1(d) as following:

8.6.1.4.1(d) written record of the findings on the firefighter’s service operation required by 8.6.10.1

Reason: To correct the reference
TN 06-503

Editorially revise as follows:

8.7.2.7.6 Lighting. No alteration shall be made that diminishes the lighting of a machine room or machinery space below that required by 2.7.5.1, 2.7.9.1.

8.7.2.7.7 Ventilation. No alteration shall be made that diminishes the ventilation of a machine room or machinery space below that required by 2.7.5.2, 2.7.9.2.

8.7.2.25.1 Alterations to Driving Machines and Sheaves
(a) Where a driving machine is installed as part of an alteration, the installation shall conform to 2.7.2.2, 2.7.2.3, 2.9, 2.10.1, 2.19, 2.20, 2.24, and 2.26.8. Requirement 2.7.2.2 applies to the extent existing installations permit.

Reason: To update the reference to A17.1S-2005.
1.1.2 Equipment not covered by this Code
Equipment not covered by this Code includes, but is not limited to, the following:
(a) personnel hoists within the scope of ANSI A10.4 and CSA-Z185
(b) material hoists within the scope of ANSI A10.5 and CSA-Z256
(c) platform lifts and stairway chairlifts within the scope of ASME A18.1, CSA B355, and CSA B613
(d) manlifts within the scope of ASME A90.1 and CSA B311, and in jurisdictions enforcing NBCC Special Purpose Personnel Elevators (ASME A17.1, Section 5.7)
(e) mobile …..
(x) in jurisdictions enforcing NBCC mine elevators within the scope of 5.9

2.14.2.1.2 In jurisdictions enforcing the NBCC, where the building is designated by the building code as a high building, materials in their end-use configuration, where the elevator is designed as a firefighters’ elevator shall have:
(a) a flame spread rating for walls and ceiling of 0 to 25 with smoke development of 0 to 100 based on the test conducted in accordance with the requirements of CAN/ULC-S102, and;
(b) a flame spread rating for floor surfaces of 0 to 300 with smoke development of 0 to 300, based on the test conducted in accordance with the requirements of CAN/ULC-S102.2.

4.1.2.2 In jurisdictions not enforcing NBCC the controller shall be permitted to be located on the exterior of the hoistway wall or other approved location apart from the hoistway, elevator machine room, or elevator machinery space. A controller so located shall be available to and used only by inspectors, maintenance personnel, and repair personnel.

In jurisdictions enforcing NBCC the controller shall be permitted to be located on the exterior of the hoistway wall or other approved location apart from the hoistway, elevator machine room, or elevator machinery space. If the controller is located outside the hoistway, machine room, and machinery spaces, it shall be made accessible only to elevator personnel.

4.1.9.1 Stopping distances
In jurisdictions not enforcing NBCC stopping distances for rack-and-pinion safeties and the travel of the car measured from the governor tripping time to the full stop time shall not exceed the values based on rated speed given in Table 4.1.9.1.

In jurisdictions enforcing NBCC stopping distances for rack and pinion safeties and the travel of the car measured from the governor tripping time to the full stop time shall not exceed the values based on rated speed given in Table 4.1.9.1. When calculating stopping distances, the kinetic energy from the driving unit shall be taken into account.

Part 5 Special application elevators
Scope
Part 5 applies to special application elevators as specified in the following requirements:
(a) Requirement 5.1 applies to inclined elevators.
(b) Requirement 5.2 applies to limited-use/limited-application elevators.
(c) Requirement 5.3 applies to private residence elevators.
(d) Requirement 5.4 applies to private residence inclined elevators.
(e) Requirement 5.5 applies to power sidewalk elevators.
(f) Requirement 5.6 applies to rooftop elevators.
(g) Requirement 5.7 applies to special purpose personnel elevators in jurisdictions not enforcing NBCC.
(h) Requirement 5.8 applies to shipboard elevators.
(i) Requirement 5.9 applies to mine elevators in jurisdictions not enforcing NBCC.
5.3.1.16.2 Driving machines: general requirements
(a) Types of Driving Means. The driving means shall be one of the following types:
(1) traction
(2) winding drum (see 5.3.1.16.3)
(3) direct plunger hydraulic (see 5.3.2)
(4) roped-hydraulic (see 5.3.2)
(5) screw machine (see 5.3.1.16.4)
(6) chain drive
(7) rack and pinion, in jurisdictions enforcing NBCC.

5.3.1.18.2 Control and operating circuit requirements
The design and installation of the operating circuits shall conform to the following:
(a) The completion or maintenance of an electric circuit shall be used neither to interrupt the power to the elevator driving machine or brake at the terminal landings, nor to stop the car when any electrical protective device operates.
(b) If springs are used to actuate switches, contactors, or relays to stop an elevator at the terminal landings, they shall be of the restrained compression type.
(c) In jurisdictions not enforcing NBCC the occurrence of a single ground or the failure of any single magnetically operated switch, contactor, or relay; or the failure of any single solid-state device; or a software system failure, shall not
(1) render any electrical protective device ineffective
(2) permit the car to move beyond the leveling or anticreep zones, if any hoistway door interlock is unlocked or if any hoistway door or car door or gate electric contact is not in the closed position
(d) In jurisdictions enforcing NBCC the occurrence of a single ground or the failure of any single magnetically operated switch, contactor, or relay, or the failure of any single solid-state device, or a software system failure, shall not permit the car to start if any hoistway door or car door or gate is not in the closed position. When any failure specified above occurs, the elevator shall not be permitted to restart.
(d) If an instantaneous reversible motor is not used, a protective device or circuit shall be provided to prevent the motor from continuing in the same direction if the reversing control is actuated.

5.4.15.5.2 Electrical connections
If the driving machine is mounted on the car chassis, electrical connections between the car and power source shall be provided with a means to remove power if the connecting traveling cable part. All electrical connections to the moving chassis and the stationary connections shall be insulated flexible conductors, in accordance with NFPA 70 or CSA C22.1, whichever is applicable (see Part 9).

Section 5.7 Special purpose personnel elevators
In jurisdictions not enforcing NBCC requirement 5.7 applies to elevators permanently installed in a wide variety of structures and locations to provide vertical transportation of authorized personnel and their tools and equipment only. Such elevators are typically installed in structures such as grain elevators, radio antennas and bridge towers, underground facilities, dams, power plants, and similar structures where, by reason of their limited use and the types of construction of the structures served, full compliance with Part 2 is not practicable or necessary.

Requirement 5.7 applies to special purpose personnel elevators having a traction, winding drum, screw, or rack-and-pinion driving machine.

Note: See also Part 8 for additional requirements that apply to special purpose personnel elevators.

Section 5.9 Mine elevators
In jurisdictions not enforcing NBCC requirement 5.9 applies to elevators as covered by Part 2, permanently installed in mine shafts. The purpose is to provide vertical transportation of mine personnel, their tools, equipment, and mine supplies. By reason of their limited use and the types of construction of the mines served, compliance with Part 2 is modified as follows (see also 1.3):

6.1.6.3.1 Emergency stop buttons
(a) Location. In jurisdictions not enforcing NBCC a red stop button shall be visibly located at the top and the bottom landings on the right side facing the escalator. Remote stop buttons are prohibited. In jurisdictions enforcing NBCC a red stop button shall be visibly located at the top and the bottom landings on the right side facing the escalator. If auxiliary emergency-stop buttons are provided, they shall be located within view of the escalator.

6.2.6.3.1 Emergency stop buttons
(a) Location. In jurisdictions not enforcing NBCC a red stop button shall be visibly located at the top and the bottom landings on the right side facing the escalator. Remote stop buttons are prohibited. In jurisdictions enforcing NBCC a red stop button shall be visibly located at the top and the bottom landings on the right side facing the escalator. If auxiliary emergency-stop buttons are provided, they shall be located within view of the escalator.

7.2.12.10
In jurisdictions not enforcing NBCC requirement 2.26.2.8 does not apply. Where a top-of-car operating device is provided, a stop switch conforming in design and operation to 2.26.2.5(a), (b), and (c) shall be provided on the top of the car.

In jurisdictions enforcing NBCC requirement 2.26.2.8 does not apply, except that for platform areas in excess of 0.5 m² or where a top-of-car operating device is provided, a stop switch conforming in design and operation to 2.26.2.5(a), (b), and (c) shall be provided on the top of the car.

<table>
<thead>
<tr>
<th>Item</th>
<th>Minimum requirements</th>
<th>Requirement reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car sill to hoistway</td>
<td>125 mm (5 in.) max.</td>
<td>2.5.1.5.1 (b)</td>
</tr>
<tr>
<td>In jurisdictions enforcing NBCC</td>
<td>190 mm (7.5 in.) max</td>
<td>2.5.1.5.1 (a)</td>
</tr>
</tbody>
</table>

Section 8.6 Maintenance, repair, and replacement

Requirement 8.6 applies to maintenance, repairs, and replacements. Requirements 8.6.1 thru 8.6.10 apply in jurisdictions not enforcing NBCC. Requirement 8.6.12 applies in jurisdictions enforcing NBCC.

8.6.11 — Reserved

8.6.12 Maintenance of elevators, dumbwaiters, escalators, and moving walks

8.6.12.1 Scope

8.6.12.1.1
8.6.12 applies to all existing installations and all new installations that have been placed in service. It provides the minimum standards for these installations. However, it is not the intent of this Section to require the alteration or replacement of equipment to meet design, nameplate, and performance standards not required by an earlier edition of this Code that was in force at the time the equipment was installed.

8.6.12.1.2
8.6.12 applies also to the maintenance of other devices, analogous in design and usage, that are covered by this Code, such as material lifts.

8.6.12.2 General maintenance requirements

8.6.12.2.1 Maintenance required
Each elevator, dumbwaiter, and escalator installation shall be maintained in accordance with the requirements of 8.6.12.2.1 and the original manufacturer’s recommendations. The maintenance shall include:
(a) inspections, examinations, and tests, at required or scheduled intervals, of all parts and functions of an installation in order to ensure, to a reasonable degree, that the installation is in a safe operating condition
(b) cleaning, lubricating, and adjusting applicable components at regular intervals, and repairing or replacing all worn or defective components where necessary, to prevent the device from becoming unsafe for operation
(c) repairing or replacing damaged or broken parts affecting the safe operation

8.6.12.2.2 Maintenance intervals
The maintenance required in 8.6.12.2.1 shall be carried out at intervals established on the basis of:
(a) the age and inherent quality of the equipment
(b) the frequency and method of usage
(c) the original manufacturer’s recommendations or a professional engineer’s recommendation

Note: If there is not sufficient data on the age, inherent quality of the equipment, and frequency and method of usage, or where the original manufacturer’s recommendations are not available.

8.6.12.2.3 Actions respecting defective parts
Where a part directly affecting the safety of the operation is found to be defective, it shall be immediately adjusted, repaired, or replaced.

8.6.12.2.4 Maintenance mechanics
Persons performing maintenance, including repair and replacement work, shall have training, be experienced, and be qualified.

Note: Maintenance mechanics should
(a) understand the operational and safety functions of all components of the installation maintained in order to appreciate all safety hazards for maintenance personnel and for the general public that might be created during any maintenance procedure
(b) be able to reasonably assess compatibility of replacement components
(c) be able to carry out the work required in this Section

8.6.12.2.5 Log book
A log pertaining to all maintenance activities specified in 8.6.12.1 (see also Appendix J) shall be maintained on site at all times by the maintenance contractor. The log shall contain, as a minimum, but not be limited to, detailed records of all tests, inspections, and other maintenance duties referred to in this Section that have been performed in the previous five years (see 8.6.12.4.1.1). For records kept in an electronic format, a hard copy shall be placed in the job site log within a maximum of three months of the initial recording.

8.6.12.2.6 Wiring diagrams
Up-to-date wiring diagrams detailing circuits of all electrical protective devices and primary directional circuits shall be available in the machine room at all times.

8.6.12.3 Maintenance procedure applicable to all installations

8.6.12.3.1 Making safety-related devices inoperative

8.6.12.3.1.1
No person shall at any time make inoperative any component on which safety of users is dependent, nor shall any electrical protective device be made inoperative, except where necessary during testing, inspections, and maintenance.

8.6.12.3.1.2
During such tests, inspections, and maintenance, the installation shall not be made available to the public. Immediately upon completion, the installation shall be restored to its normal operating condition in conformity with the applicable requirements.

8.6.12.3.1.3
Substitution of any wire or current-carrying device for the proper fuse or circuit breaker in an elevator circuit shall not be permitted.

8.6.12.3.2 Hoistways, pits, and machine rooms

8.6.12.3.2.1
Hoistways, trusses, and pits shall be kept clean and dry. Accumulation of rubbish in elevator pits and the use of these areas for storage shall not be permitted.

8.6.12.3.2.2
The machine room floor shall be kept clean and free from oil or grease. Articles or materials that are not necessary for the maintenance or operation of the elevator shall not be stored in the machine room. Flammable liquids having a flashpoint of less than 44°C shall not be kept in the machine room.

8.6.12.3.2.3
Access doors shall be kept closed and locked, except during periods when a qualified person is in the machine room or secondary sheave space.

8.6.12.3.2.4
Care shall be used in the painting of the equipment to ensure that the paint does not interfere with the proper function of the equipment. Brakes, governors, car-safety parts, and buffer parts shall be tested for proper operation after completion of painting.

8.6.12.3.3 Top of cars
The top of cars shall be kept free of oil or grease and shall not be used for storing lubricants, tools, or other material.

8.6.12.3.4 Cleaning of car and hoistway transparent enclosures
If the requirements of 2.11.1.4 or 2.14.2.6 are not met, cleaning of transparent enclosures on the exterior of an elevator car or on the interior of an elevator hoistway shall be done under the direct supervision of a maintenance mechanic who shall be present at the site of the cleaning.

8.6.12.3.5 Lubrication

8.6.12.3.5.1 General
All parts of the machinery and equipment requiring lubrication shall be maintained with lubricants of a grade and quantity recommended by the manufacturer.

8.6.12.3.5.2 Lubrication of suspension wire ropes
Precautions shall be taken in lubricating suspension wire ropes to prevent loss of traction (see 2.20.2.2(j)).

8.6.12.3.5.3 Lubrication of governor wire ropes
Governor wire ropes shall not be lubricated unless recommended by the manufacturer of the governor (see 2.18.9(e)).

8.6.12.3.5.4 Lubrication of guide rails

8.6.12.3.5.4.1
Guide rails shall be lubricated only on elevators equipped with guiding members requiring lubrication. Rail lubricants or coatings shall comply with 2.17.16. Means shall be provided at the base of the rails to collect excess lubricant.
8.6.12.3.5.4.2 Rails shall be kept clean and free of excess lubricant, lint, and dirt accumulation. Where necessary, a nonflammable or high-flashpoint solvent shall be used for cleaning the rails.

8.6.12.3.5.4.3 Rust-preventive compounds such as paint, lubricants such as graphite or oil, and similar coatings shall not be applied unless recommended by the manufacturer.

Note: Rust-preventive compounds or improper lubricants can interfere with and, in many cases, prevent proper operation of the safety devices. Such substances can even cause complete failure of the safeties. If it is considered necessary for any reason to use any of these substances, the manufacturer of the elevator should be consulted before their application.

8.6.12.3.6 Car and counterweight safeties mechanism
All moving parts of car and counterweight safeties mechanism shall be kept clean and free of rust and dirt and shall be lubricated at frequent intervals.

Note: This is especially important where the equipment is exposed to water or corrosive vapors or excessively damp conditions, as corrosion or rusting of the parts can prevent operation of the safety.

8.6.12.3.7 Hydraulic components

8.6.12.3.7.1 Plungers of water-hydraulic elevators and dumbwaiters shall be thoroughly cleaned periodically to remove any buildup of rust or scale.

8.6.12.3.7.2 Where valves and cylinders use packing glands, the packing glands shall be periodically checked and tightened or replaced as necessary to prevent excessive loss of the fluid.

8.6.12.3.7.3 Oil leakage collected from the cylinder packing gland shall not exceed 20 L (5.28 US gal) before removal.

8.6.12.3.7.4 The level of oil in the oil tanks shall be checked and, where necessary, adjusted to comply with the prescribed minimum and maximum level (see J.2.9).

8.6.12.3.8 Oil buffers

8.6.12.3.8.1 The oil shall be maintained at the level indicated by the manufacturer.

8.6.12.3.8.2 Buffer plungers shall be kept clean and shall not be coated or painted with a substance that will interfere with their operation.

8.6.12.3.9 Controller contactors and relays
Controller components shall be kept clean and free from dirt, and, where necessary, shall be lubricated as recommended by the manufacturer.

8.6.12.4 Repairs and replacement

8.6.12.4.1 Replacement parts and quality of work

8.6.12.4.1.1 Replacement parts or components
Unless otherwise required in 8.6.12.5, any repair and replacement of damaged or worn parts or components shall be with parts of material and strength equivalent to or better than the original manufacturer’s design.
Any change in the design of components other than those specified in 8.6.12.5 or 8.7, that might affect the safe operation of the equipment shall be certified for use by a professional engineer. A copy of the certification shall be retained by the contractor and recorded in the log book.

8.6.12.4.1.2 Quality of work
Repair and replacement shall be done in a competent manner. Care should be taken during operations such as torquing, drilling, cutting, and welding to ensure that no component of the assembly is damaged or weakened so as to affect the safe operation of the equipment. Rotating parts shall be properly aligned within the manufacturer’s design tolerances.

8.6.12.4.2 Refastening or resocketing of car-hoisting ropes on winding-drum machines

8.6.12.4.2.1
The hoisting ropes of elevators or dumbwaiters that have winding-drum driving machines with 1:1 roping, if of the babbitted rope socket type, shall be resocketed, or other types of fastenings replaced or moved on the rope to a point above the existing fastening at the car ends, at intervals no longer than
(a) 1 year, for machines located over the hoistway
(b) 2 years, for machines located below or at the side of the hoistway

8.6.12.4.2.2
When resocketing babbitted rope sockets or replacing other types of fastenings, a sufficient length shall be cut from the end of the rope to remove damaged or fatigued portions. The fastenings shall conform to the requirements of 2.20.9.4.

8.6.12.4.2.3
A legible metal tag shall be securely attached to one of the wire rope fastenings after each resocketing or each change to other types of fastenings and shall bear the following information:
(a) the name of the person or firm who performed the resocketing or changed the types of fastenings
(b) the date on which the rope was resocketed or the types of fastening were changed

8.6.12.4.3 Procedure for replacement of governor ropes

8.6.12.4.3.1
Replacement governor ropes shall be of the same size, material, and construction as the rope originally furnished by the elevator manufacturer. Related tests shall be performed (see J.2.2.2 and J.2.3.3).

8.6.12.4.3.2
A new rope data tag conforming to 2.20.2.2 shall be installed at each rope renewal, and the date of the rope replacement and the data from the tag shall be recorded in the log book for the device.

8.6.12.4.4 Procedure for replacement of all ropes other than governor ropes

8.6.12.4.4.1
Replacement ropes shall be specified by the original elevator manufacturer or be at least equivalent in strength and design to the original ropes.

8.6.12.4.4.2
When replacing suspension, compensating, and car or drum counterweight ropes, all ropes in a set shall be replaced. The ropes in the set shall all be from the same manufacturer and of the same material, grade, construction, and diameter.

8.6.12.4.4.3
A new rope data tag conforming to 2.20.2.2 shall be installed at each rope renewal, and the date of the rope replacement and the data from the tag shall be recorded in the log book for the device.

8.6.12.4.4.4
For runby and clearances, refer to 8.6.3.3.

8.6.12.4.5 Procedure for replacement of belts or chain sets
If one belt or entire chain of a set is worn or stretched beyond the manufacturer’s service recommendation or is damaged so as to require replacement, the entire set shall be replaced. Sprockets and toothed sheaves shall also be replaced if worn beyond the manufacturer’s service recommendation.

8.6.12.5 Replacement of specific elevator components

8.6.12.5.1 General
Replacement of elevator components specified in c8.6.12.5.2 to c8.6.12.5.7 shall constitute an alteration and shall comply with requirements specified therein and also with the applicable requirements in 8.7.1.3.

8.6.12.5.2 Replacement of Driving Machine
Where a driving machine is replaced, the installation shall conform to the requirements specified in 8.7.2.25.1(a).

8.6.12.5.3 Replacement of controller

8.6.12.5.3.1 Elevator controller
Where an elevator controller is replaced it shall conform to the requirements specified in 8.7.2.27.4(a) or 8.7.3.31.5(a), whichever is applicable.

8.6.12.5.3.2 Door controller
When a controller for operation of the hoistway doors, car doors, or gates is replaced, the replacement controller and wiring shall conform to the requirements of 2.26.4.1 and 2.26.4.2.

8.7.1.7 Repairs and replacements
Repairs and replacements shall conform to 8.6.2 and 8.6.3. In jurisdictions enforcing NBCC repairs and replacements carried out as a part of an alteration shall conform to the requirements of 8.6.12.4, except that replacements in 8.6.12.5 shall be deemed to be alterations.

8.7.1.8 Code data plate
A data plate shall be provided as required by 8.6.1.5. In jurisdictions enforcing NBCC the data plate required by 8.9.1 shall include the code and edition in effect at the time of alteration and the requirements in 8.7 that were applicable to the alteration.

8.10.3.2.4 Outside hoistway
(a) Car Platform Guard [8.10.2.2.4(a)] (Item 4.1)
(b) Hoistway Doors 8.10.2.2.4 (Item 4.2)

8.10.3.3.2 Tests shall be performed when the following alterations are made:
(a) Where the alteration consists…….
(q) Where an alteration is made that results in a new hoistway door, car door or car gate controller without any change to the operation or control [8.7.3.31.5(b)], test shall be performed as specified in 8.10.3.3(l)(1), (l)(2), (l)(3), and (l)(5).

8.10.3.3.3 Tests shall be performed when the following alterations are made:
(a) Where the alteration consists ……
(q) Where an alteration is made that results in a new hoistway door, car door or car gate controller without any change to the operation or control [8.7.3.31.5(b)], test shall be performed as specified in 8.10.3.3(l)(1), (l)(2), (l)(3), and (l)(5) 8.10.3.2.2(l)(1)(2)(3) and (5).

8.10.4.1.1 External inspection and tests
8.11.2.10 Ascending car overspeed protection and unintended car motion devices
In jurisdictions enforcing NBCC:
(a) Examinations. All working parts of ascending car overspeed protection and unintended car motion devices shall be examined to determine that they are in satisfactory operating condition and that they conform to the applicable requirements of 2.19.1.2(a) and 2.19.2.2(a).
(b) Tests. These devices shall be subjected to tests with no load in the car at the slowest operating speed in the up direction.

8.11.2.3.2 Governors
(a) The tripping speed of the governor and the speed at which the governor overspeed switch, where provided, operates shall be tested to determine conformance with the applicable requirements and the adjustable means shall be sealed (Item 2.13.2.1).
(b) The governor rope pull-through and pull-out forces shall be tested to determine conformance with the applicable requirements, and the adjustment means shall be sealed (Item 2.13.2.1).
(c) After these tests in jurisdictions enforcing NBCC, a metal tag indicating the date of the governor tests, together with the name of the person or firm that performed the tests, shall be attached to the governor in a permanent manner.

8.11.3.1.3 Top of car
(a) Top-Of-Car Stop ……
(cc) Crosshead Data Plate [Item 3.27] in jurisdictions enforcing NBCC.
Nonmandatory Appendix E

Elevator requirements for persons with physical disabilities in jurisdictions enforcing NBCC

Notes:
(1) This Appendix was developed and approved by the CSA B44 Technical Committee. The ASME A17 Standards Committee, in the spirit of harmonization, authorized the publication of this Appendix.
(2) This Appendix is not a mandatory part of this Code. Although this Appendix is not a mandatory part of this Code, it is provided for reference in order to comply with the requirements of the NBCC.

Definitions

destination-oriented elevator system — an elevator system that provides lobby controls to select destination floors, lobby indicators designating which elevator to board, and a car indicator designating the floors at which the car will stop.

Physical disability — a disability resulting in a mobility or sensory impairment.

E.1 Scope
This Appendix contains requirements intended to make passenger elevators usable by persons with physical disabilities in jurisdictions enforcing NBCC. These requirements are in addition to, or modifications of, certain requirements specified elsewhere in this Standard.

E.2 Operation and leveling
Elevator operation shall be automatic. Each car shall be equipped with a self-leveling feature that will automatically bring and maintain the car at floor landings within a tolerance of 13 mm under rated loading to zero loading conditions.

E.3 Door operation
Power-operated horizontally sliding car and landing doors opened and closed by automatic means shall be provided.

E.4 Door size
The clear width of elevator doors shall comply with E-1.

<table>
<thead>
<tr>
<th>Door location</th>
<th>Door clear width, mm</th>
<th>Inside car, side to side, mm</th>
<th>Inside car, back wall to front return, mm</th>
<th>Inside car, back wall to inside face of door</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centred</td>
<td>1065</td>
<td>2030</td>
<td>1295</td>
<td>1370</td>
</tr>
<tr>
<td>Side (off-centre)</td>
<td>915</td>
<td>1725</td>
<td>1295</td>
<td>1370</td>
</tr>
<tr>
<td>Any</td>
<td>915</td>
<td>1370</td>
<td>2030</td>
<td>2030</td>
</tr>
<tr>
<td>Any</td>
<td>915</td>
<td>1525</td>
<td>1525</td>
<td>1525</td>
</tr>
<tr>
<td>Minimum Diameter of LU/LA (Limited Use/Limited Application) Elevators</td>
<td>815</td>
<td>1065</td>
<td>1370</td>
<td>Not specified</td>
</tr>
</tbody>
</table>

Notes:
(1) E-1 is based on Table 407.2.8 in ANSI/ICC A117.1, metric values only.
(2) A tolerance of minus 16 mm shall be permitted.

E.5 Door protective and reopening device
E.5.1
Doors shall be provided with a door-reopening device that will function to stop and reopen a car door and an adjacent landing door to at least 910 mm, in case the car door is obstructed while closing. This reopening device shall also be capable of sensing an object or person in the path of a closing door at a nominal 125 ± 25 mm and 735 ± 25 mm above the floor without requiring contact for activation, although contact may occur before the door reverses.

E.5.2
Door-reopening devices shall remain effective for a period of not less than 20 s.

E.6 Door timing for hall and car calls
From the time the doors start to open, a minimum period of 5 s shall elapse before the doors start to close, if it is a hall call, and 3 s, if it is a car call. A reduction of this time shall be permitted after operation of the door close button.

E.7 Inside dimensions of elevator cars
The inside dimensions of elevator cars shall comply with E-1.

E.8 Car controls

E.8.1
Car controls shall have the features as specified in Clauses E.8.2 to E.8.7.

E.8.2 Clear floor space
A clear floor space of 760 mm × 1220 mm minimum shall be provided at controls.
E.8.3 Height

Buttons with floor designations shall be located a maximum of 1220 mm above the floor or ground measured to the centreline of the buttons, except that when the elevator serves more than 16 openings and parallel approach is provided, the location of buttons with floor designations a maximum of 1370 mm above the floor shall be permitted. Emergency controls, including the emergency alarm, shall be grouped at
the bottom of the panel. Emergency control buttons shall have their centrelines 890 mm minimum above the floor or ground.

E.8.4 Buttons

E.8.4.1 Button dimensions
Buttons shall be 3/4 in (19 mm) minimum in their smallest dimension. Buttons or surrounding button collars shall be raised a minimum of 1.5 mm.

E.8.4.2 Button arrangement
Except where provided in a standard telephone keypad arrangement, buttons shall be arranged with numbers in ascending order. When two or more columns of buttons are provided, they shall read from left to right.

E.8.4.3 Button designations
Except where provided in a standard telephone keypad arrangement, control buttons shall be identified by tactile characters and visual characters complying with Clause E.19. Tactile characters and Braille shall be placed immediately to the left of the button to which they apply.

E.8.4.4
The control button for the main entry floor, and control buttons other than remaining buttons with floor designations, shall be identified with tactile and visual symbols as shown in Table 2.26.12.1.

EXCEPTION: The location and size of Braille, where required, shall comply with Table 2.26.12.1. (English shown for reference only).

E.8.4.5
Buttons with floor designations shall be provided with visible indicators to show that a call has been registered. The visible indication shall extinguish when the car arrives at the designated floor.

E.8.5 Telephone-style keypads
Telephone-style keypads shall be in a standard telephone keypad arrangement. Call buttons shall be 19 mm minimum in their smallest dimension. Buttons shall be raised a minimum of 1.5 mm. Braille shall not be required. Characters shall be 13 mm minimum in height and otherwise conform to Clause E.19.4. The number five key shall have a single raised dot. The dot shall be 3.00 mm to 3.05 mm base diameter and in other aspects conform to Table E-19.5. Characters shall be centred on the corresponding keypad button. A display shall be provided in the car with visible indicators to show registered car destinations. The visible indication shall extinguish when the call has been answered. A standard five-pointed star shall be used to indicate the main entry floor.

E.9 Car position indicators

E.9.1 General
In elevator cars, both audible and visible car floor location indicators shall be provided to identify the floor location of the car.

E.9.2 Visible
Indicators shall be located above the car control panel or above the door. Numerals shall be 16 mm minimum in height.

E.9.3 Audible
The audible signal shall be 10 dBA minimum above ambient, but shall not exceed 80 dBA maximum, measured at the annunciator. The signal shall be an automatic verbal announcement that announces the floor at which the car has stopped, except that for elevators that have a rated speed of 1 m/s or less, an audible signal with a frequency of 1500 Hz maximum that sounds as the car passes or stops at a floor served by the elevator shall be permitted.
E.10 Emergency communications

E.10.1 Emergency two-way communication systems between the elevator car and a point outside the hoistway shall comply with 2.27.1. The highest operable part of a two-way communication system shall be located a maximum of 1220 mm from the floor. If the device is located in a closed compartment, the compartment door hardware shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 22.2 N maximum.

E.10.2 The device shall be identified by symbol. The identification shall be a phone located adjacent to the device or located on the compartment door if the device is located in a closed compartment. If the system uses a handset, the cord from the panel to the handset shall have a minimum length of 900 mm. Telephones, where provided, shall be equipped with a receiver that generates a magnetic field in the area of the receiver cap, and the telephone shall have a volume control and shall comply with CSA CAN3-T515.

E.10.3 Emergency signalling device
The car emergency signalling device shall not be limited to voice communication. If instructions for use are provided, essential information shall be presented in both tactile and visual form.

E.11 Floor surfaces
Floor surfaces in elevator cars shall have a firm, stable, and skid-resistant surface that permits easy movement of wheelchairs. Carpet pile height shall be 13 mm maximum.

E.12 Handrails
Handrails shall be provided on all nonaccess walls. The top of the gripping surfaces of the handrails shall be at a height of 800 mm to 920 mm, with a space of 35 mm to 45 mm between the handrails and wall.

E.13 Illumination levels
The level of illumination at the car controls, platform, car threshold, and landing sill shall be 100 lx minimum.

E.14 Hall buttons

E.14.1 Hall buttons in elevator lobbies and halls shall be located vertically between 890 mm and 1220 mm above the floor, measured to the centreline of the respective button.

E.14.2 A clear floor space of 760 mm × 1220 mm minimum shall be provided at hall buttons.

E.14.3 Hall buttons shall be 19 mm minimum in the smallest dimension.

E.14.4 Hall buttons shall have visual signals to indicate when each call is registered and when each call is answered.

E.14.5 The hall button that designates the UP direction shall be located above the button that designates the DOWN direction. Buttons or surrounding button collars shall be raised a minimum of 1.5 mm. Objects located beneath hall buttons shall protrude 25 mm maximum.

E.15 Hall or in-car signals
E.15.1 General
A visible and audible signal shall be provided at each hoistway entrance to indicate which car is answering
a call and its direction of travel, except that signals in cars, visible from the floor area adjacent to the hall
call buttons, and complying with requirements of Clauses E.15.2 and E.15.3, shall be permitted.

E.15.2 Audible signals
Audible signals shall sound once for the UP direction and twice for the DOWN direction, or shall have
verbal annunciators that state the word UP or DOWN. Audible signals shall have a frequency of 1500 Hz
maximum. The audible signal or verbal annunciator shall be 10 dBA minimum above ambient, but shall not
exceed 80 dBA maximum, measured at the hall call button.

E.15.3 Visible signals

E.15.3.1 Height
Hall signal fixtures shall be 1830 mm minimum above the floor or ground, measured to the centreline of
the fixture.

E.15.3.2 Size
The visible signal elements shall be 60 mm minimum in the smallest dimension.

E.15.3.3 Visibility
Signals shall be visible from the floor area adjacent to the hall button.

E.16 Floor/car designations
Raised character and Braille floor designations shall be provided on both jambs of elevator hoistway
entrances and shall be centred at 1525 mm above the floor, measured from the baseline of the characters. A
raised star placed immediately to the left of the floor designation shall also be provided on both jambs at
the main entry level. Such characters shall be 50 mm high and shall comply with Clause E.19.2.

E.17 Destination-oriented elevators

E.17.1 General
Destination-oriented elevators shall comply with Clauses E.2 to E.7, E.10, E.11, E.13, E.16, and E.17.2 to
E.17.6.

E.17.2 Call buttons
Call buttons shall be 890 mm minimum and 1220 mm maximum above the floor or ground, measured to
the centreline of the buttons. A clear floor or ground space of 760 mm × 1220 mm shall be provided. Call
buttons shall be 19 mm minimum in their smallest dimension. Buttons shall be raised a minimum of 1.5
mm. Objects beneath hall call buttons shall protrude 25 mm maximum into the clear floor or ground space.
Destination-oriented elevator systems shall have a keypad or other means for the entry of destination
information. Keypads, if provided, shall be in a standard telephone keypad arrangement, and buttons shall
be identified by characters complying with Clause E.19.4. Characters shall be centred on the corresponding
keypad button. The number five key shall have a single raised dot. The dot shall be 3.00 mm to 3.05 mm
base diameter, and in other aspects comply with Table E-19.5. Destination-oriented elevator systems shall
be provided with visual and audible signals that indicate which elevator car to enter. The audible signal
shall be activated by pressing the function button. The function button shall be identified by the
international symbol for accessibility (see Figure E-19.2.6.1). The symbol shall be 16 mm in height. The
function button shall be located immediately below the keypad arrangement or floor buttons. A display
shall be provided in the car with visible indicators to show registered car destinations.

E.17.3 Hall signals

E.17.3.1 General
A visible and audible signal shall be provided to indicate a car destination in accordance with Clause E.17.2. The audible tone and verbal announcement shall be the same as those given at the call button or call button keypad, if provided. Each elevator in a bank shall have audible and visible means for differentiation.

E.17.3.2 Visible signals

E.17.3.2.1 Height
Hall signal fixtures shall be 1830 mm minimum above the floor or ground, measured to the centreline of the fixture.

E.17.3.2.2 Size
The visible signal elements shall be 60 mm minimum in their smallest dimension.

E.17.3.2.3 Visibility
Signals shall be visible from the floor area adjacent to the hoistway entrance.

E.17.4 Car controls
Emergency controls, including the emergency alarm, shall have centrelines that are 890 mm minimum and 1220 mm maximum above the floor or ground. Buttons shall be 19 mm minimum in their smallest dimension. Buttons shall be raised a minimum of 1.5 mm. A clear floor space of 760 mm × 1220 mm minimum shall be provided at controls.

E.17.5 Car position indicators

E.17.5.1 General
In elevator cars, audible and visible car location indicators shall be provided.

E.17.5.2 Visible indicators
Indicators shall be above the car control panel or above the door. Numerals shall be 16 mm high minimum. As the car passes or stops at a floor served by the elevator, the corresponding character shall illuminate. The visible indicators shall extinguish when the car arrives at the designated floor.

E.17.5.3 Audible indicators
An automatic verbal announcement that announces the floor at which the car has stopped shall be provided. The announcement shall be 10 dBA minimum above ambient and 80 dBA maximum, measured at the annunciator.

E.17.6 Elevator car identification
In addition to the tactile signs required by Clause E.16, a tactile elevator car identification shall be placed immediately below the hoistway entrance floor designation. The characters shall be 50 mm high and shall comply with Clause E.19.2.

E.18 Limited-use/limited-application elevators
Limited use/limited-application elevators shall comply with Clauses E.1 to E.17.

E.19 Signs

E.19.1 General
Signs required to be tactile, visual, or both shall comply with Clauses E.19.2 to E.19.7.

E.19.2 Characters that are both tactile and visual

E.19.2.1 General
Characters required to be tactile shall comply with Clauses E.19.2.2 to E.19.2.6. Tactile characters shall be duplicated in Braille in accordance with Clause E.19.5, except for tactile characters complying with Clause
E.19.3, where separate visual characters with duplicate information complying with Clause E.19.4 are provided.

**E.19.2.2 Finish and contrast**
Characters and their background shall have a non-glare finish. Characters shall contrast with their background: either light characters shall appear on a dark background or dark characters shall appear on a light background.

**E.19.2.3 Tactile character depth**
Tactile characters shall be raised a minimum of 0.8 mm above their background.

**E.19.2.4 Character forms**

**E.19.2.4.1 Fonts**
Fonts shall have characters complying with Clauses E.19.2.4.2 to E.19.2.4.7.

**E.19.2.4.2 Case**
Characters shall be uppercase.

**E.19.2.4.3 Style**
Characters shall be sans serif. Characters shall not be italic, oblique, script, highly decorative, or of other unusual form.

**E.19.2.4.4 Width**
Character width shall be 55% minimum and 110% maximum of the height of the character, with the width based on the uppercase letter “O” and the height based on the uppercase letter “l”.

**E.19.2.4.5 Stroke thickness**
Characters with rectangular cross-sections shall have a stroke thickness that is 10% minimum, and 15% maximum, of the height of the character, based on the uppercase letter “l”. Characters with other cross-sections shall have a stroke thickness at the base of the cross-sections that is 10% minimum, and 30% maximum, of the height of the character, and a stroke thickness at the top of the cross-sections that is 15% maximum of the height of the character, based on the uppercase letter “l”.

**E.19.2.4.6 Spacing**
Where characters have rectangular cross-sections, spacing between individual characters shall be 3 mm minimum to 10 mm maximum. Where characters have other cross-sections, spacing between individual characters shall be 2 mm minimum to 10 mm maximum at the base of the cross-sections and 3 mm minimum to 10 mm maximum at the top of the cross-sections. Spacing shall be measured between the baselines of separate lines of characters and shall be 135% minimum to 170% maximum of the character height.

**E.19.2.4.7 Height**
Character height, measured vertically from the baseline of the character, shall be 16 mm minimum, and 51 mm maximum, based on the uppercase letter “l”.

**E.19.2.5 Mounting height**
Characters shall be located 1220 mm minimum and 1525 mm maximum above the adjacent floor or ground surface, measured from the baseline of the characters, except for elevator car controls.

**E.19.2.6 Mounting location**
Where a sign containing tactile characters is provided at a door, the sign shall be located alongside the door on the latch side. Where a tactile sign is provided at double doors, the sign shall be located to the right of the right-hand door. Where there is no wall space on the latch side of a single door, or to the right side of double doors, signs shall be located on the nearest adjacent wall. Signs containing tactile characters shall be
located so that a clear floor space of 455 mm × 455 mm minimum, centred on the sign, is provided beyond the arc of any door swing between the closed position and 45° open position.

EXCEPTION: Signs shall be permitted on the push side of doors with closers and without hold-open devices.

E.19.3 Tactile Characters

E.19.3.1 Where tactile characters are required, and separate tactile and visual characters with duplicate information are provided, tactile characters shall comply with Clauses E.19.3.2 to E.19.3.5 and visual characters shall comply with Clause E.19.4. Tactile characters shall be duplicated in Braille in accordance with Clause E.19.5.

E.19.3.2 Tactile character depth
Tactile characters shall be raised a minimum of 0.8 mm above their background.

E.19.3.3 Character forms

E.19.3.3.1 Fonts shall have characters complying with Clauses E.19.3.3.2 to E.19.3.3.7.

E.19.3.3.2 Case
Characters shall be uppercase.

E.19.3.3.3 Style
Characters shall be sans serif. Characters shall not be italic, oblique, script, highly decorative, or of other unusual form.

E.19.3.3.4 Width
Character width shall be 55% minimum and 110% maximum of the height of the character, with the width based on the uppercase letter “O” and the height based on the uppercase letter “l”.

E.19.3.3.5 Stroke thickness
Characters shall have a stroke thickness that is 15% maximum of the height of the character, based on the uppercase letter “l”.

E.19.3.3.6 Spacing
Spacing between individual characters shall be 3 mm minimum to 6 mm maximum. Spacing shall be calculated by measuring the two closest points between each adjacent character within a message, excluding spaces between words. Spacing between the baseline of separate lines of characters within a message shall be 135% minimum and 170% maximum of the character height.

E.19.3.3.7 Height
Character height, measured vertically from the baseline of the character, shall be 13 mm minimum, and 19 mm maximum, based on the uppercase letter “l”.

E.19.3.4 Mounting height
Characters shall be located 1220 mm minimum and 1525 mm maximum above the adjacent floor or ground surface, measured from the baseline of the characters, except for elevator car controls.

E.19.3.5 Mounting location
Where a tactile sign is provided at a door, the sign shall be located alongside the door on the latch side. Where a tactile sign is provided at double doors, the sign shall be located to the right of the right-hand door. Where there is no wall space on the latch side of a single door, or to the right side of double doors, signs shall be located on the nearest adjacent wall. Signs containing tactile characters shall be located so that a
clear floor space of 455 mm × 455 mm minimum, centred on the sign, is provided beyond the arc of any
door swing between the closed position and 45° open position.

EXCEPTION: Door-mounted signs shall be permitted on the push side of doors with closers and without
hold-open devices.

E.19.4 Visual characters
E.19.4.1 General
Visual characters required to be accessible shall comply with Clauses E.19.4.2 and E.19.4.3.

E.19.4.2 Finish and contrast
Characters and their background shall have a non-glare finish. Characters shall contrast with their
background: either light characters shall appear on a dark background or dark characters shall appear on a
light background.

E.19.4.3 Character forms
E.19.4.3.1 General
Fonts shall have characters complying with Clauses E.19.4.3.2 to E.19.4.3.7.

E.19.4.3.2 Case
Characters shall be uppercase and/or lowercase.

E.19.4.3.3 Style
Characters shall be conventional in form. Characters shall not be italic, oblique, script, highly decorative, or
of other unusual form.

E.19.4.3.4 Width
Character width shall be 55% minimum and 110% maximum the height of the character, with the width
based on the uppercase “O”, and the height based on the uppercase “I”.

E.19.4.3.5 Stroke thickness
Characters shall have a stroke thickness that is 10% minimum, and 30% maximum, the height of the
character, based on the uppercase letter “I”.

E.19.4.3.6 Spacing
Spacing between individual characters shall be 10% minimum and 35% maximum of character height.
Spacing shall be calculated by measuring the two closest points between each adjacent character within a
message, excluding spaces between words. Spacing between the baseline of separate lines of characters
within a message shall be 135% minimum and 170% maximum of the character height.

E.19.4.3.7 Height
Minimum character height, measured from the baseline of the character, shall comply with Clause E.8.4,
based on the height of the characters above the finish floor of the viewing location and the minimum
viewing distance. Character height shall be based on the uppercase letter “I”. Minimum viewing distance
shall be the horizontal distance where an obstruction prevents further approach toward the sign.

E.19.5 Braille
E.19.5.1 General
Tactile characters shall be accompanied by Grade II Braille complying with Clauses E.19.5.2 to E.19.5.4
and Table E.19.5. Braille dots shall have a domed or rounded shape.
Table E.19.5
Measurement range for standard sign Braille

<table>
<thead>
<tr>
<th>Measurement range for</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dot base diameter</td>
<td>1.5 mm</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>Distance between any two dots in same cell, centre to centre</td>
<td>2.3 mm</td>
<td>2.5 mm</td>
</tr>
<tr>
<td>Distance between corresponding dots in adjacent cells, centre to centre</td>
<td>6.1 mm</td>
<td>7.6 mm</td>
</tr>
<tr>
<td>Dot height</td>
<td>0.6 mm</td>
<td>0.8 mm</td>
</tr>
<tr>
<td>Distance between corresponding dots from one cell to the cell directly below, centre to centre</td>
<td>10.0 mm</td>
<td>10.1 mm</td>
</tr>
</tbody>
</table>

**E.19.5.2 Location**
Braille shall be located below the corresponding text. If text is multi-lined, Braille shall be placed below entire text. Braille shall be separated 10 mm minimum from any other tactile characters. Braille provided in accordance with Figure 4.10.1.12 shall be separated 5 mm minimum either directly below or adjacent to the corresponding raised characters or symbols.

**E.19.5.3 Height**
Braille shall be located 1015 mm minimum, and 1525 mm maximum, above the finish floor, measured from the baseline of the Braille cells, except for elevator car controls.

**E.19.5.4 Braille standard**
Braille shall be in accordance with literary Braille, except the indication of an uppercase letter or letters shall only be used before the first word of sentences, proper nouns and names, individual letters of the alphabet, initials, or acronyms.

**E.19.6 Identifying pictograms**

**E.19.6.1 General**
Where pictograms are required to be accessible, they shall comply with Clauses E.19.6.2 to E.19.6.4.

**E.19.6.2 Pictogram field**
Pictograms shall have a field with a height of 150 mm minimum. Characters and/or Braille shall not be located in the pictogram field.

**E.19.6.3 Finish and contrast**
Pictograms and their fields shall have a non-reflective finish. Pictograms shall contrast with their fields: either a light pictogram shall appear on a dark field or a dark pictogram shall appear on a light field.

**E.19.6.4 Text descriptors**
Where text descriptors for pictograms are required, they shall be located directly below or adjacent to the pictogram and shall comply with Clause E.19.2.

**E.19.7 Symbols of accessibility**

**E.19.7.1 Finish and contrast**
Symbols of accessibility and their backgrounds shall have a non-glare finish. Symbols of accessibility shall contrast with their backgrounds: either a light symbol shall appear on a dark background or a dark symbol shall appear on a light background.

**E.19.7.2 Symbols**
E.19.7.2.1 International symbol of accessibility
Where the international symbol of accessibility is required, it shall be proportioned as shown in Fig. E-19.7.2.1.

![International symbol of accessibility](image)

(A) Proportions  (B) Display conditions

Fig. E-19.7.2.1
International symbol of accessibility

E.19.7.2.2 International symbol of a text telephone (TTY)
Where the international symbol of text telephones (TTY) is required, it shall be proportioned as shown in Fig. E-19.7.2.2.

![International TTY symbol](image)

Fig. E-19.7.2.2
International TTY symbol

E.19.7.2.3 Assistive listening systems
Where assistive listening systems are required to be identified by the international symbol of access for hearing loss, it shall be proportioned as shown in Fig. E-19.7.2.3.

![International symbol of access for hearing loss](image)

Fig. E-19.7.2.3
International symbol of access for hearing loss

E.19.7.2.4 Volume-controlled telephones
Where telephones with volume controls are required to be identified, the identification symbol shall be a telephone handset with radiating sound waves, such as shown in Fig. E-19.7.2.4.

![Volume-controlled telephone](image)

**Fig. E-19.7.2.4**

Volume-controlled telephone

Rationale: The above proposal incorporates the remaining modifications in CSA B44, that if the ASME A17 Standards Committee approved for publication in ASME A17.1, will allow for the publication of a single ASME A17.1 and CSA B44 document, pending a formal agreement being reached by CSA and ASME.

Rationale for 2.14.2.1.2: The more restrictive flame spread and smoke development ratings are required by the NBCC on all elevators in a high building, not just elevators used as Firefighters' Elevators.
Additional Editorial Changes:

1) Requirement 8.11.1.6 should read “Category 1 and 5 for electric and 1, 3 and 5 for Hydraulic.”

2) 3.17.3.6.5 If a governor is used, it must comply with 2.18.5.1, except lang-lay construction is permitted and the diameter is permitted to be less than 9.5 mm (0.0375-0.375 in.).
Proposal 1. Revise A17.1-2004, requirement 6.1.6.11 as follows:

6.1.6.11 Electrically powered safety devices

If the handrail speed monitoring device required by 6.1.6.4, the missing step or missing skirt device, required by 6.1.6.5, or any electrical protective device required by 6.1.6.3, requires electrical power for its functioning

(a) a loss of electrical power to the device shall cause power to be removed from the escalator driving-machine motor and brake

(b) the occurrence of a single ground or the failure of any single magnetically operated switch, contactor or relay; or any single solid-state device; or a software system failure, shall not render the missing step or missing dynamic skirt devices or handrail speed monitoring device or electrical protective device inoperative

(c) when a single ground or failure as described in 6.1.6.11(b) occurs, the escalator shall not be permitted to restart.

Rationale: Add handrail speed monitoring device to requirement (b) to ensure a single failure will not render the handrail speed monitor ineffective.

Code: A17.1/B44-04
Requirement: 6.2.6.10

Proposal 2. Revise A17.1-2004, requirement 6.2.6.10 as follows:

6.2.6.10 Electrically powered safety devices

If the handrail-speed monitoring device required by 6.2.6.4, the missing pallet device, required by 6.2.6.5, or any electrical protective device required by 6.2.6.3, requires electrical power for its functioning

(a) a loss of electrical power to the device shall cause power to be removed from the moving walk driving-machine motor and brake

(b) the occurrence of a single ground or the failure of any single magnetically operated switch, contactor, or relay; or any single solid-state device; or a software system failure, shall not render the missing pallet device or handrail speed monitoring device or electrical protective device inoperative

(c) when a single ground or failure as described in 6.2.6.10.2 occurs, the moving walk shall not be permitted to restart.

Rationale: Add handrail speed monitoring device to requirement (b) to ensure a single failure will not render the handrail speed monitor ineffective.
Editorial Revision to A17.1, Requirement 6.1.6.3, Electrical Protective Devices

Proposed Editorial Revision:

6.1.6.3 Electrical Protective Devices. Electrical protective devices shall be provided in accordance with 6.1.6.3.1 through 6.1.6.3.15.

Rationale: to meet the latest code requirement.