

July 2021 Draft for Public Review

A17.1-20XX/B44-XX, Safety Code for Elevators and Escalators
(Proposed Revisions of ASME A17.1-2019/CSA B44-19)

TENTATIVE
SUBJECT TO REVISION OR WITHDRAWAL
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ASME Codes and Standards

Record 08-1345

Revise A17.1-2019 as follows:

8.6.3.10 Replacement of Hydraulic Jack, Plunger, and Cylinder, Tanks, and Anticreep Leveling Device

...
~~8.6.3.10.4~~ A tank replacement ~~shall be classified as an alteration and~~ shall comply with ~~8.7.3.29~~ 3.24.

~~8.6.3.10.5~~ An anti-creep leveling device replacement shall be classified as an alteration and ~~shall comply~~ tested to determine conformance with 8.7.3.31.3 8.10.3.4.2(a).

Rationale:

- *To define tank replacement as a Replacement. Note: For an Alteration; 8.7.3.29 requires conformance to 3.24.*
- *To define anti-creep device replacement as a Replacement. Note: For an Alteration; 8.7.3.31.3 requires conformance to 3.26.3.1.*

8.6.3.11 Replacement of Valves, and Pressure Piping, and Fittings.

(a) Where any valves, pressure pipings, or fittings are replaced, replacements shall conform to Section 3.19 with the exception of except for 3.19.4.6. (When changing valves, pressure piping, or fittings to a different type, see 8.7.3.24.) The unit shall be tested in accordance with 8.10.3.4.3(a).

(b) A Replacement control valves must conform to the Code under which it was installed. 8.6.1.1.2. (When changing control valve to a different type, see 8.7.3.24.) Relief valves shall be tested in accordance with 8.10.3.4.3(b)

Rationale: To differentiate replacement of identical components from those of a different design, which is an Alteration.

When replacement with same occurs the requirements of 8.6.3.11 apply.

Testing requirements are included to add the requirement that was omitted in the 2000 code (1006.4: This required testing and for the valve required 1005.2a, which is a Relief Valve Test comparable to 8.6.5.14.1) and to assure identical replacements operate in the manner intended.

Bring greater clarity to 8.6.3.11 replacement, and provide a reference to the alteration requirement 8.7.3.24.

Title consistent with Section 3.19.

8.6.3.16 Replacement of Driving Machine or Controller

8.6.3.16.1 Replacement of the Complete Driving Machine.

(a) Where an electric elevator driving machine (see Section 1.3) is replaced, it shall be considered an alteration and shall conform to 8.7.2.25.1 except, the replacement driving machine shall be permitted to conform to the code under which the original machine was installed, or altered if:

(1) the driving machine is replaced with equipment approved by the original equipment elevator manufacturer as being equivalent to the original make and model or,

(2) the replaced driving machine is certified by a licensed professional engineer as being equivalent to the original make and model and able to meet the original design criteria of the elevator system

(b) Where an electric elevator driving machine is replaced in accordance with 8.6.3.16.1(a)(1) or 8.6.3.16.1(a)(2) it shall be inspected and tested in accordance with the requirements specified in 8.10.2.4.1(a).

Rationale: To allow for direct replacement of machines and to provide inspection and testing requirements. The intention is to allow exception to the alteration requirement only when the same type machine with the same form, fit and function is used.

8.6.3.16.2 Replacement of Controller

(a) Where an elevator controller is replaced, with either;

- (1) a motion controller,
- (2) an operation controller,
- (3) a motion and operation controller, or
- (4) a door controller

it shall be considered an alteration and shall conform to 8.7.2.27.4 or 8.7.3.31.5 as applicable.

(b) Where a controller specified in (a) is replaced with equipment equivalent to the original make and model, due to;

- (1) damage or loss, and
- (2) for the purpose of matching other equipment in the group

it shall be permitted to conform to the code under which the original controller was installed or last altered, and shall be inspected and tested in accordance with the requirements specified in 8.10.2.4.1(b) or 8.10.3.4.1(a) as applicable.

Rationale:

Allow for the direct replacement of a controller, with an identical and available controller, when the original controller has been damaged. (Example: Controller destroyed by fire or water). The controller will need to meet the Code to which it was originally installed or last altered.

8.7.1.7 Repairs and Replacements. Repairs and replacements shall conform to 8.6.2 and 8.6.3

8.7.2.27.4 Controllers. When the replacement of the controller does not meet the requirements of 8.6.3.16.2(b), it will be an alteration and meet the following requirements

(a)...

8.7.3.31.5 Controllers. When the replacement of the controller does not meet the requirements of 8.6.3.16.2(b), it will be an alteration and meet the following requirements

(a)...

Rationale: Adding a requirement providing references in Alterations when the change would be designated as a Replacement and provide the appropriate Requirement.

8.10.2.4 Inspection and Test Requirements for Replacements

8.10.3.4 Inspection and Test Requirements for Replacements

Rationale: To acknowledge that there are tests in these sections for specific replacements.

8.10.2.4.1

(a) Where a driving machine is replaced (see 8.6.3.16.1), tests shall be performed as specified in 8.10.2.2.2(o), and (u) through (z), (cc)(1), (cc)(2), (cc)(3) [except (cc)(3)(-c), unless required as installed or last altered], (dd), and (kk); and 8.10.2.2.1(q).

Tests as specified in requirements 8.10.2.2.2(cc)(3) and (jj) are required if these features were present when the unit was installed or last altered.

Rationale: To provide inspection and testing requirements for the direct replacement of an Electric elevator driving machine.

(b) Where a controller is replaced (see 8.6.3.16.2); tests shall be performed, if these features were present when the unit was installed or last altered, as specified in 8.10.2.2.1(c), (j), (l)(5), (q), and (t); 8.10.2.2.2(r), (s), (t), (v), (aa), (bb), (ff), (gg), (jj) and (kk); 8.10.2.2.6; and 8.10.2.2.3(o). All electric protective devices shall be tested for proper operation.

Rationale: To provide inspection and testing requirements for the direct replacement of an Electric elevator controller with a spare due to a controller loss.

8.10.3.4.1

(a) Where a controller is replaced (see 8.6.3.16.2); tests shall be performed, for those features that were present when the unit was installed or last altered, as specified in 8.10.2.2.1(l)(5), and 8.10.2.2.2(q), (s), (t)(1), (t)(2), (t)(4), and (ll); and 8.10.2.2.1(t), and 8.10.2.2.3(o). All electrical protective devices shall be tested for proper operation.

Rationale: To provide inspection and testing requirements for the direct replacement of a hydraulic controller with a spare due to a controller loss.

8.10.3.4.2

(a) Where an anti-creep leveling device is replaced, it shall be tested to determine conformance with 3.26.3.1.

Rationale: To provide inspection and testing requirements for the replacement of an anti-creep leveling device.

8.10.3.4.3

(a) Where any valves, pressure piping, or fittings are replaced, replacements shall be tested in accordance with 8.6.5.14.1.

(b) A replacement control valve shall have their relief valve tested in accordance with 8.6.5.14.1.

Rationale: To provide inspection and testing requirements for the replacement of valves, pressure piping, or fittings; and relief valves.

Record 09-1761

Revise A17.1 as follows:

2.19.3.3 Marking Plate Requirements. The emergency brake shall be provided with a marking plate indicating the manufacturer, the model number ~~the range of total masses (car with attachments and its load) for which it is permitted to be used, the range of speeds at which it is set to operate,~~ and the criteria such as rail lubrication requirements that are critical to the performance.

Rationale: Based on collaboration between the A17 Mechanical Design Committee and the A17 Inspections committee the determination was that the data plate technical data entries are not useful to elevator personnel. The emergency brake should be labeled for identification purposes, but adequacy of application should be demonstrated by acceptance test and periodic tests. Furthermore, the MCP should cover emergency brake maintenance and repair procedures in lieu of location on the data plate.

Record 15-397

Revise ASME A17.1-2019/CSA B44-19 as follows:

Rationale: As a result of a ballot comment noting the Alternative Test results were being referenced in the incorrect 8.6.1.2.2 location, this proposal is to require Alternative Test results to be located in 8.6.1.4.1(c)(5) by adding the following language:

8.6.1.4.1 On-Site Maintenance Records

...
(c)

...
(5) Written records where required by 8.6.11.10.4.

8.6.4.20.11 Emergency Brake

(a) *Emergency Brake and Ascending Car Overspeed Protection.* For passenger elevators and all freight elevators, the emergency brake shall be tested for compliance with 2.19.3.2. Verify the setting of the ascending car overspeed detection means.

(b) *Emergency Brake and Unintended Car Movement Protection.* Test the unintended car movement protection and the emergency brake in the down direction with 125% of rated load at the landing above the bottom landing.

(c) *Alternative Test Method for Emergency Brakes.* The alternative test methods shall comply with 8.6.11.10 and the following:

(1) Any method of verifying conformity of the emergency brake with the applicable Code requirements (see 2.19.3.2) shall be permitted, including the testing method of the emergency brakes with or without any load in the car, provided that when applied the method verifies that the emergency brake performs or is capable of performing in compliance with 8.6.4.20.11(a) and 8.6.4.20.11(b).

(2) A test tag as required in 8.6.1.7.2 shall be provided.

8.6.11.10 Category 5 Tests Without Load Via Alternative Test Methodologies

8.6.11.10.1 Where Permitted. Alternative test methods without load are permitted for Category 5 testing subject to approval by the authority having jurisdiction of

(a) car and counterweight safeties per 8.6.4.20.1

(b) oil buffers per 8.6.4.20.3

(c) driving-machine brakes per 8.6.4.20.4, and

(d) braking system, traction, and traction limits per 8.6.4.20.10 results

(e) emergency brake per 8.6.4.20.11

NOTE: See Section 8.10, Note (2).

8.6.11.10.3 Alternative Test Method Procedure. The alternative test method shall

(a) include requirements to obtain and verify car and counterweight masses if necessary for the test

(b) have a procedure document that

(1) defines the permissible equipment range and limitations regarding use

(2) establishes monitoring and calibration criteria for tools or measuring devices as appropriate

(3) defines the test setup procedure

(4) provides instructions on how to interpret results and correlate the results to pass–fail criteria

(c) describe how to correlate no-load test results with previously acquired full-load and no-load results if necessary for the test method

(d) be included in the maintenance control program [see 8.6.1.2.1(a)]

(e) include the information required by 8.6.1.2.2(b)(5) where applicable, and

(f) require a report conforming to 8.6.11.10.4

8.6.11.10.4 Alternative Test Method Report. The alternative test method report shall

(a) identify the alternative test tool (make/model) used to perform the test

(b) identify the company performing the tests, names of personnel conducting and witnessing the tests, and testing dates

(c) contain all required printouts or record of tests required to demonstrate compliance to the testing ~~requirement~~ requirements that were gathered during an acceptance test

(d) identify which results from the baseline test are to be used for future compliance evaluation if necessary for the test method

(e) record the car and counterweight masses that were obtained per 8.6.11.10.3(a) during the acceptance test and during any subsequent Category 5 test if required by test method

(f) contain all subsequent Category 5 results with pass–fail conclusions regarding Code compliance

(g) remain on site or shall be available to elevator personnel and the authority having jurisdiction.

Rationale: There are virtually no differences in the testing methods of a driving-machine brake and an emergency brake. The allowance to use alternative testing on the driving-machine brake should be also provided for testing the emergency brake.

Record 15-1375

Proposed Revision to A17.1, Requirement 6.1.3.3.11 Ceiling Intersection Guards:

6.1.3.3.11 Guard at Ceiling Intersection

(a) On high deck balustrades, a solid guard shall be provided in the intersection of the angle of the outside balustrade deck and the ceiling or soffit, under the following conditions:

(1) where the clearance between the outside edge of the deck and the ceiling or soffit is 300 mm (12 in.) or less; or

(2) where the projected intersection of the outside deck and the ceiling or soffit is 600 mm (24 in.) or less from the centerline of the handrail.

(b) On low deck balustrades, a solid guard shall be provided to protect the intersection formed by the top of the handrail and the plain of the ceiling or soffit where the centerline of the handrail is 350 mm (14 in.) or less from the ceiling or soffit.

(c) The vertical edge of the guard shall be a minimum of 350 mm (14 in.) in length.

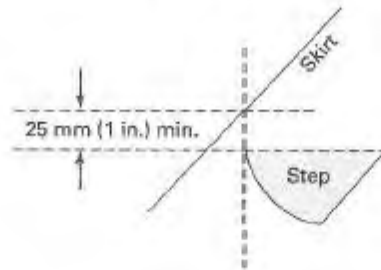
(d) The escalator side of the vertical face of the guard shall be flush with the face of the wellway.

(e) The exposed edge of the guard shall present a minimum width of 25 mm (1 in.) and a minimum radius of 12 mm (0.5 in.).

(f) Guards are permitted to be of glass or plastic, provided they meet the requirements of 6.1.3.3.3.

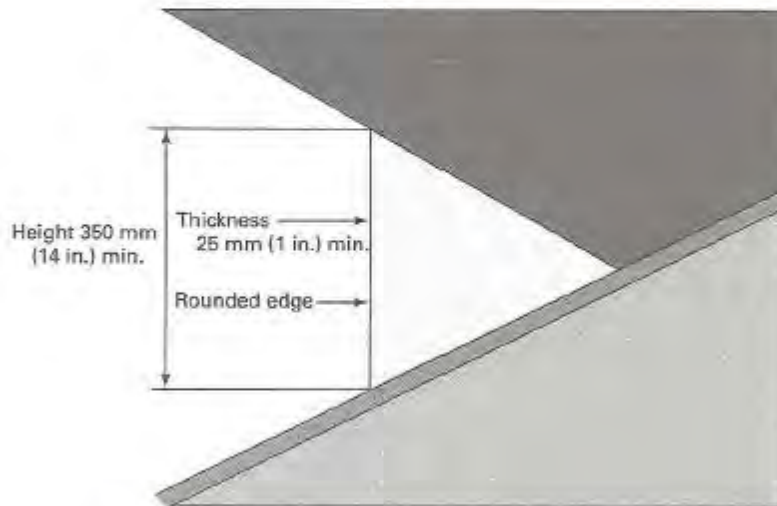
See also Nonmandatory Appendix I, Fig. I-5, [I-13](#) and [I-14](#).

**Fig. I-4 Skirt or Dynamic Skirt Panel: Step Nose
(6.1.3.3.6)**

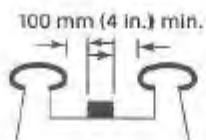


**Fig. I-5 Ceiling or Soffit Guard
(6.1.3.3.11)**

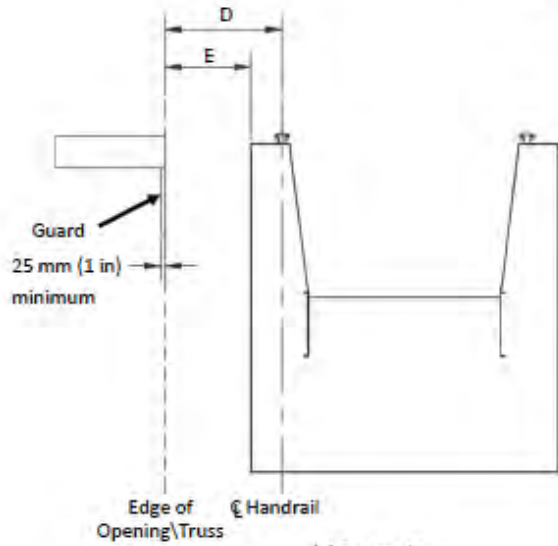
See also I-13 and I-14



**Fig. I-6 Antislip Device
(6.1.3.3.12)**



**Fig. I-13 Ceiling or Soffit Guard
 High Deck Escalators
 (6.1.3.3.11)**

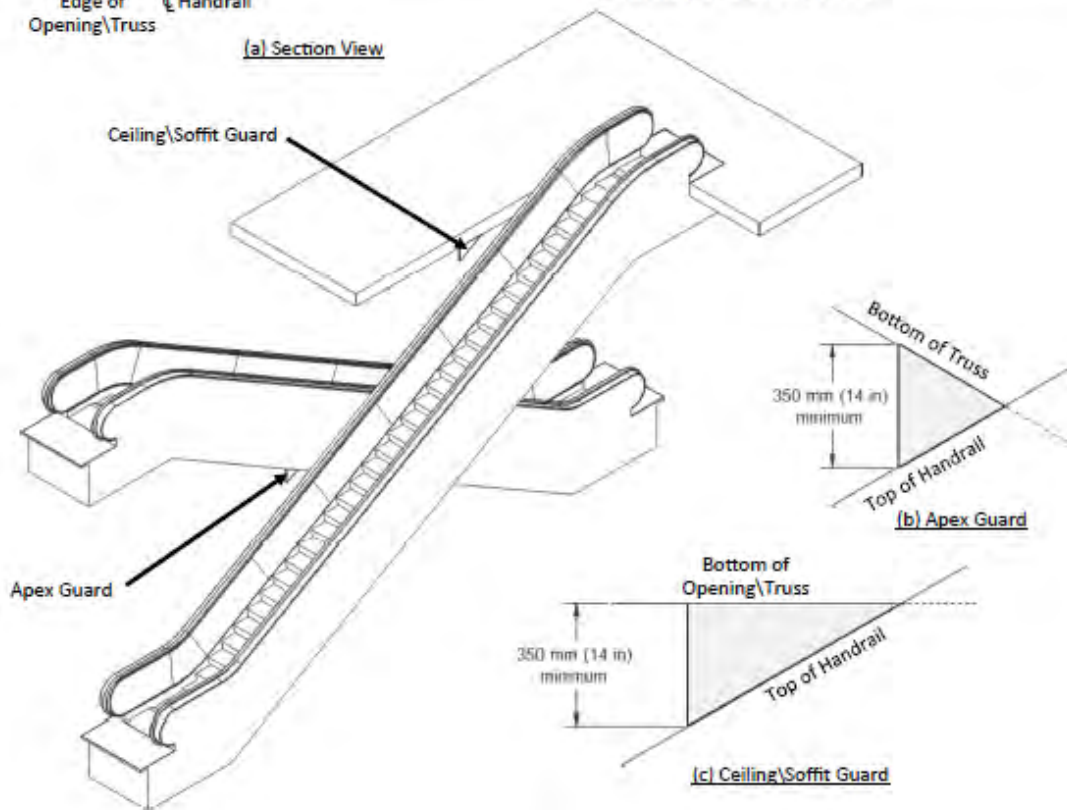


- Guard required when centerline of handrail is less than 600 mm (24 in) [Distance D] from edge of opening or adjacent escalator truss

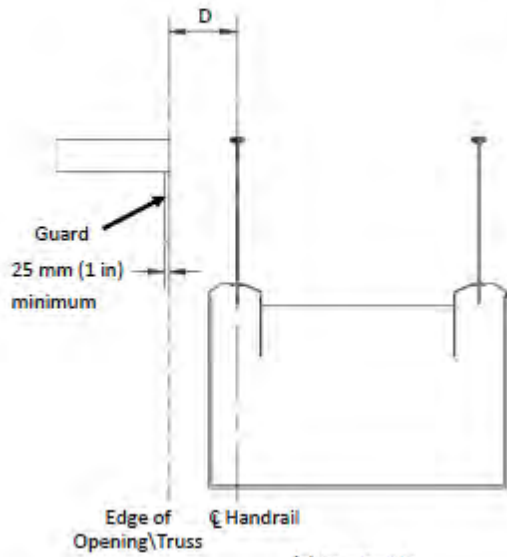
- OR -

When edge of outer decking is less than 300 mm (12 in) [Distance E] from edge of opening or adjacent escalator truss

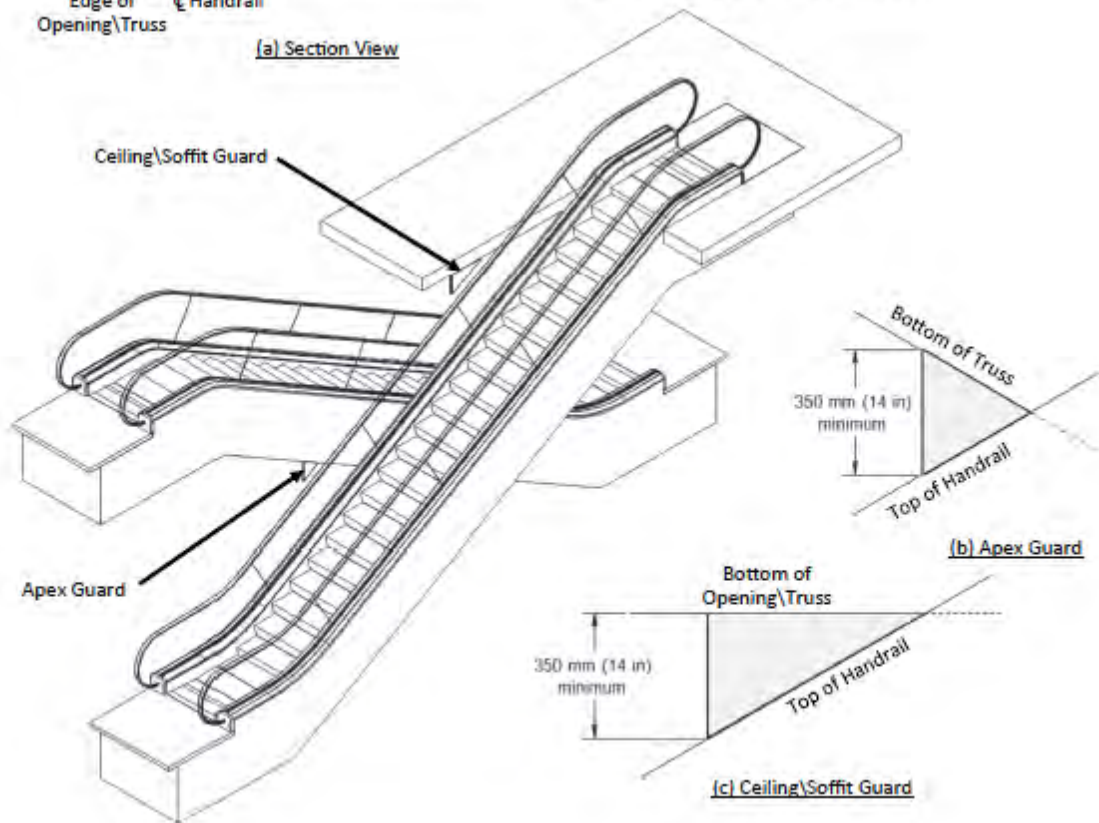
- The vertical edge of the guard shall be a minimum of 350 mm (14 in.) in length.
- The escalator side of the vertical face of the guard shall be flush with the face of the wellway or adjacent truss cladding.
- The exposed edge of the guard shall present a minimum width of 25 mm (1 in.) and a minimum radius of 12 mm (0.5 in.).
- Guards are permitted to be of glass or plastic, provided they meet the requirements of 6.1.3.3.3.



**Fig. I-14 Ceiling or Soffit Guard
 Low Deck Escalators
 (6.1.3.3.11)**



- Guard required when centerline of handrail is less than 350 mm (14 in) [Distance D] from edge of opening or adjacent escalator truss
- The vertical edge of the guard shall be a minimum of 350 mm (14 in.) in length.
- The escalator side of the vertical face of the guard shall be flush with the face of the wellway or adjacent truss cladding.
- The exposed edge of the guard shall present a minimum width of 25 mm (1 in.) and a minimum radius of 12 mm (0.5 in.).
- Guards are permitted to be of glass or plastic, provided they meet the requirements of 6.1.3.3.3.



Rationale: To add clarifying diagrams for escalator ceiling intersection guards.

Record 15-2890

Proposed Revision to A17.1, Requirement 6.1.5.3.5, 6.1.6.3.2, 6.1.6.3.4 Auxiliary Brake:

6.1.5.3.5 Auxiliary Brake. Escalators not utilizing dynamic braking (6.1.5.3.4) and with a rise greater than 6.00 m (20 ft) shall be equipped with an auxiliary brake that complies with brake requirements in 6.1.5.3.1 and 6.1.5.3.3.

a) application of the auxiliary brake shall be caused only:

1) by actuation of the Escalator Speed Monitoring Device (6.1.6.3.2) or

2) by actuation of the Drive Chain Device if the auxiliary brake is located on the main shaft and utilized to also function as a Main Drive Shaft Brake (6.1.5.3.2) when a Main Drive Shaft brake is required

b) auxiliary brake shall be applied after the escalator has stopped.

c) where simultaneous application of the driving machine brake and auxiliary brake occur, requirement 6.1.5.3.1(c) does not apply.

6.1.6.3.2 Escalator Speed-Monitoring Device. An escalator speed-monitoring device shall be provided.

(a) The operation of the device shall cause the electric power to be removed from the driving-machine motor and brake, and the auxiliary brake (6.1.5.3.5) if so equipped, should the speed exceed the rated speed by more than 20%.

(b) The device shall be of the manual-reset type.

6.1.6.3.4 Drive-Chain Device. When the driving machine is connected to the main drive shaft by chain, a device shall be provided that will cause the application of the brake on the main drive shaft, if so equipped [see 6.1.5.3.2(a) and 6.1.5.3.5(b)], and will also cause the electric power to be removed from the driving-machine motor and brake if any drive chain between the machine and the main drive shaft becomes disengaged from the sprockets. The device shall be of the manual-reset type.

Rationale: In order to provide an additional means to bring an escalator to a controlled stop in the event of over speed situations resulting from malfunctioning machine braking, a requirement for an auxiliary brake, on higher rise escalators, compliant with Machine Brake requirements is created. It is to be actuated by over speed conditions, or, when located on the main shaft and utilized to fulfill Main Drive Shaft Brake requirements when it is required, by the Drive Chain Device. The simultaneous application of the driving machine brake and auxiliary brake should only occur in an overspeed situation. When actuated by a properly operating broken drive chain device, the machine brake is effectively disconnected from the step band. Controlling the escalator in the event of an overspeed situation by applying the auxiliary and machine brakes outweighs the potential hazard of a higher deceleration than normal stop. The auxiliary brake is applied after the escalator is stopped to mechanically exercise the brake components in an effort to ensure reliability.

Comments:

- 1) *The Auxiliary Brake's primary purpose is to be a backup, and Machine Brake to guard against Machine brake malfunction or escalator overspeeding.*
- 2) *Auxiliary Brake language has been added to 6.1.6.3.2 and 6.1.6.3.4.*
- 3) *6.1.5.3.4 is attached for reference.*

Approved in TN 12-1111

6.1.5.3.4 Escalator Driving Machine Motor Controlled Dynamic Braking.

Motor controlled dynamic braking of an escalator by variable frequency control of the escalator driving machine motor shall be permitted provided that:

- a) The motor controlled dynamic braking function conforms to acceleration requirements in 6.1.5.3.1(c) and, where applicable, the stopping distance requirements in 6.1.5.3.1(d) (5).*
- b) The escalator driving machine brake complying with 6.1.3.9.3 and 6.1.5.3.1 shall be applied not later than when the escalator has stopped. Interruption of electrical power to the escalator or machine motor shall automatically cause application of the machine brake.*
- c) Activation of electrical protective devices that do not specifically permit dynamic braking shall stop the escalator only by the removal of electrical power from the driving machine motor and brake.*
- d) Stopping performance shall be monitored in conformance with 6.1.6.10 throughout the retardation period at intervals not greater than 25 ms and shall cause the removal of electrical power from the driving machine motor and brake if the deceleration is not conforming to the requirements in 6.1.5.3.1 (c) or it is determined that the stopping rate will not result in a stopping distance conforming to the requirements of 6.1.5.3.1(d)(5), where applicable. Non-conformance shall require a manual reset.*

Record 16-861

Revise A17.1-2016 as follows:

3.24.3.3 Means for Checking Liquid Level. Tanks shall be provided with means for checking the liquid level. Such means shall be readily accessible (see Section 1.3) ~~without the removal of any cover or other part.~~

Rationale: To simplify checking the liquid level.

Record 17-193

Proposed Revision to A17.1, Requirement 8.6.5.14.9 Category 1 Testing for Plunger Gripper:

8.6.5.14.9 Plunger Gripper

Plunger Grippers shall be subjected to the following test with no load in the car using a written procedure supplied by the plunger gripper manufacturer or the person or firm maintaining the equipment [see 8.6.1.2.2(b)(1) On-Site Documentation]:

- (a) Plunger Grippers shall be tested by actuating the plunger gripper
- (b) Plunger Grippers shall be tested in the down direction with the car operating at the slowest possible speed
- (c) The plunger gripper shall stop & hold the empty car.
- (d) A periodic test record as required in 8.6.1.7.2 shall be provided.

8.11.3.1.5 Pit

(r) Plunger Gripper (3.17.3)(Item 5.17)

Rationale: Provide periodic inspection & testing requirements for plunger grippers.

Record 17-197

Proposed Revision to A17.1, Requirements 8.6.1.2.2(b) Onsite Documentation:

8.6.1.2.2 (b) Procedures for inspections and tests not described in ASME A17.2 and procedures or methods required for elevator personnel to perform maintenance, repairs, replacements, and adjustments, as follows (also see 8.10.1.5 and 8.11.1.7):

Rationale: To refer to additional unique or product-specific procedures or methods in 8.6.1.2.2(b).

Record 17-1089

Revise A17.1-2019 as follows:

8.7.7 Alterations to Escalators and Moving Walks

8.7.7.1 Escalators

...
8.7.7.1.7 Step System

(a) Any alteration to the step system shall require conformance with 6.1.3.3.5, 6.1.3.5 [except as specified in 8.7.6.1.7(b)], 6.1.3.6 [except as specified in 8.7.6.1.1], 6.1.3.8, 6.1.3.9.4, 6.1.3.10.4, 6.1.3.11, 6.1.6.3.3, 6.1.6.3.9, 6.1.6.3.11, 6.1.6.3.14, and 6.1.6.5.

(b) Steps having a width less than 560 mm (22 in.) shall not be reduced in width by the alteration.

RATIONALE: To affirm and clarify the exception permitted to 6.1.3.6.5 (Flat Steps) specified in General Requirements (8.7.6.1.1).

8.7.6.1.9 Trusses and Girders. Any alterations or welding, cutting, ~~and lengthening,~~ or splicing of ~~the~~ any truss structural member or girder shall conform to 8.7.1.4 and 8.7.1.5. 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.

RATIONALE: To clarify that "the truss" in this requirement means truss structural members corresponding/ equivalent to "members on which the support of the...escalator depends" referenced in 8.7.1.4 and 5. Parts or members that are a part of or affixed to the truss, but are not structural or supporting the escalator, would not require compliance with 8.7.1.4 and 5. Conformance to 8.7.1.5 is a necessary additional requirement for modification of structural members.

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

Installation of a new escalator including the truss is a new installation and not an alteration.

8.7.6.1.11 Rated Load and Speed. Any alteration that increases the rated load or rated speed or both shall ~~result in the escalator's conforming with~~ to 6.1.

RATIONALE: In accordance with the Escalator and Moving Walk Committee, any alteration that increases the rated load or rated speed or both shall conform to 6.1.

8.7.6.1.13 Driving Machine, Motor, and Brake

(a) *Driving Machine.* An alteration to the driving machine shall result in the escalator's conforming to 6.1.3.9.2, 6.1.3.10.3, 6.1.4.1, 6.1.5.1, 6.1.5.2, 6.1.5.3.1, 6.1.5.3.2, 6.1.6.3.4, and 6.1.6.3.8.

(b) *Driving Motor.* An alteration to the drive motor shall result in the escalator's conforming to 6.1.3.9.2, 6.1.3.10.3, 6.1.4.1, 6.1.5.2, 6.1.5.3.1, 6.1.5.3.2, 6.1.6.3.2, 6.1.6.3.8, and 6.1.6.3.10.

(c) *Machine Brake*. An alteration to the machine brake shall result in the escalator's conforming to 6.1.3.9.3, 6.1.3.10.2, and 6.1.5.3.1.

RATIONALE: Editorial change for clarity.

8.7.6.1.14 Lighting, Access, and Electrical Work. An alteration to or addition of lighting, access, or electrical work shall conform ~~with~~ to the specific requirements within 6.1.7 for that change.

RATIONALE: Consistency with language.

8.7.6.2 Moving Walks

...

8.7.6.2.9 Trusses and Girders. Any alterations or welding, cutting, ~~and~~ lengthening, or splicing of ~~the~~ any truss structural member or girder shall conform to 8.7.1.4 and 8.7.1.5. Alterations shall result in the moving walk's conforming to 6.2.3.9, 6.2.3.10.1, and 6.2.3.11.1. The installation of a new moving walk into an existing truss shall conform to all of the requirements of 6.2.

RATIONALE: to clarify that "the truss" in this requirement means truss structural members corresponding/ equivalent to "members on which the support of the....moving walk depends" referenced in

8.7.1.4 and 8.7.1.5. Parts or members that are a part of or affixed to the truss, but are not structural or supporting the escalator, would not require compliance with 8.7.1.4 and 8.7.1.5. Conformance to 8.7.1.5 is a necessary additional requirement for modification of structural members.

8.7.6.2.11 Rated Load and Speed. Any alteration that increases the rated load or rated speed or both shall ~~result in the escalator's conforming with~~ to 6.2.

RATIONALE: In accordance with the Escalator and Moving Walk Committee, any alteration that increases the rated load or rated speed or both shall conform to 6.2.

8.7.6.2.13 Driving Machine, Motor, and Brake

(a) *Driving Machine*. An alteration to the driving machine shall result in the moving walk's conforming to 6.2.3.10.2, 6.2.3.10.3, 6.2.4.1, 6.2.5.1, 6.2.5.2, 6.2.5.3.1, 6.2.5.3.2, 6.2.6.3.4, and 6.2.6.3.8.

(b) *Driving Motor*. An alteration to the drive motor shall result in the moving walk's conforming to 6.2.3.9.2, 6.2.3.10.3, 6.2.4.1, 6.2.5.2, 6.2.5.3.1, 6.2.5.3.2, 6.2.6.3.2, 6.2.6.3.8, and 6.2.6.3.10.

(c) *Machine Brake*. An alteration to the machine brake shall result in the moving walk's conforming to 6.2.3.10.3, 6.2.3.10.2, and 6.2.5.3.1.

RATIONALE: Editorial change for clarity.

8.7.6.2.14 Lighting, Access, and Electrical Work. An alteration to or addition of lighting, access, or electrical work shall conform ~~with~~ to the specific requirements within 6.2.7 for that change.

RATIONALE: Editorial change for clarity.

8.7.6.2.18 Entrance and Egress. Any alteration to the entrance or egress end shall comply with 6.2.3.8.1 through 6.2.3.8.4.

RATIONALE: To add requirements for alterations on Entrances and Egresses on Moving Walk's consistent with Escalators.

Record 17-2250

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 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 2.26.1.6

(b) to prevent 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 (see 2.27.3.3.9)

(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

Revised Rationale:

To add clarity to the code via a reference in 2.26.5 that points to an exception to a portion of the requirement that exists in another section of the code.

2.27.3.3 Phase II Emergency In-Car Operation.

...

2.27.3.3.9 Requirement 2.26.5(b)(2) shall not apply when the elevator is on Phase II Emergency In-Car Operation.

Rationale:

To allow the firefighters, only when on Phase II Emergency In-Car Operation, to maintain maximum control of the elevator by being able to close the car door in the event that a faulty hoistway door contact is falsely indicated due to the car and hoistway doors being decoupled. Here the problem is not a faulty door contact but a mechanical problem with the hoistway door coupling means. In this scenario the firefighter is stuck in the car with the car door fully open, with the hoistway door fully closed and with the hoistway door interlock contact made up but not faulty. Under this proposal, if the door close button remains active, the firefighter is able to clear the fault with continuous pressure on the door close button to close the car door. With both doors now closed, the firefighters will be able to evaluate the situation and exercise their judgement, i.e., continue using the elevator noting an issue with the hoistway/car door coupling at one floor or move to a safe floor to exit the elevator.

If a faulty hoistway door contact existed on any operation prior to calling for Phase II In-Car Operation, the elevator would be shut down and not available for Phase II In-Car Operation in the first place.

For the door coupling issue that this proposal addresses, the faulty door contact monitor would detect the problem on any operation other than Phase II In-Car Operation the first time the elevator stops at the floor with the defective door coupling means. The only way to recover the car is to be on Phase II In-Car Operation and use the door close button to fully close the car door. This is only possible if the decoupling problem occurs while on Phase II In-Car Operation.

In that case the apparent faulty door contact is not overridden or ignored but cleared. Under this proposal the faulty door contact monitoring function will remain active at all times. Instead it is the disabling the door close button after the condition is detected when on Phase II In-Car Operation that is at issue. If the car doors are open in any scenario the car will not run. In addition, a faulty car door contact will still be detected on Phase II In-Car Operation.

Record 17-3230

Proposed Revision to A17.1, Requirements 8.5.1 Balustrade Construction:

8.5.1 Balustrade Construction

Balustrades shall be designed to withstand the vertical inertial force due to the weight of the balustrade and the horizontal seismic forces as follows:

(a) The component operating weight, W_p , is the sum of the balustrade dead load, and decking weight if supported by the balustrade, ~~and 70% of the machinery rated load (see 6.1.3.9.2) and the seismic force computed as defined in 8.4.13 and 8.4.14.~~

(b) ~~The~~ Horizontal seismic forces resulting from 50% of the machinery rated load in addition to the loads imposed by the balustrade components shall be distributed along the exposed length of the handrail from entry newel tangent to exit newel tangent as depicted in Fig. 8.5.1.

Rationale: *8.5.1 is incorrect to apply the seismic load, related to the passenger load, to the escalator balustrade in the vertical direction rather than the horizontal direction as originally intended. In addition, it is appropriate to ~~split~~ distribute the balustrade horizontal force ~~from~~ of a fully loaded escalator evenly between the two balustrades at the handrails. Changes are made to correct.*

Background:

It was the original objective in the rewrite of 8.5 to relate a horizontal seismic force applied to the escalator balustrade to the live/passenger load (mass) since it is reasonable that in a seismic occurrence, passengers presumably would grasp and impart a horizontal force to the handrail related to their body mass. As written, it instead applies a vertical weight load to the balustrade handrail. This merits correction.

While lightly loaded escalators may tend to have a predominance of passengers on one side or the other, it is reasonable that a fully loaded escalator with rated load will evenly ~~split~~ distribute the passenger load between both handrails. This reflects one larger passenger on every step but on alternating sides. Adjustment to the balustrade load reflecting this condition merits change.

Record 17-3271

Revise A17.1-2019 as follows:

2.24.3 Factor of Safety for Driving Machines, Driving Machine Brakes, Sheaves, and Drums

The factor of safety to be used in the design of driving machines, braking components, sheaves, and drums used with suspension means and compensating means shall be not less than

(a) 8 for metals having an elongation of at least 14% in a gauge length of 50 mm (2 in.) when tested in accordance with ASTM E8.

(b) 10 for cast iron, or for metals having an elongation of less than 14% in a gauge length of 50 mm (2 in.) when tested in accordance with ASTM E8.

(c) 10 for sheaves of plastic, fiber-reinforced plastic, or combinations thereof. The material used shall ensure that the factor of safety is not less than 8 during the service life of the sheave.

Factor of safety shall not apply to the friction surfaces of braking components.

2.24.8.3 Driving-Machine Brake. The driving machine shall be equipped with a friction brake applied by a spring or springs, or by gravity, and released electromechanically or electrohydraulically (see Section 1.3) in conformance with 2.24.3 and 2.26.8. The driving-machine brake, on its own, shall be capable of

(a) holding the car at rest with its rated load (see 2.16.8 and 2.26.8).

(b) holding the empty car at rest.

(c) decelerating the empty car traveling in the up direction from the speed at which the governor overspeed switch is set. Any deceleration not exceeding 9.8 m/s² (32.2 ft/s²) is acceptable provided that all factors such as, but not limited to, system heat dissipation and allowable buffer striking speeds are considered.

Rationale: Brake components have to conform with driving machine factors of safety.

Record 18-153

Proposed Revision to A17.1, Requirement 6.2.3.1 Angle of Inclination:

6.2.3.1 Angle of Inclination. The angle of inclination for the Treadway from the ~~horizontal~~ moving walk landing plate shall not exceed 3 deg within 900mm (36 in.) of the comb intersection line with the treadway at the entrance and egress ends and shall not exceed 12 deg from the horizontal at any point.

Rationale: *The Angle of Inclination requirement in the Walk section was originally written with the assumption that the building floor surface at the landings is always horizontal and specified a maximum angle of inclination of the walk landing to the horizontal. It is not the case that the floors are always horizontal resulting in a possible excessive angle between the floor and the walk landings and the requirement is changed to correct for this condition.*

Record 18-531

2.26.4.2 Electrical equipment shall comply with requirements of 2.26.4.2.1 through 2.26.4.2.4, be listed/certified and labeled/marked. CSA B44.1/ASME A17.5 defines the scope and applicable requirements for this listing/certification.

2.26.4.2.1 The following shall be listed/certified and labeled/marked in accordance with requirements of CSA B44.1/ASME A17.5

- (a) motor controllers
- (b) motion controllers
- (c) operation controllers
- (d) assemblies containing (a), (b), or (c)

2.26.4.2.2 Operating devices shall be listed/certified and labeled/marked to:

- (a) CSA B44.1/ASME A17.5, or
- (b) the approved product safety standard or code applicable to the country where the equipment is installed (e.g., Canada or the USA)

2.26.4.2.3 Electrical equipment that is not an electrical protective device, does not perform any other safety function(s) and it is not described in 2.26.4.2.1, and 2.26.4.2.2 is not required to be listed/certified if:

- (a) the equipment does not include any component operating at voltage greater than 30 V rms or 42.4 V peak,
- (b) the equipment is located entirely in a Class 2 circuit in accordance with CSA C22.1, Part 1 or NFPA 70, as applicable, and is supplied with a certified/listed Class 2 power supply/transformer, and
- (c) failure of the equipment shall not render an electrical protective device ineffective.

2.26.4.2.4 Electrical equipment not covered by 2.26.4.2.1, 2.26.4.2.2, or 2.26.4.2.3 shall be listed/certified and labeled/marked to the approved safety standard or code applicable to the country where the equipment is installed (e.g., Canada or the USA).

Rationale: Requirement 2.26.4.2 has been a source of concern for some readers. Some have interpreted the clause to mean that ALL electrical equipment must be listed/certified and labeled/marked using CSA B44.1/ASME A17.5. The second sentence of the clause was an attempt to help the reader understand when CSA B44.1/ASME A17.5 is applicable, but there is still ambiguity within the current 2.26.4.2 wording as related to the scope of CSA B44.1/ASME A17.5.

The scope of CSA B44.1/ASME A17.5 indicates that is intended to apply to electrical equipment for elevators, escalators, moving walks, dumbwaiters, material lifts, and elevating devices for persons with physical disabilities, including

- (a) motor controllers,*
- (b) motion controllers,*
- (c) operation controllers,*

- (d) operating devices; and*
- (e) all other electrical equipment not listed/certified and labelled/marked according to another product safety standard or code.*

CSA B44.1/ASME A17.5 does not include appropriate requirements for every imaginable type of component that exists, and was never intended to be applied to devices for which component standards already exist, only for the specific elevator type equipment enumerated in (a) through (d) and to devices for which no safety standard currently exists, as indicated in (e).

Requirement 1.5 of CSA B44.1/ASME A17.5 also includes a statement that the standard does not apply to devices rated for connection to extra-low-voltage Class 2 supply circuits. Many have interpreted this to mean that any component rated 30 V rms or less need not comply with CSA B44.1/ASME A17.5 (or any other standard).

In reality, requirement 1.5 applies only to devices that are in extra-low-voltage Class 2 circuits, which are very specifically defined in the Canadian and National Electrical Codes, and require very special installation considerations, including separation of Class 2 circuits from all other circuits. Furthermore, even when a circuit is a Class 2 circuit, if failure of the circuit or a device in the circuit will introduce a life hazard (such as rendering an EPD ineffective), it must be treated as a Class 1 circuit (see C22.1 rule 16-010), and any the requirements for Class 1 circuits are applicable, including the need for devices to be listed/certified.

This proposal expands requirement 2.26.4.2 to encompass all of these considerations, which will more clearly communicate the requirements for listing/certification of electrical equipment. The base requirement is that electrical equipment shall be listed/certified and labeled/marked. The new requirements 2.26.4.2.1 through 2.26.4.2.3 clarify which devices must comply with CSA B44.1/ASME A17.5, which devices must comply with other approved component standards applicable to the country where the equipment is installed (for example, Canada or the USA), and which devices are not required to be listed/certified.

Expanding requirement 2.26.4.2 as proposed will result in a more uniform understanding of the listing/certification requirement for all stakeholders, and reduce the likelihood that non-compliant devices will be used in low voltage circuits that could affect the safety of an elevator system.

Record 18-979

Proposed changes to A17.1-2016, 5.3.1.10.1.

5.3.1.10.1 Capacity.

The inside net platform area shall be determined at a point 1000mm (39in.) above the floor and inside of any panels or wall surfaces, but exclusive of any hand-rails and space for doors or gates as shown in figure 2.16.1.1 for horizontal sliding car doors or as shown in figure 5.3.1.10.1 for other car doors or gates. To allow for variations in car designs, an increase in the maximum inside net area not exceeding 5% shall be permitted.

The maximum inside net platform area shall not exceed 1.4 m² (15 ft²). The minimum rated load shall be not less than the following:

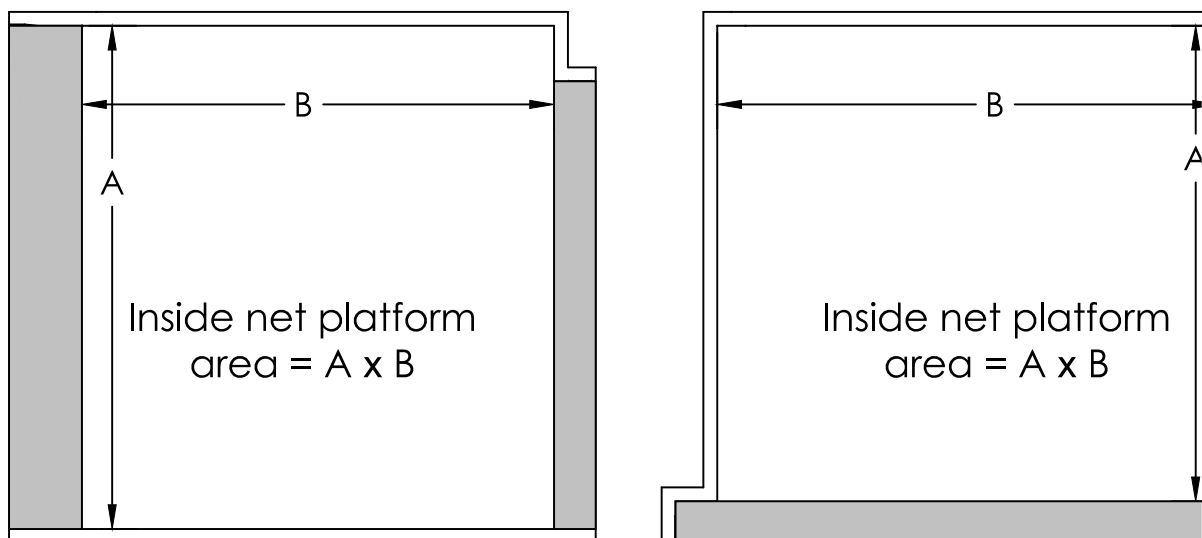
(a) For net platform areas up to and including 1.1 m² (12 ft²), the rated load shall be not less than 195 kg/m² (40 lb/ft²) or 159 kg (350 lb), whichever is greater.

(b) For net platform areas greater than 1.1 m² (12 ft²), the rated load shall be based upon 305 kg/m² (62.5 lb/ft²).

Rationale: To provide a standard means of measuring the net car platform area as it is currently not defined.

Shaded area represents the space occupied by various

Fig. 5.3.1.10.1
Inside Net Platform Areas for Private Residence Elevators



Record 18-1140

Revise A17.1-2019 as follows:

8.7.2.22.4 Compensation. Where compensation means is added or altered it shall conform to Section 2.21.4 and, where applicable, requirements 2.1.2.3(c), 2.4, 2.22.4.10.3 and 2.26.2.3. For inspection test requirements, see 8.10.2.3.2(ii).

8.10.2.3.2

...

(ii) Where alteration consists of a change to the Counterweights (8.7.2.22); the affected components shall be tested as specified in 8.10.2.2.3(e), (x), (dd), (ii), (jj), and (kk).

Rationale: Adding Alteration and additional Inspection and Test requirements for the Addition or Alteration of Compensation Means.

Note: 8.10.2.3.2(ii) changes are based on the approved Record17-443.

Record 18-1150

7.2.6.7 Suspension Means Monitoring and Protection ~~Splicing and Replacement of Suspension Ropes.~~

Requirement 2.20.8 does not apply.

Rationale: Correct section heading to match heading of 2.20.8.

Record 18-1393

Proposed Revision to A17.1, Requirement 8.10.4 Acceptance Inspection & Tests of Escalators & Moving Walks:

8.10.4 Acceptance Inspection & Tests of Escalators & Moving Walks

8.10.4.2.1 Alterations shall be inspected for compliance with the applicable requirements specified in Section 8.7.

Check Code data plate for compliance with 8.7.1.8.

~~NOTE: For Code data plate, see 8.7.1.7.~~

Rationale: Requirement 8.7.1.7 pertains to Repairs & Replacements. 8.10.4.2.1 should refer the user of the code to 8.7.1.8 to verify code data plate information pertinent to an alteration just as seen for Electric and Hydraulic Type Elevators.

Record 18-1574

5.2.1.20 Suspension Ropes Means and Their Connections.

Suspension ropes means and their connections shall conform to Section 2.20, except as modified by 5.2.1.20.1 through 5.2.1.20.23, ~~for 2.20.1 and 2.20.3.~~

~~Suspension~~

~~ropes and their connections shall also conform to~~

~~5.2.1.20.1 and 5.2.1.20.2.~~

5.2.1.20.1 Suspension Means. Suspension means shall comply with 2.20.1 or 5.2.1.20.1.1. ~~Cars shall be suspended~~

~~by ropes attached to the car frame or passing~~

~~around sheaves attached to the car frame specified in~~

~~2.15.1. Suspension means Ropes that have previously been installed and~~

~~used on another installation shall not be reused. Only~~

~~rope having the following classifications shall be used~~

~~for the suspension of limited use/limited application~~

~~elevator cars and for the suspension of counterweights:~~

~~(a) Iron (low carbon steel) or steel wire rope, having~~

~~the commercial classification “Elevator Wire Rope,” or~~

~~wire rope specifically constructed for elevator use. The~~

~~wire material for these wire ropes shall be manufactured~~

~~by the open-hearth or electric furnace process or their~~

~~equivalent.~~

5.2.1.20.1.1 Alternate Suspension Means

Aircraft cable rope of 7 x 19 construction, classified

as MIL-DTL-83420M Spec, shall be permitted in

those applications where aircraft cable rope is not subjected

to crushing pressures, with the following exceptions

permitted:

(1) nonjacketed, carbon steel, tin- or zinc-coated

(Type 1A) 7 x 19 construction (Section 3.4.3.3 of

MIL-DTL-83420M Spec)

(2) identifying color tracer filaments are not

required (Section 3.6.2 of MIL-DTL-83420M Spec)

5.2.1.20.2 Factor of Safety. The factor of safety

shall comply with 2.20.3 or 5.2.1.20.2.1 ~~be specified in accordance with the following:~~

(a) ~~“Elevator Wire Rope” [see 5.2.1.20.1(a)] shall comply~~

~~with 2.20.3.~~

(b) 5.2.1.20.2.1 ~~“Aircraft Cable Rope” [see 5.2.1.20.1.1(b)] shall have~~

~~a factor of safety of not less than 7.5.~~

Rationale: To allow alternate suspension means and align requirements with section 2.20.

Record 18-2454

Revise A17.1 as follows:

8.7.3.31.5 Controllers

...

(e) Where a controller for the elevator operation on emergency or standby power systems or Firefighters' Emergency Operation is installed, see 8.7.3.31.828.

Rationale: To correct incorrect reference.

Record 18-2482

Revise A17.1-2019 as follows:

8.6.1.4.1 On-Site Maintenance Records

...

(b) *Repair and Replacement Records.* The following repairs and replacements shall be recorded and shall be kept on-site for viewing by elevator personnel in either hard copy or electronic format. Instructions for locating the records of each unit for immediate viewing shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The provided instructions shall be permanently legible with characters a minimum of 3 mm (0.125 in.) in height. The record shall include an explanation of the repair or replacement, date, and name of person(s) and/or firm performing the task. The record of repairs and replacements shall be retained by the owner of the equipment for the most recent 5 ~~yr~~ years or from the date of installation or adoption of ASME A17.1-2013/CSA B44-13 and later editions ~~this Code edition~~, whichever is less, or as specified by the authority having jurisdiction, and shall be a permanent record for the installation. These records may be kept remotely from the site.

...

(c) *Other Records.* The following written records shall be kept on-site for each unit. Instructions for locating the records of each unit for immediate viewing shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The provided instructions shall be permanently legible with characters a minimum of 3 mm (0.125 in.) in height. These records shall be retained for the most recent 5 ~~yr~~ years ~~or~~ or from the date of installation or adoption of ASME A17.1-2013/CSA B44-13 and later editions ~~this Code edition~~, whichever is less or as specified by the authority having jurisdiction. The record shall include the date and name of person(s) and/or firm performing the task.

...

Rationale: In [8.6.1.4.1(b) and (c)] to make language specific to the edition in which it was first used, to clarify that "yr" is years and in [8.6.1.4.1(c)] to provide an editorial correction where an "or" was left out of original text.

Record 18-2496

Revise A17.1-2019 as follows:

5.9.20.2 Devices permanently attached to the suspension ropes that absorb moisture, accumulate debris, restrict suspension rope movement, or impede suspension rope examinations shall be prohibited, with the exception of the suspension means and their connections as specified in Section 2.20.

Rationale: *Prohibit auxiliary devices permanently attached to the suspension ropes, which are not specified in Section 2.20, that could cause localized corrosion on the suspension ropes in the mine environment or interfere with the required suspension rope examinations.*

Record 18-2497

Proposal to Revise A17.1-2019 as follows

(NOTE: Requirement 5.9.2.2 was approved in Record 17-1565):

5.9.2.2 When the pit extends below the mine level, a standard railing conforming to 2.10.2 shall be provided around the pit. Where necessary, guarding shall be provided to prevent accidental contact with moving elevator equipment.

Rationale: *To better describe a standard railing by referencing the requirements in A17.1. Modification of this section is being proposed to make the language consistent with that typically used in A17.1.*

Record 18-2567

Proposed Revision to A17.1, Requirement 8.9.3, 8.10.1.1.4, 8.10.2.2.3(n), 8.10.2.2.5 Pit (c), 8.11.3.1.5(d), 8.10.2.2.5 Pit (b)(4), and 8.10.4.1.1(f) Material and Construction, Data Plates, Marking Plates, and Signage:

Revision #1

Revise 8.9.3:
CODE DATA PLATE

8.9.3 Material and Construction

The code data plate shall conform to 8.13.1.

Existing Code data plates that comply with the edition of the Code under which they were installed and have legible accurate information do not have to be changed to comply with these material and construction requirements.

Rationale: To conform to the new requirements for permanent marking plates and tags.

Revision #2

8.10.1.1.4 Acceptance Test Tags. A metal tag with the applicable Code requirement(s) and date(s) performed, and the name of the person or firm performing the test and the inspector witnessing the test, including their inspector's ID number and certifying organization, shall be installed to be readily visible and shall be permanently attached to the controller of each unit. The tag shall conform to 8.13.3.

Rationale: To conform to the new requirements for permanent marking plates and tags.

Revision #3

8.10.2.2.3 (n) Counterweight Safeties (Item 3.29). Visually inspect counterweight safeties, including marking plate
~~(2.17.4)~~ (2.17.14)

Rationale: Corrected reference number.

Revision #4

8.10.2.2.5 Pit (c) Car and Counterweight Buffer (Item 5.9). Marking plates shall be checked in accordance with 2.22.3.3, 2.22.4.11, or 2.22.5.56 for proper application. No test shall be required on spring-type or elastomeric buffers.

The following tests on oil-type buffers shall be performed (Item 5.9):

Rationale: Corrected wrong reference number.

8.11.3.1.5(d) Car Buffer (3.6.3, 3.6.4, and 3.22.1) (Item 5.12). Marking plates shall be checked for proper application in accordance with 2.22.3.3 or 2.22.5.56. No test shall be required on spring-type or elastomeric buffers.

Rationale: Corrected wrong reference number

Revision #5

8.10.2.2.5 Pit (b)(4) warning signs [2.4.4(b)1.6]

Rationale: Corrected wrong reference number.

Revision #6

8.10.4.1.1 (f) Caution Signs (~~6.1.6.2~~, 6.1.6.9.1 or ~~6.2.6.9.1~~) (Items 7.6 and 9.6)

Rationale: Correct references.

Overall Rationale: Update references to comply with current requirements. This will bring these items into sync with the 2019 edition and new section Req. 8.13.

Record 18-2573

Proposed Revision to A17.1, Requirement 8.10.4.1.2(m) Handrail Speed Monitor:

8.10.4.1.2 Internal Inspection and Tests

(m) Handrail Speed Monitor. The handrails operating mechanism shall be visually inspected for condition ~~and the handrail speed monitor device shall be tested (6.1.6.4 or 6.2.6.4)~~ (Items 8.13 and 10.13).

The person or firm installing the equipment shall provide a written checkout procedure and demonstrate that the handrail speed monitor device (6.1.6.4 and 6.2.6.4) will activate an alarm without any intentional delay and the device will shut down the unit when a speed deviation of 15% or more is continuous within a 2 s to 6 s range.

Verify that the handrail speed monitoring device requires a manual reset or the person or firm installing the equipment shall provide a written checkout procedure and demonstrate that it automatically resets only once in 24 hours of operation and then requires manual reset.

Rationale: *To require a written checkout procedure to verify the handrail speed monitor complies with 6.1.6.4 and 6.2.6.4.*

Record 18-2575

Revise A17.1-2019 as follows:

2.15.6.4 Requirements for Wood Used for Platform Floors and Stringers. Wood used for platform stringers and platform floors and sub-floors shall be of structural quality lumber or ~~exterior-type~~ plywood conforming to the requirements of the following:

- (a) ASTM D245, Structural Grades of Lumber
- (b) ASTM D198, Static Tests of Timbers in Structural Sizes
- (c) ANSI Voluntary Product Standard PS 1-74 or CSA O151, Softwood Plywood, Construction and Industrial

Rationale: *The above changes to 2.15.6.4 address the outdated wood platform requirements within PS-1 74. Remove “Exterior-type” due to changes within PS 1 plywood changes from PS 1-74 to PS-1 09. Since PS 1 -09 removed the PS 1-74 Interior Type bonded with interior glue and Interior Type bonded with intermediate bonded glue classifications, there is no need to add an additional requirement for specifying the bonding classification type. Both are required to be exposed to dry and wet weather, but Exposure 1 is allowed during construction phase and Exterior is allowed long term exposure. The PS 1 - 09 bonding classification Exposure 1 and Exterior are both exterior bonding and have the same test requirements. Only difference, Exposure 1 is allowed to have a slightly higher failure rates. Also, the CSA O151 bonding tests and failure requirements are similar with PS 1- 09 Exposure 1 testing requirements.*

Conclusion: Both Exposure 1 and Exterior bonding classifications are suitable for elevator use.

Section 9

ANSI/Vol. Prod. Std. PS-1 US (latest edition) -74	Construction and Industrial Plywood	APA
CSA O151-M1978 (same as Canada CAN/CSA-O151-M78) (latest edition)	Canadian Softwood Plywood	CSA

Record 18-2576

Proposed Revision to A17.1, Requirement 8.10.4.1.2(d)(7) Drive Machine Brake:

8.10.4.1.2 Internal Inspection and Tests

(d) Drive Machine and Brake.

(7) The person or firm installing the equipment shall provide a written procedure to demonstrate that whenever the driving machine brake is applied that the escalator braking distance monitor detects when the maximum and minimum stopping distance is not achieved and prevents the unit from restarting unless the device is manually reset.

***Rationale:** To add testing requirements for Requirements 6.1.6.7 and 6.2.6.8 added in A17.1.*

Record 18-2578

Proposed Revision to A17.1, Requirement 8.10.2.2.3 Percent Counterweight Overbalance:

8.10.2.2.3 Top-of-Car

(k) Data Plate (2.16.3.3 ~~and~~, 2.20.2, and 2.24.2.3.5) (Item 3.27). Where applicable, the percent counterweight overbalance shown on or adjacent to the crosshead data plate shall be verified by one of the following methods:

- (a) placing weight inside the car until it balances the counterweight (for 2:1 roping the car and counterweight sheaves need to be at the same vertical height) or
- (b) weighing the counterweight and then weighing the car with the appropriate weight inside the car
- (c) using the motor drive data information

***Rationale:** Revise to include testing information based on approved revisions to A17.1 per Record 17-338 to verify the percent counterweight overbalance.*

Record 18-2587 (editorial)

Proposed Editorial Revision to A17.1, References to 8.6.4.20(1), (3), (4), (10) Periodic Test Record:

8.6.4.20.1 Car and Counterweight Safeties.

...

(b)(2) A ~~test tag~~ periodic test record as required in 8.6.1.7.2 shall be provided.

8.6.4.20.3 Oil buffers

...

(g) A ~~test tag~~ periodic test record as required in 8.6.1.7.2 shall be provided.

8.6.4.20.4 Driving-Machine Brake(s).

...

(b)(2) A ~~test tag~~ periodic test record as required in 8.6.1.7.2 shall be provided.

8.6.4.20.10 Braking system, Traction, and Traction Limits.

...

(b)(2) A ~~test tag~~ periodic test record as required in 8.6.1.7.2 shall be provided.

***Rationale:** Ensure language referencing requirement 8.6.1.7.2 accurately reflects the title of the requirement.*

Record 18-2792

Revise A17.1-2019 as follows:

8.4.1 Horizontal Car and Counterweight Clearances

8.4.1.1 Between Car and Counterweight and Counterweight ~~Screen~~Guard. The following clearances shall supersede those specified in 2.5.1.2.

...

8.4.1.1.3 The running clearance between the counterweight assembly and the nearest obstruction, including counterweight ~~screens~~guards, shall be not less than 25 mm (1 in.).

Rationale: To be consistent with the verbiage used in the remainder of the code. For example see 2.3.2.3; 2.5.1.2; 2.7.5.2.1; 2.7.2.4; 8.7.2.27.6(b) and 8.7.3.31.7(b).

INDEX

References given are to the Part, Section, Requirement, Table, Figure, and Appendix designations.

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~~Counterweight screen (see also Counterweight, guarding of)
clearance, 2.5.1.2~~

Rationale: To be correct the index to reflect the proposed changes to 8.4.1.

Record 18-2958

Background:

Requirement 8.10.3.2.2 was updated without notifying the A17 Hydraulic Committee to update their reference in conjunction with the changes. Changes were made between the A17.1-2004 and 2007 editions

Revision Proposal

3.18.4.1 Metal Stops and/or Other Means. Metal stops and/or other means shall be provided at one end of the plunger and at the packing head end of the cylinder to prevent the plunger from traveling beyond the limits of the cylinder. The metal stops and/or other means shall be so designed and constructed as to stop the plunger traveling in the up direction at maximum speed under full load pressure, should the normal terminal stopping device (see 3.25.1) fail to operate, or at a reduced speed when a terminal speed-reducing device is provided as required by 3.25.2. No running test onto the stop ring is required [see 8.10.3.2.2(sz)].

Rationale

Reference in ASME A17.1, 3.18.4.1 to requirement 8.10.3.2.2(s) should be revised to 8.10.3.2.2(z).

Record 18-2967

Proposed Revision to A17.1, Requirements 6.2.6.3.8 Disconnected Motor Safety Device:

6.2.6.3.8 Disconnected Motor Safety Device. If the drive motor is attached to a gear reducer by means other than a continuous shaft, mechanical coupling, or toothed gearing, a device shall be provided that ~~will~~ shall cause ~~initiation of dynamic braking (6.2.5.3.3)~~ or the electric power to be removed from the driving machine motor and brake (see 6.2.5.3.1) if the motor becomes disconnected from the gear reducer. The device shall be of the manual-reset type.

***Rationale:** In reviewing the A17.1 changes to permit dynamic braking (TN 12-1111) updates, there appears to be an error on the devices identified as permitting dynamic braking. 6.2.6.3.8 Disconnected Motor Safety Device was amended to permit dynamic braking in the final version of TN 12-1111. Given that the motor is required for dynamic braking, this appears to be an error (note also that 6.1.6.3.10 Disconnected Motor Safety Device for escalators does not permit use of dynamic braking. 6.2.6.3.8 needs to revert to its A17.1-2016 language or be modified. Dynamic braking cannot stop the moving walk when the motor becomes disconnected from the gear reducer. Reverting to the A17.1-2016 does not preclude application of dynamic braking to the disconnected motor for purposes of stopping the free spinning motor rotor. Electrical power must be removed from the drive machine brake which must be connected to the gear reducer per 6.1.5.3.1(e) and 6.2.5.3.1(e) when the drive motor is attached to a gear reducer by means other than a continuous shaft, mechanical coupling, or toothed gearing.*

Record 19-14

Proposed Revision to A17.1, Requirements

7.5.2.6 Requirement 2.15.11 does not apply. For Type A and Type B Material Lifts the vertical deflection of the platform when the rated load is in any position on the platform shall not exceed 5 mm per 1 000 mm (0.25 in. per 50 in.) of platform length. The maximum allowable deflection shall be 50 mm (2 in.).

Rationale: *Require both type A and type B material lift to comply with the deflection requirements for the safety of materials being loaded on and off and the material handler. Previously, there was no requirement for deflection for type A material lifts.*

Record 19-106

Revise A17.1-2019 as follows:

Proposal to modify the Mine Elevator Scope 5.9 to include requirements for rack and pinion mine elevators as follows:

**SECTION 5.9
MINE ELEVATORS**

In jurisdictions not enforcing NBCC, Section 5.9 applies to elevators as covered by Part 2 and Section 4.1, 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 and Section 4.1 is modified as follows (see also Section 1.3):

5.9.3X Rack and Pinion Elevators

Rack and pinion elevators shall comply with Section 4.1 and shall be equipped with supplemental mechanical safety devices (i.e. safety hooks) to prevent pinion separation from the rack in all directions if any roller(s) fails. The supplemental mechanical safety device (i.e. safety hooks) shall have a factor of safety of not less than 5. Obstructions in the hoistway shall be considered when calculating the maximum dynamic loads on the mechanical safety devices.

Rationale: Rack and pinion elevators installed at mines can be exposed to inadvertent obstructions in the open hoistway. The strength requirements for supplemental mechanical safety devices (i.e. safety hooks, refer to A17.1 Handbook for diagram) will prevent the elevator car pinion and safety pinion from disengaging from the rack under the force of the drive motor and gravity if a hoistway obstruction is struck by the elevator car.

8.6.7.9.X Rack and pinion elevator pits shall be kept free of water and debris that would corrode the supporting structure. The drain holes at the bottom of the rack and pinion elevator supporting structure shall be kept open and free of debris that would prevent proper draining of water accumulated inside the supporting structure.

Rationale: The pits of rack and pinion elevators installed in mines naturally accumulate debris and water which can interfere with the proper draining of water accumulated inside the supporting structure and contribute to the deterioration of the supporting structure.

Record 19-107

Proposed Revision to A17.1, Machine Brake Inspection Testing of Escalators and Moving Walks:

SECTION 8.6 MAINTENANCE, REPAIR, REPLACEMENT, AND TESTING

8.6.1.2.2 On-Site Documentation.

The documents specified in (a) through (c) shall be written and permanently kept on-site in the machine room, machinery space, control room, control space, or in the means necessary for test (2.7.6.4) in hard copy for each unit for elevator personnel. The documentation specified in (d) shall be on-site and available to the specified personnel.

(a) Up-to-date wiring diagrams detailing circuits of all electrical protective devices (see 2.26.2) and critical operating circuits (see 2.26.3)

(b) Procedures for inspections and tests not described in ASME A17.2 and procedures or methods required for elevator personnel to perform maintenance, repairs, replacements, and adjustments, as follows:

(1) all procedures specifically identified in the Code as required to be written (e.g., 8.6.4.20.8, checkout procedure for leveling; 8.6.5.16.5, checkout procedure for overspeed valve; and 8.6.8.15.7, checkout procedure for reversal stop switch)

(2) unique maintenance procedures or methods required for inspection, tests, and replacement of SIL rated E/E/PES electrical protective devices and circuits [See 2.26.4.3.2, 2.26.9.3.2(b), 2.26.9.5.1(b), and 2.26.9.6.1(b).]

(3) unique maintenance procedures or methods required for inspection, tests, and replacement of equipment applied under alternative arrangements (see 1.2.2.1) shall be provided by the manufacturer or installer

(4) unique maintenance procedures or unique methods required for inspection and test of equipment specified in an ASME A17.7/CSA B44.7 code compliance document (CCD)

(5) procedures for tests, periodic inspections, maintenance, replacements, adjustments, and repairs for traction-loss detection means, broken-suspension-member detection means, residual-strength detection means, and related circuits [See 2.20.8.1 through 2.20.8.3, 8.6.4.19.12, 8.6.11.11, 8.10.2.2.2(cc)(3)(-c)(-2), and 8.10.2.2.2(ss).]

(6) procedures for inspections, maintenance, replacements, adjustments, and repairs for escalator\moving walk dynamic braking means (See I-15, 6.1.5.3.4)

(c) Written checkout procedures

(1) for elastomeric buffers (see 8.6.4.4.2)

(2) to demonstrate E/E/PES function as intended (see 8.6.4.19.10)

(3) for two-way communication means (see 8.6.4.19.15)

(4) for elevator leveling speed with open doors (see 8.6.4.20.8)

(5) for hydraulic elevator overspeed valve (see 8.6.5.16.5)

(6) for escalator reversal stopping device (see 8.6.8.15.7)

(7) for escalator handrail retarding force (see 8.6.8.15.13)

(8) for escalator and moving walk dynamic brake systems (see 8.6.8.15.4)

8.6.8.15.4 Drive Machine and Brake.

The drive machine and brakes shall be examined and tested, including test of the brake torque (Items 8.4 and 10.4). For escalators and moving walks utilizing dynamic braking:

- (a) removal of electrical power from the driving machine motor and brake for conditions where deceleration and/or stopping distance requirements are not met shall be tested.
- (b) the person or firm maintaining the equipment shall provide a written checkout procedure and demonstrate the system complies with the requirements of the Code (see 8.6.1.2.2(c)(8)). This shall include, but not be limited to:

(1) Verification that all EPD's not permitting use of dynamic braking properly removes motor power and applies drive machine brake (see 6.1.5.3.4(c)).

(2) Verification that loss of electrical power properly applies drive machine brake (see 6.1.5.3.4(b)).

(3) Verification that a solid state motor drive control (VFD) error or fault properly removes motor power and applies drive machine brake including, but not limited to, errors on braking resistors and regenerative power distribution.

(4) Verification that failure of stopping distance monitoring means properly removes motor power and applies drive machine brake (see 6.1.5.3.4(d)).

(5) Verification that failure to achieve stopping rate to meet required stopping distance properly removes motor power and applies drive machine brake (see 6.1.5.3.4(d)).

(6) Verification that drive machine brake is set not later than when the escalator/moving walk comes to rest (see 6.1.5.3.4(b)).

(c) the escalator dynamic brake system shall be tested manually in each escalator travel direction to determine that it functions properly. If the escalator has been continuously run in only one direction such that it may be damaged by reversal, perform the test in that direction only and note on inspection form.

SECTION 8.10 ACCEPTANCE INSPECTIONS AND TESTS

8.10.4 Acceptance Inspection and Tests of Escalators and Moving Walks

8.10.4.1.2 Internal Inspection and Tests

(d) Drive Machine and Brake. The drive machine and brakes shall be inspected and tested including a test of the brake torque and dynamic braking systems, where provided (6.1.5.3 and 6.2.5.3) (Items 8.4 and 10.4).

(1) connection of machine and driveshaft (6.1.5.1 and 6.1.5.3.2 or 6.2.5.1 and 6.2.5.3.2)

(2) drive motor (6.1.5.2 or 6.2.5.2)

(3) brake type (6.1.5.3 or 6.2.5.3)

(-a) Verify that the brake torque complies with the value shown on the data plate or in the special instructions

[see 6.1.5.3.1(d) for escalators and 6.2.5.3.1(d) for moving walks].

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

(4) brake data plate [6.1.5.3.1(d)]

- (5) main driveshaft brake (6.1.5.3.2)
- (6) escalator brake certification (6.1.5.3.3)
- (7) escalator/moving walk dynamic braking (6.1.5.3.4 and 6.2.5.3.4)

SECTION 8.11 PERIODIC INSPECTIONS AND WITNESSING OF TESTS

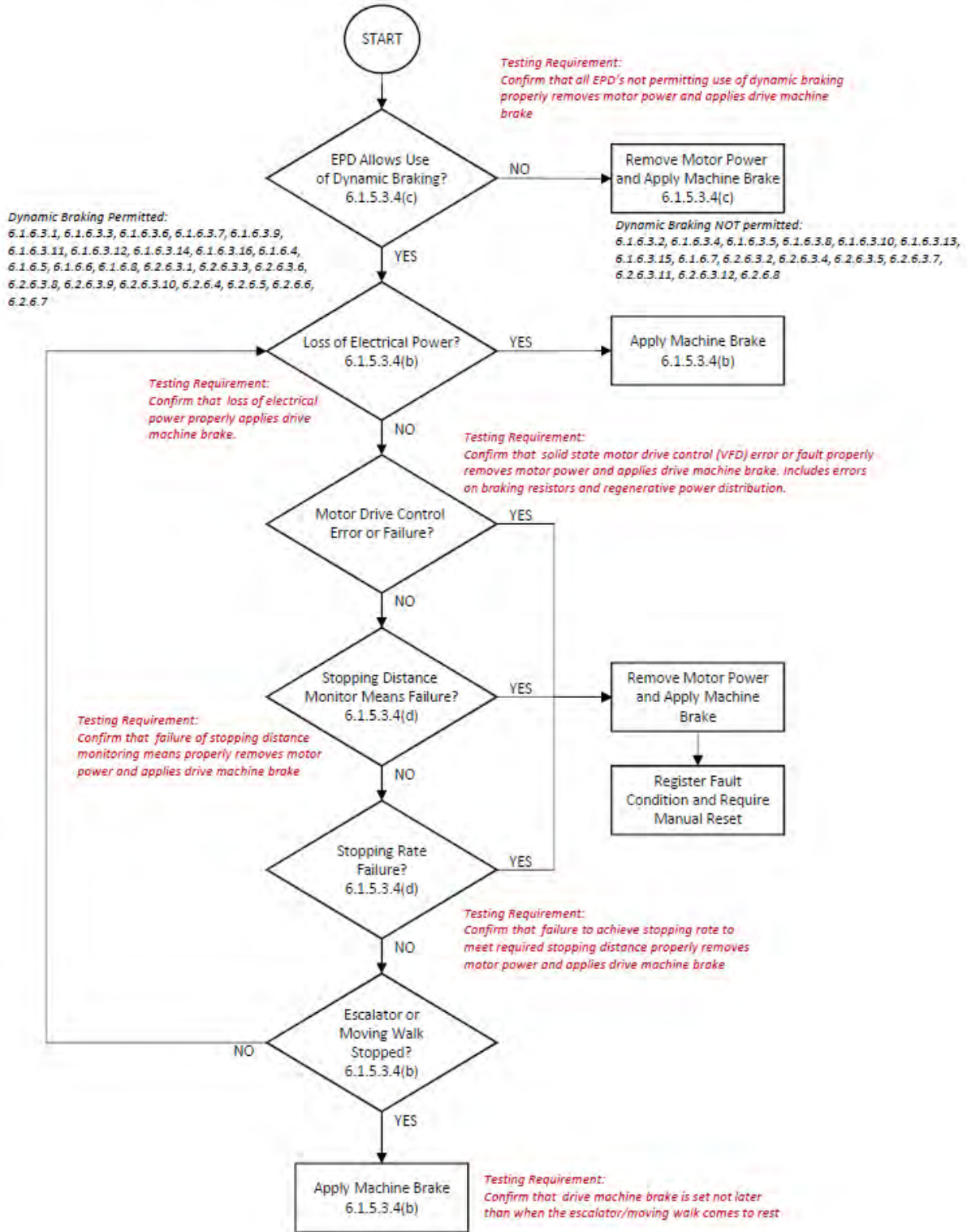
8.11.4.1 Periodic Inspection and Test Requirements. Inspectors shall include the following when identifying components or systems, or both, that shall be inspected:

(w) Escalator/Moving Walk Dynamic Braking (Item 8.4 and 10.4)

Rationale: *These requirements have been added or revised in order to have inspection and testing requirements for dynamic braking on escalators and moving walks that has been approved for the 2019 code edition. See approved TN 12-1111.*

Add the following shown on next page
Figure I-15

ESCALATOR\MOVING WALK DYNAMIC BRAKING BASIC LOGIC



Record 19-172

Revise A17.1-2019 as follows:

2.17.12 Minimum Factors of Safety and Stresses of Safety Parts and Rope Connections

2.17.12.1 Parts of safeties, except springs, safety rope drums, leading sheaves, bearings, and their supporting brackets and safety-jaw gibs, shall have a factor of safety of not less than 3.5, and the materials used shall have an elongation of not less than 15% in a length of 50 mm (2 in.) when tested in accordance with ASTM E 8. Forged, cast, or welded parts shall be stress relieved.

Rationale: ASTM E8 was never intended to address bearings.

Record 19-175

Revise A17.1-2019 as follows:

2.19.1 Ascending Car Overspeed Protection

2.19.1.1 Purpose. Ascending car overspeed protection shall be provided to prevent the car from striking the hoistway overhead structure as a result of a failure in;

- (a) the electric driving-machine motor, brake, coupling, gear-shaft, or gearing
- (b) the control system
- (c) any other component upon which the speed of the car depends, except;
 - (1) the suspension ropes and the drive sheave of the traction machine.
 - (2) the driving machine sheave shaft, provided that any failure of this sheave shaft does not result in ascending car overspeed.

*Rationale: 1. To mirror requirement 2.19.2.1(a) as this represents the same situation.
2. To clarify the requirement, and enable safe sheave shaft design arrangements.*

2.19.2.1 Purpose. Protection shall be provided with a means to detect unintended car movement (see Section 1.3) and stop the car movement, as a result of failure in any of the following:

- (a) electric driving-machine motor, brake, coupling, gear-shaft, or gearing
- (b) control system
- (c) any other component upon which the speed of the car depends, except;
 - (1) the suspension ropes and the drive sheave of the traction machine.
 - (2) the driving machine sheave shaft, provided that any failure of this sheave shaft does not result in ascending car overspeed.

Rationale: To clarify the requirement, and enable safe sheave shaft design arrangements.

Record 19-931

Revise A17.1-2019 as follows:

Rationale: Revised to clarify runby requirements and properly delineate between the installation, maintenance and replacement requirements for runby.

DESIGN:

2.4.2 Minimum Bottom Runby for Counterweighted Elevators

The bottom runby of cars and counterweights when new suspension means are provided shall be not less than the requirements stated in 2.4.2.1 and 2.4.2.2.

2.4.2.1 Where oil buffers are used, the bottom runby shall be not less than 150 mm (6 in.), except that

(a) where practical difficulties prevent a sufficient pit depth or where a top clearance cannot be provided to obtain the runby specified, it shall be permitted to be reduced

(b) where spring-return-type oil buffers are used, the runby shall be permitted to be eliminated so that the buffers are compressed by amounts not exceeding those permitted by 2.22.4.8, when the car floor is level with the terminal landings.

2.4.2.2 Where spring buffers, elastomeric buffers, or solid bumpers are used, the bottom runby shall be not be less than 150 mm (6 in.), ~~except for rheostatic and single speed AC control, not less than shown in Table 2.4.2.2.~~

~~**Table 2.4.2.2 Minimum Bottom Runby for Counterweight Elevators With Spring Buffers, Elastomeric Buffers, or Solid Bumpers and Rheostatic Control or Single Speed AC Control**~~

Rated Speed, m/s (ft/min)	Runby, mm (in.)
Not over 0.13 (not over 25)	75 (3)
Over 0.13 to 0.25 (over 25 to 50)	150 (6)
Over 0.25 to 0.50 (over 50 to 100)	225 (9)
Over 0.50 to 1.0 (over 100 to 200)	300 (12)

Rationale: Clarify runby requirements based on buffer type(s). Remove table 2.4.2.2 for new elevators since Single speed AC control and Rheostatic Control do not meet 2.26.11, A117.1 and ADDAG. The table has been moved to 8.6.3.12.1.

2.22.4.8 Compression of Buffers When Car Is Level With Terminal Landings. Car and counterweight oil buffers of the mechanical spring-return type shall be permitted to be compressed not to exceed 25% of their stroke when the car is level with the terminal landings (see 2.4.2.1(b)).

Rationale: Update cross reference for revised proposal.

REPLACEMENT:

8.6.3.12 Runby and Clearances After Suspension Means are Replaced Reroping or Shortening.

8.6.3.12.1 When new suspension means are installed, ~~t~~The minimum top-of-car and top-of-counterweight clearances specified in 2.4.76 and 2.4.89 shall apply and the minimum car and counterweight runby specified in 2.4.2 shall apply. For rheostatic and single speed AC control the runby shall not be less than shown in Table 8.6.3.12.1, ~~be maintained when new suspension means are installed or when existing suspension means are shortened. The minimum clearances shall be maintained by~~ Any of the methods, or a combination of methods described in (a) through (c), may be used to satisfy these clearance requirements. 8.6.3.12.1 through 8.6.3.12.4 (see 8.6.4.11).

8.6.3.12.1 (a) Adjust Limit the length that of the suspension means are shortened.

8.6.3.12.2 (b) Provide blocking at the car or counterweight strike plate. The blocking shall be of sufficient strength and secured in place to withstand the reactions of buffer engagement as specified in 8.2.3. If wood blocks are used to directly engage the buffer, a steel plate shall be fastened to the engaging surface or shall be located between that block and the next block to distribute the load upon buffer engagements.

8.6.3.12.3 (c) Provide blocking under the car or counterweight buffer or both of sufficient strength and secured in place to withstand the reactions of buffer engagement as described in 8.2.3.

~~**8.6.3.12.4** Provide the month and year the suspension means were first shortened. Appropriate data shall be recorded on the data tag (see 2.20.2.2.2).~~

Note: See 2.20.2.2.2(m) and 8.6.4.11.3 when suspension means are first shortened.

Table 8.6.3.12.1 Minimum Bottom Runby for Counterweight Elevators With Spring Buffers, Elastomeric Buffers, or Solid Bumpers and Rheostatic Control or Single-Speed AC Control

<u>Rated Speed, m/s (ft/min)</u>	<u>Runby, mm (in.)</u>
<u>Not over 0.13 (not over 25)</u>	<u>75 (3)</u>
<u>Over 0.13 to 0.25 (over 25 to 50)</u>	<u>150 (6)</u>
<u>Over 0.25 to 0.50 (over 50 to 100)</u>	<u>225 (9)</u>
<u>Over 0.50 to 1.0 (over 100 to 200)</u>	<u>300 (12)</u>

Rationale: Correct a reference that was not updated when this section was renumbered for the A17.1b-2009 code.

Clarify the methods or combination of methods that may be used for maintaining the required clearances.

Move requirements to shorten and to track the first shortening of suspension means into the maintenance section and replace with a note.

MAINTENANCE:

8.6.4.11 Runby

8.6.4.11.1 The car and counterweight runby shall be maintained to ensure ~~permitted to be reduced (see 2.4.2), provided the car or counterweight does not strike the buffer,~~ the top car clearances are not reduced below that required at the time of installation or alteration.; ~~and the~~ The final terminal stopping device shall remain is still operational (see also 8.6.3.3.3).

8.6.4.11.2 ~~Where spring return oil buffers are provided and compression was permitted with the car at the terminals (see 2.4.2 and 2.22.4.8), the buffer compression shall not exceed 25% of the buffer stroke.~~ The runby specified in:

(a) 2.4.2.1(a) and 2.4.2.2 shall be permitted to be eliminated.

(b) 2.4.2.1(b) for spring return oil buffers shall be maintained to not exceed the 25% compression of the buffer stroke with the car level with the terminal landings.

8.6.4.11.3 When suspension means are first shortened, the required information shall be recorded on the data tag (see 2.20.2.2.2(m)).

Rationale: Utilize requirement 8.6.4.11.1 to ensure sufficient car top clearance. Utilize requirement 8.6.4.11.2 to ensure runby values. Provide a cross reference that shortening of suspension means must be recorded/dated.

Record 19-1027

Revise A17.1-2019 as follows:

8.6.1.4.1 On-Site Maintenance Records

...

(d) Permanent Record. A permanent record of the results of all acceptance tests as required by 8.10.1.1.4 and 8.10.1.1.5 shall be kept with the on-site records.

Test tags, complying with ~~2.16.3.3~~ [8.13.3](#) for marking plates (except lettering shall be 1.6 mm [0.0625 in.]), permanently attached to or adjacent to the controller, shall meet this requirement.

Rationale: The reference in 8.6.1.4.1(d) is to test tags complying with 2.16.3.3 for 'marking plates'. With the changes for A17.1-2019, this reference in 2.16.3.3 is to 8.13.1 (Permanent Plates), which is not correct. The correct reference is to 8.13.3 for Marking Plates; as was the reference in previous editions.

Record 19-1327

Proposed Revision to A17.1, Appendix X Door Monitoring System:

**NONMANDATORY APPENDIX X
ACCEPTANCE TESTS**

**Table X-1 Acceptance Test for Electric Elevators
Acceptance Test: Electric Elevators**

Name of Person Performing Test (Print):

Name and License Number/Certifying Organization of Inspector (Print):

Name of Firm Performing Test:

Devices Tested/Test Requirement	Date	Results of Test
1 Door Closing Force	— 8.10.2.2.1(h)	
2 Door Closing Time	— 8.10.2.2.1(i)	
3 Door Opening	— 8.10.2.2.1(j)(1)	
4 Leveling Zone and Speed	— 8.10.2.2.1(j)(2)	
5 Inner Landing Zone	— 8.10.2.2.1(j)(3)	
6 Emergency/Standby Power	— 8.10.2.2.1(q)	
7 Braking System	— 8.10.2.2.2(v)	
8 Door Monitoring System	— 8.10.2.2.2(t)	
9 Winding-Drum Machines Slack Rope	— 8.10.2.2.2(y)(3)	
10 Winding-Drum Machine Final Terminal Stopping Devices	— 8.10.2.2.2(y)(6)	
11 Emergency Stop	— 8.10.2.2.2(cc)(1)	
12 Traction Limit	— 8.10.2.2.2(cc)(3)	
13 Terminal Stopping Devices	— 8.10.2.2.2(ff)	
14 Governor Overspeed	— 8.10.2.2.2(hh)	
15 Car Safety	— 8.10.2.2.2(ii)	
16 Car Safety Type “A” Inertia Application	— 8.10.2.2.2(ii)(2)	
17 Counterweight Safety	— 8.10.2.2.2(ii)	
18 CWT Safety Type “A” Inertia Application	— 8.10.2.2.2(ii)(2)	
19 Ascending Car Overspeed Protection	— 8.10.2.2.2(jj)(1)	
20 Unintended Car Movement	— 8.10.2.2.2(jj)(2)	
21 Emergency Brake	— 8.10.2.2.2(mm)	
22 AC Drives From DC Sources	— 8.10.2.2.2(oo)	
23 Car Oil Buffer	— 8.10.2.2.5(c)	
24 Counterweight Oil Buffer	— 8.10.2.2.5(c)	
25 Top-of-Car Clearance and Refuge Space	— 8.10.2.2.3(d)	
26 Unexpected Car Movement Device (top of car)	— 8.10.2.2.3(ff)	
27 Unexpected Car Movement Device (pit)	— 8.10.2.2.5(l)	
28 Firefighters’ Emergency Operation (See Checklist in ASME A17.2)	— 8.10.2.2.6	
29 Seismic and Counterweight Displacement Detection Devices	— 8.10.2.2.2(rr)	
30 Testing of Broken Suspension and Residual-Strength Detection Means	— 8.10.2.2.2(ss)	

Table X-2 Acceptance Test for Hydraulic Elevators
Acceptance Test: Hydraulic Elevators

Name of Person Performing Test (Print):

Name and License Number/Certifying Organization of Inspector (Print):

Name of Firm Performing Test:

Devices Tested/Test Requirement Date Results of Test

1 Door Closing Force — 8.10.3.2.1(h)

2 Door Closing Time — 8.10.3.2.1(i)

3 Door Opening — 8.10.3.2.1(j)

4 Standby/Emergency Power — 8.10.3.2.1(q)(1)

5 Auxiliary Power Lowering (where provided) — 8.10.3.2.1(q)(2)

6 Door Monitoring Systems — 8.10.3.2.1(t)

7 Low Oil Protection — 8.10.3.2.2(s)(7)

8 Reverse Phase Protection — 8.10.3.2.2(s)(6)

9 Working Pressure Verification — 8.10.3.2.2(t)

10 Relief Valve Setting — 8.10.3.2.2(u)

11 Supply Line and Shutoff Valves — 8.10.3.2.2(y)

12 Terminal Speed-Reducing Device — 8.10.3.2.3(f)

13 Terminal Stopping Devices — 8.10.3.2.3(e)

14 Governor Overspeed — 8.10.3.2.2(ff)

15 Safety — 8.10.3.2.5(j)

16 Safety Inertia Application — 8.10.3.2.3(dd)

17 Hydraulic Cylinder Plunger Stop — 8.10.3.2.2(z)

18 Pressure Switch (Cylinder Top Above Tank) — 8.10.3.2.2(aa)

19 Recycle Operation (Multiple or Telescopic Plungers) — 8.10.3.2.2(bb)

20 Static Controls — [3.25.2.4.2(b)], 8.10.3.2.2(cc)

21 Normal Terminal Stopping Devices — 8.10.3.2.3(e), 8.10.3.2.5(e)

22 Operating Devices — 8.10.3.2.2(ee)

23 Class C2 Freight Elevators — 8.10.3.2.2(hh)

24 Top-of-Car Clearance, Refuge Space, and Runby — 8.10.3.2.3(d)

25 Overspeed Valve — 8.10.3.2.5(o)

26 Plunger Clearance Bottom of Cylinder — 8.10.3.2.5(c)(3)(a)

27 Plunger Gripper — 8.10.3.2.5(n)

28 Bottom Clearance, Refuge Space, and Runby — 8.10.3.2.5(b)

29 Car Leveling and Anticreep Operation — 8.10.3.2.3(g)

30 Unexpected Movement — See 2.26.2.34 and 2.7.5.1.1, 8.10.3.2.3(ff)

31 Firefighters' Emergency Operation (See Checklist in ASME A17.2) — 8.10.3.2.6

Rationale: to add Door Monitoring Systems to the lists and renumber accordingly.

Record 19-1337

Proposed Revision to A17.1, Requirements 8.6.1.2.2(c)(3) and 8.6.5.14.3 Category 1 for Communication Devices:

8.6.1.2.2(c)(3) for two-way communication means (see 8.6.4.19.15, 8.5.14.3(l))

8.6.5.14.3 Additional Tests. The following tests shall also be performed:

- (a) Normal Terminal Stopping Devices (8.6.4.19.5) (Item 3.5.2)
- (b) Governors (8.6.4.19.3) (Item 2.13.2.2)
- (c) Safeties (8.6.4.19.2) (Item 5.8.2)
- (d) Oil Buffers (8.6.4.19.1) (Item 5.12)
- (e) Firefighters' Emergency Operation (8.6.4.19.6) (Items 6.1 through 6.5, as applicable)
- (f) Standby or Emergency Power Operation (8.6.4.19.7) (Item 1.17.2.2)

NOTE: Absorption of regenerated power (2.26.10) does not apply to hydraulic elevators.

- (g) Power Operations of Door System (8.6.4.19.8) (Items 4.6 and 4.7)
- (h) Emergency Terminal Speed-Limiting Device and Emergency Terminal Stopping Device (3.25.2) (Item 3.6.2.2)
- (i) Low Oil Protection Operation (3.26.9) (Item 2.39.2)
- (j) *Auxiliary Power Lowering Device.* The auxiliary power lowering device, where provided, shall be tested with no load in the car for conformance with applicable requirements (3.26.10) (Item 2.44).
- (k) **Occupant Evacuation Operation.** Occupant Evacuation Operation shall be tested to determine conformance with the applicable requirements. Deficiencies shall be corrected. A record of findings shall be available to the building owner and the authority having jurisdiction (3.27, 2.27.11) (A17.2 Nonmandatory Appendix D).
- (l) **Emergency Communications.** Emergency communications shall be tested to determine conformance with the applicable requirements (8.6.1.2.2(c)(3)) (Item 1.6). A written checkout procedure shall be provided (check on-site documentation, see 8.6.1.2.2).
- (m) **Means to Restrict Hoistway or Car Door Opening.** Means to restrict hoistway or car door opening shall be tested to determine conformance with the applicable requirements (3.14, 2.14.5.7) (Item 1.18).

Rationale: A17.1-2016/B44-16 added requirement for testing OEO, emergency communication and hoistway/car door opening restriction (8.6.4.19.15). These applied to electric elevators, but not hydraulic. This proposal adds the same requirements to hydros.

Record 19-1339

Proposed Revision to A17.1, Requirement 8.6.5.14.3(g) and 8.6.5.14.6 Power Operation of Door System:

8.6.5.14.3 Additional Tests. The following tests shall also be performed:

- (a) Normal Terminal Stopping Devices (8.6.4.19.5) (Item 3.5.2)
- (b) Governors (8.6.4.19.3) (Item 2.13.2.2)
- (c) Safeties (8.6.4.19.2) (Item 5.8.2)
- (d) Oil Buffers (8.6.4.19.1) (Item 5.12)
- (e) Firefighters' Emergency Operation (8.6.4.19.6) (Items 6.1 through 6.5, as applicable)
- (f) Standby or Emergency Power Operation (8.6.4.19.7) (Item 1.17.2.2)

NOTE: Absorption of regenerated power (2.26.10) does not apply to hydraulic elevators.

~~(g) Power Operations of Door System (8.6.4.19.8) (Items 4.6 and 4.7)~~

~~(hg)~~ Emergency Terminal Speed-Limiting Device and Emergency Terminal Stopping Device (3.25.2) (Item 3.6.2.2)

~~(ih)~~ Low Oil Protection Operation (3.26.9) (Item 2.39.2)

...

8.6.5.14.6 Power Operation of Door System.

The closing forces and speed of power-operated hoistway door systems shall be tested to determine conformance with the applicable requirements (Item 1.8.2). For elevators required to comply with 2.13.4.2.4, the time in the door Code zone distance shall be measured and compared with the time specified on the data plate. Where a data plate conforming to 2.13.4.2.4 is not required, see Nonmandatory Appendix Z. (Items 4.6 and 4.7)

***Rationale:** The requirement was duplicated in the code. The revision editorially combines the duplicative language*

Record 19-1354

Revise A17.1-2019 as follows:

5.9.XX Elevators Under Construction or Disassembly

Partially assembled elevators not complying with all the requirements of Section 5.9 shall not be placed in service and used to transport passengers or materials, with the exception of use by elevator personnel.

Rationale: Elevators not complying with Section 5.9 are not safe for use by miners.

Record 19-1763

8.6.1.2.2 On-Site Documentation. The following documents specified in (a) through ~~(e)~~ (f) shall be written and permanently kept on-site in the machine room, machinery space, control room, control space, or in the means necessary for test (2.7.6.4) in hard copy for each unit for elevator personnel.

The documentation specified in (d) shall be on-site and available to the specified personnel.

...

(e) USI(s) of the executable software associated with the relevant functions in 2.26.1.7.1 and 3.26.11.1 (see also 2.26.1.7.3).

(f) The documentation for the engineering test of skirt panels deflection for units installed or altered under A17.1-2011 and later editions (see 8.3.15.5)

Rationale:

1) To clarify that the personnel for which the Unique Software Identifier documentation is intended is elevator personnel and to provide the correct reference to the on-site documentation. See Record 09-872.

2) To provide the correct reference to the required documentation for the engineering test of skirt panel deflection in the on-site documentation. See Record 16-1623

Record 19-2457

Proposed Revision to A17.1, 2.24 and 8.6 Driving-Machine Brake(s):

2.24.8.5 Driving Machine Brake Data or Marking Information Plates. The brake setting and method of measurement shall be provided on the driving machine on a data plate complying with 8.13.1 or a marking plate complying with 8.13.3 and shall be readily visible after installation.

The following information shall be conveyed on the data or marking plate:

- (a) the type of brake (see 2.24.8.7)
- (b) for ‘Type A’ brakes
 - (1) adjustments on the brake that affect the brakes holding capacity or decelerating capacity and
 - (2) method of measuring these adjustments to verify the brakes correct holding capacity and decelerating capacity (see 2.24.8.3).
- (c) for ‘Type B’ brakes; “Brake Holding and Decelerating Capacity Not Field Adjustable – See Onsite Documentation for Method to Verify”.

Any unique or product specific procedures or methods for the adjustment or method of measurement of Type B driving machine brakes shall be included in the on-site documentation [see 8.6.1.2.2(b)(6)] with sufficient detail to ensure that testing can be accomplished by elevator personnel.

2.24.8.7 Identification, Classification and Seals on Driving Machine Brakes

2.24.8.7.1 Identification. Driving machine brakes shall be identified as either ‘Type A’ or ‘Type B’, and the identification shall be included on the brake marking plate (see 2.24.8.5(a)).

2.24.8.7.2 Classification. Driving machines brakes shall be classified based on their ability to field adjust the brake holding capacity or decelerating capacity as follows:

- (a) ‘Type A’, driving machine brake refers to a brake where the brake holding capacity or decelerating capacity can be adjusted on site (see 2.24.8.3).
- (b) ‘Type B’, driving machine brake refers to a brake where the brake holding capacity or decelerating capacity is not field adjustable (see 2.24.8.3).

2.24.8.7.3 Seals

- (a) All seals shall be of a type that shall be broken if there is a
 - (1) change to the adjustment of brake holding capacity or decelerating capacity of a ‘Type A’ brake or
 - (2) replacement of a ‘Type B’ brake.
- (b) Seals used on:
 - (1) Type A” brakes shall have a unique identifier and shall meet the requirements defined for an adjustment seal
 - (2) Type B’ brakes shall have a unique identifier, unless the brake is marked with a unique serial number and shall meet the documentation requirements defined for an adjustment seal

- (c) For ‘Type A’ brakes, the adjustment(s) shall be sealed to prevent readjustment once the correct holding capacity or decelerating capacity of the driving machine brake has been established.
- (d) For ‘Type B’ brakes, a seal shall be provided at a suitable location which would require the seal to be broken in the event the non-adjustable type B brake is replaced.
- (e) Provisions shall be made to enable affixing seals after tests.
Note: Factory applied seals meeting the requirements of (a) to (d) are acceptable.
- (f) Adjustments that do not affect the brake holding capacity or decelerating capacity do not need to be sealed.
- (g) The method to seal the adjustment shall not alter the structural integrity of any component or assembly.

8.6.1.2.2 On-site Documentation. The documents ...

(b) Procedures for inspections and tests not described in ASME A17.2 and procedures or methods required for elevator personnel to perform maintenance, repairs, replacements, and adjustments, as follows:

.....

- (6) Unique or product-specific procedures or methods required for the adjustment or method of measurement of Type B driving machine brakes
- (7) Unique or product-specific procedures or methods required to maintain, repair, replace, inspect, or test equipment, such procedures or methods shall be provided by the manufacturer or installer. These procedures and any unique devices required by the procedures for inspection and testing shall be accessible on-site to elevator personnel [see 8.11.1.7]

8.6.3.16 Replacement of Driving Machine Brake.

When a driving machine brake is replaced it shall conform to 2.24.8.2 through 2.24.8.7. See also 8.6.4.6.2.

8.6.4.6 Brakes

8.6.4.6.1 The driving-machine brake shall be maintained to ensure proper operation, including, but not limited to, the following:

- (a) residual pads (antimagnetic pads)
- (b) lining and running clearances
- (c) pins and levers
- (d) springs
- (e) sleeves and guide bushings
- (f) disks and drums
- (g) brake coil and plunger
- (h) holding and decelerating capacities (See 2.24.8.3)

8.6.4.6.2 If any part of the driving-machine brake is changed or adjusted that can affect the holding capacity or decelerating capacity of the brake when required (see 2.24.8.3), it shall be adjusted or replaced as applicable (see 2.24.8.7 and 8.6.3.16) and checked by means that will verify its proper function, ~~and~~ holding capacity and decelerating capacity. A test complying with 8.6.4.20.4 shall be performed.

8.6.4.20.4 Driving-Machine Brake(s). For passenger elevators and all freight elevators, the driving-machine brake shall be tested for compliance with applicable requirements, in accordance with (a) or, subject to approval by the authority having jurisdiction, with (b). For elevators installed under ASME A17.1-2000/CSA B44-00 and later editions, have the brake setting verified in accordance with the data on the brake marking plate.

Upon completion of the test, the means of adjusting the holding capacity shall be sealed, if applicable (see 2.24.8.7.3), to prevent changing the adjustment without breaking the seal. The seal shall bear or otherwise attach the identification of the person or firm that installed it. (See also 8.6.1.7.2, Periodic Test Record.)

***Rationale:** Revised driving machine brake data and marking plate requirements to address adjustable and non-adjustable brakes and to agree with 8.6.4.6.2. Added classifications for adjustable brakes and non-adjustable brakes. Added different methods of sealing adjustable and non-adjustable brakes. Revised 8.6.1.2.2 onsite documentation requirements to include unique or product specific procedures or methods required for non-adjustable brakes and to agree with 8.11.1.7. Revised 8.6.4.20.4 to address non-adjustable brakes. Revised 8.6.4.6.1 and clarified 8.6.4.6.2 for driving machine brakes related to holding and decelerating capacity (see 2.24.8.3). 2.24.8.3 clearly requires that the driving machine brake must be capable of decelerating the empty car in the up direction within defined parameters. This has been in A17.1/B44 since 2000. Capacity has a common definition that includes “the amount that something can produce”.*

Record 19-2498

Revise A17.1-2019 as follows:

8.6.8.15 Periodic Test Requirements — Category 1

...

8.6.8.15.24 16 Maintenance of Seismic Devices. A seismic detection device, where provided, shall be maintained in accordance with the manufacturer's recommendations.

Rationale: Requirement 8.6.8.15 is for Category 1 testing of the escalators and moving walks while 8.6.8.15.24 is a maintenance item. It is suggested the paragraph be moved away from the Category 1 procedures to avoid confusion.

Record 20-160

Proposed Revision to A17.1, Requirement 8.6.4.6.3 Testing Requirements of Emergency Brake when Replacing Parts:

8.6.4.6.3 If any part of the emergency brake is changed or adjusted that can affect the holding capacity or decelerating capacity of the emergency brake when required (see 2.19.3), it shall be adjusted and checked by means that will verify its proper function and holding capacity. A test complying with 8.6.4.20.11 shall be performed.

Rationale: Add the appropriate cross-reference to the applicable testing requirement mirroring Driving Machine Brake 8.6.4.6.2. Note that TN 15-397 adds alternative testing for the emergency brake.

Record 20-174

Proposed Revision to A17.1-2019/CSA B44-19:

2.27.10.1 Fire Service Access Elevators. In jurisdictions not enforcing the NBCC, fire service access elevators shall be provided when required by the building code and shall:

- (a) provide a control signal(s) shall be provided to the building system for lighting the hoistway when Firefighters' Emergency Operation is active.
- (b) be identified as fire service access elevator(s) in accordance with the requirements of the building code.

Rationale: Editorially modified to provide guidance for identifying fire service access elevators.

Record 20-272

Revise A17.1-2019 as follows:

8.6.7.9.X Rack and pinion elevators shall be removed from service when the rack or gear teeth are damaged, missing, or the wear exceeds the manufacturers service limit.

Rationale: Establish retirement criteria for rack and pinion mine elevators.

Record 20-1141

Proposed revisions to A17.1-2019/B44:19:

SECTION 3.27

EMERGENCY OPERATION AND SIGNALING DEVICES

Emergency operation and signaling devices shall conform to 2.27, except as modified by the following:

(a) In requirement 2.27.2.4.4 (a) replace the wording with the following: “An elevator that is not on designated attendant operation, hoistway access operation, inspection operation, Firefighters’ Phase I Emergency Recall Operation, or Firefighters’ Phase II In-Car Emergency Operation shall return to the designated level where the power operated doors at the landing where the illuminated signal (see 2.27.2.3) is located shall open. Where more than one entrance is provided at the designated level, the other doors are permitted to open and, when open, automatic closing shall be initiated within 15 s. When the selected elevator is at the designated level or fails to move within 30 s, the selection shall be automatically transferred to another elevator. The door open button(s) shall be operative and when released, automatic closing shall be initiated within 15 s. If the doors are open when the selection means selects another elevator, automatic closing shall be initiated within 15 s.”

(b) In requirement 2.27.2.4.4(c) replaced the wording with the following: “An elevator that is on Firefighters’ Phase I Emergency Recall Operation shall return to the recall level in accordance with 2.27.3.1 or 2.27.3.2 and upon arrival, automatic power doors shall open. Once recall is complete, or the selected elevator fails to move within 30 s, the selection shall be automatically transferred to another elevator. The door open button(s) shall be operative and when released, automatic closing shall be initiated within 15 s. When selected and at the recall level, the door shall open in accordance with 2.27.3.1 or 2.27.3.2. If the doors(s) are open when the selection means selects another elevator, automatic closing shall be initiated within 15 s.”

(c) The requirements of 3.26.9 and 3.18.2.7 shall be modified when Phase I Emergency Recall Operation and Phase II Emergency In-Car Operation are in effect, as specified in 3.27.1 through 3.27.4.

(d) The requirements of 2.27.3.2.1(b) and 2.27.3.2.2(b) shall be modified to include a machinery space containing a hydraulic machine.

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)
- (c) auxiliary power lowering (see 3.26.10)
- (d) oil tank temperature shutdown (see 3.26.6.5)

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 when open, automatic closing shall be initiated within 15 s. The door open button(s) shall remain operative and, when released, automatic closing shall be initiated within 15 s. The visual signal [2.27.3.1.6(h)] shall extinguish.

3.27.2 Phase I Emergency Recall Operation Prior to Device Actuation

- (a) If any of the devices specified in 3.27.1(a) through 3.27.1(d) is activated while Phase I Emergency Recall Operation is in effect but before the car reaches the recall level, the car shall do one of the following:
- (1) If the car is above the recall level, it shall complete Phase I Emergency Recall Operation.
 - (2) If the car is below the recall level, it shall descend to an available floor.
- (b) Upon arrival, automatic power-operated doors shall open, and ~~then reclose when open,~~ automatic closing shall be initiated within 15 s. The door open button(s) shall remain operative and, when released, automatic closing shall be initiated within 15 s. The visual signal [see Fig. 2.27.3.1.6(h)] shall extinguish.

3.27.3 Device Actuation at Recall Level

If any of the devices specified in 3.27.1(a), 3.27.1(c), or 3.27.1(d) is activated while the car is stationary at the recall level and Phase I Emergency Recall Operation is in effect, the following shall apply:

- (a) Automatic power-operated doors shall ~~close~~ initiate closing within 15 s.
- (b) The door open button(s) shall remain ~~operational~~ operative and, when released, automatic closing shall be initiated within 15 s.
- (c) The visual signal [see Fig. 2.27.3.1.6(h)] shall illuminate intermittently.

***Rationale:** Requirement 3.26.3.1.4 permits the anticreep operation, depending upon the availability of the electric power supply to move the elevator. When the normal power fails and emergency or standby power system is not capable of moving all elevators simultaneously, the power is available to all elevators for door operation but the selection to run is transferred between elevators. When a hydraulic elevator is unselected to run, anticreep operation will not function therefore the doors are to automatically close when the elevator is not selected to run.*

Because power is available to all cars, the door open button is required to be operative should someone enter an elevator just prior to being unselected. When the elevator is not selected to run, the door open button is used to exit the elevator and the doors are required to automatically close when the button is released after a short period of time to allow the passenger to exit.

If an elevator fails to run for 30 seconds for any reason the selection to run is transferred to another elevator to minimize the delay of evacuating trapped passengers in other elevators. The doors are required to be open when selected or reopen if reselected when at the fire recall level to allow firefighters access for Phase II operation

Record 20-1142

Proposed revisions to A17.1-2019/CSA B44:19

2.27.3.4 Interruption of Power. 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.

...

- (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 reestablish 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, (c) or (d) shall apply, and automatic power-operated doors shall open if in a leveling 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. If the car is in an unlocking zone, automatic power-operated doors shall open, if the doors are not fully closed and the car is in a leveling zone. The elevator shall then conform to 2.27.3.3.2.
- (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 under power until a door open or door close button is pressed, after which they shall conform to 2.27.3.3.1(d) and 2.27.3.3.1(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 reestablish absolute car position prior to answering car calls.

Rationale:

For the car doors to remain open when power is removed requires the mechanical resistance of the door operator and/or car doors to overcome the closing force of the mechanical door closers used to comply with requirement 2.11.3.1 “Closing of Hoistway Doors”. Modern door operators are designed for minimal wear therefore provide little mechanical resistive force. The door closers can in certain cases mechanically fully close both the car and hoistway doors when power is removed. This change restores control of the car to the firefighter should this occur. To clarify that once the car recovers on “HOLD” operation it shall conform to the requirements of 2.27.3.3.2.

Record 20-1143

Proposed revisions to A17.1-2019/CSA B44:19

2.27.3.2.6 When Phase I Emergency Recall Operation is initiated by a fire alarm initiating device for any of the following locations, as required by 2.27.3.2.3 or 2.27.3.2.4, the visual signal [see 2.27.3.1.6(h) and Figure 2.27.3.1.6] shall illuminate intermittently only in a car(s) with equipment in that location:

- (a) machine room
- (b) machinery space containing a motor controller or driving machine
- (c) control room
- (d) control space
- (e) hoistway

If the fire alarm system that includes the FAIDs in (a) through (e) is reset, the visual signal [see 2.27.3.1.6(h)] shall not change from illuminating intermittently to illuminating continuously.

Rationale:

For automatic elevators, to require that the visual signal must not change from intermittent illumination to continuous illumination until the FIRE RECALL switch is turned to reset. To ensure that the change in the status of the visual signal does not change with the change in status of the FAID. The intent of the flashing indicator was to let firefighters know that the Phase I recall was initiated from a location where there is elevator equipment and the elevator equipment may be compromised.

**2.27.4 Firefighters' Emergency Operation:
Nonautomatic Elevators**

...

2.27.4.2 Phase I Emergency Recall Operation by Fire Alarm Initiating Devices

(a) Fire alarm initiating devices shall be installed, in the locations listed in (1) through (3), in compliance with the requirements in NFPA 72 or the NBCC, whichever is applicable (see Part 9), as follows:

- (1) at each elevator lobby served by the elevator
- (2) in the associated elevator machine room, machinery space containing a motor controller or driving machine, control space, or control room
- (3) in the elevator hoistway, when sprinklers are located in those hoistways

...

(d) When a fire alarm initiating device in a location specified by (a)(2) or (a)(3) initiates Phase I Emergency Recall Operation as required by 2.27.3.2.3 or 2.27.3.2.4, the visual signal [see 2.27.3.1.6(h) and Figure 2.27.3.1.6] shall illuminate intermittently only in a car(s) with equipment in that location. If the fire alarm system that includes the FAIDs in (a)(2) or (a)(3) is reset, the visual signal [see 2.27.3.1.6(h)] shall not change from illuminating intermittently to illuminating continuously.

Rationale:

For non-automatic elevators, to require that the visual signal must not change from intermittent illumination to continuous illumination until the FIRE RECALL switch is turned to reset. To ensure that the change in the status of the visual signal does not change with the change in status of the FAID. The intent of the flashing indicator was to let firefighters know that the Phase I recall was initiated from a location where there is elevator equipment and the elevator equipment may be compromised.

Record 20-1180

Revise A17.1-2019 as follows:

8.6.1.6.5 Fire Extinguishers. ~~In jurisdictions not enforcing the NBCC,~~ Class ABC fire extinguishers shall be provided in elevator electrical machine rooms, control rooms, and control spaces outside the hoistway intended for full bodily entry, and walk-in machinery and control rooms for escalators and moving walks; and they shall be located convenient to the access door.

Rationale: To provide the same level of protection for elevator personnel regardless of the jurisdiction if a fire extinguisher is required.

Record 20-1184

Revise A17.1-2019 as follows:

8.6.1.2.2 On-Site Documentation. The documents specified in (a) through (eg) shall be written and permanently kept on-site in the machine room, machinery space, control room, control space, or in the means necessary for test (2.7.6.4) in hard copy for each unit for elevator personnel.

The documentation specified in (d) shall be on-site and available to the specified personnel.

(a) Up-to-date wiring diagrams detailing circuits of all electrical protective devices (see 2.26.2) and critical operating circuits (see 2.26.3)

(b) Procedures for inspections and tests not described in ASME A17.2 and

(c) Procedures or methods required for elevator personnel to perform maintenance, repairs, replacements, and adjustments, as follows:

~~(1) all procedures specifically identified in the Code as required to be written (e.g., 8.6.4.20.8, checkout procedure for leveling; 8.6.5.16.5, checkout procedure for overspeed valve; and 8.6.8.15.7, checkout procedure for reversal stop switch)~~

~~(12)~~ unique maintenance procedures or methods required for inspection, tests, and replacement of SIL rated E/E/PES electrical protective devices and circuits [See 2.26.4.3.2, 2.26.9.3.2(b), 2.26.9.5.1(b), and 2.26.9.6.1(b), and 8.6.5.14.10]

~~(23)~~ unique maintenance procedures or methods required for inspection, tests, and replacement of equipment applied under alternative arrangements (see 1.2.2.1) shall be provided by the manufacturer or installer

~~(34)~~ unique maintenance procedures or unique methods required for inspection and test of equipment specified in an ASME A17.7/CSA B44.7 code compliance document (CCD)

~~(45)~~ procedures for tests, periodic inspections, maintenance, replacements, adjustments, and repairs for traction-loss detection means, broken-suspension-member detection means, residual-strength detection means, and related circuits [See 2.20.8.1 through 2.20.8.3, 8.6.4.19.12, 8.6.11.11, 8.10.2.2.2(cc)(3)(-c)(-2), and 8.10.2.2.2(ss).]

~~(de) All checkout procedures specifically identified in the Code as required to be written: Written checkout procedures~~

~~(1) for elastomeric buffers (see 8.6.4.4.2)~~

~~(2) to demonstrate E/E/PES function as intended (see 8.6.4.19.10)~~

~~(3) for two-way communication means (see 8.6.4.19.15)~~

~~(4) for elevator leveling speed with open doors (see 8.6.4.20.8)~~

~~(5) for escalator drive machine and brake hydraulic elevator overspeed valve (see 8.6.8.15.4 8.6.5.16.5)~~

~~(6) for escalator reversal stopping device (see 8.6.8.15.7)~~

~~(7) for escalator handrail retarding force (see 8.6.8.15.13)~~

~~(ea) All procedures specifically identified in the Code as required to be written: Written procedures for the following:~~

~~(1) evacuation procedures for elevators by authorized persons and emergency personnel shall be available on-site (see 8.6.11.5.2 and ASME A17.4)~~

~~(2) the procedure for cleaning of a car and hoistway transparent enclosures by authorized persons (see 8.6.11.4.2)~~

~~(3) for see hydraulic plunger gripper (see 8.6.5.16.4)~~

~~(4) for hydraulic elevator overspeed valve (see 8.6.5.16.5)~~

(fe) USI(s) of the executable software associated with the relevant functions in 2.26.1.7.1 and 3.26.11.1 (see also 2.26.1.7.3).

(gf) The documentation for the engineering test of skirt panels deflection for units installed or altered under A17.1-2019 and later editions (see 8.3.15.5).

Rationale: To clarify the requirement for written procedures for inspection and test not described in A17.2 in addition to the four (4) specific required items.

To remove duplicate language and add clarity on the written checkout and written procedure requirements that the Code has.

Add new written checkout procedures identified for A17.1-2019.

Appropriately move requirements for written procedures in the correct section.

2.20.8.1 Protection Against Traction Loss. All electric traction elevators shall be provided with a traction-loss detection means to detect loss of traction between suspension members and the drive sheave [see 8.6.1.2.2(b)(5)(c)(4)].

This means shall

...

(d) once actuated by traction loss, comply with the following:

(1) The traction-loss detection means shall remain actuated until it is manually reset.

(2) The car shall not start or run unless the traction loss detection means is manually reset [see 8.6.1.2.2(b)(5)(c)(4) and 8.6.11.11].

...

(f) be included in the on-site documentation [see 8.6.1.2.2(b)(5)(c)(4)] with sufficient detail to ensure that testing can be accomplished by elevator personnel

Rationale: To update the references.

2.20.8.2 Broken Suspension Member.

...

(c) be arranged to be tested in accordance with the requirements in 8.10.2.2.2(ss)(1), and instructions for testing shall be included in the on-site documentation [see 8.6.1.2.2(b)(5)(c)(4)] with sufficient detail to ensure that testing can be accomplished by elevator personnel

Rationale: To update the references.

2.20.8.3 Suspension Member Residual Strength

...

(c) be arranged to be tested in accordance with the requirements in 8.10.2.2.2(ss)(2), and instructions for testing shall be included in the on-site documentation [see 8.6.1.2.2(b)(5)(c)(4)] with sufficient detail to ensure that testing can be accomplished by elevator personnel

Rationale: To update the references.

8.6.4.19.12 Traction-Loss Detection Means. Where provided, conformance with the traction-loss detection means specified in 2.20.8.1 shall be demonstrated by either of the following:

- (a) causing relative motion between the drive sheave and the suspension means by bottoming the car or counterweight [see 8.6.4.20.10(b)]
- (b) an alternative test provided in the on-site documentation [see 8.6.1.2.2(~~b~~)(~~5~~)(c)(4)]

Rationale: To update the references.

8.6.4.19.20 Testing of Alternative Arrangements and ASME A17.7/CSA B44.7–Conforming Equipment. As required by the manufacturer and/or an ASME A17.7/CSA B44.7 Code Compliance Document (CCD), tests shall be performed

- (a) on equipment applied under alternative arrangements [see 8.6.1.2.2(~~b~~)(3)(c)(2)]
- (b) on equipment specified in an ASME A17.7/CSA B44.7 CCD [see 8.6.1.2.2(~~b~~)(3)(c)(3)]

Rationale: To update the references.

8.6.5.14.9 Testing of Alternative Arrangements and ASME A17.7/CSA B44.7–Conforming Equipment. As required by the manufacturer and/or an ASME A17.7/CSA B44.7 CCD, tests shall be performed

- (a) on equipment applied under alternative arrangements [see 8.6.1.2.2(~~b~~)(3)(c)(2)]
- (b) on equipment specified in an ASME A17.7/CSA B44.7 CCD [see 8.6.1.2.2(~~b~~)(3)(c)(3)]

Rationale: To update the references.

8.6.5.16.4 A plunger gripper, where provided, shall be examined and tested per 8.10.3.2.5(n) (Item 5.17.2). The periodic test record shall be completed. The person or firm installing or maintaining the equipment shall provide a written procedure in the on-site documentation [see 8.6.1.2.2(~~b~~)(1)(e)(3)] and demonstrate that the plunger gripper shall function as required by 3.17.3

Rationale: To update the references.

8.6.8.15.26 Testing of Alternative Arrangements and ASME A17.7/CSA B44.7–Conforming Equipment.

As required by the manufacturer and/or an ASME A17.7/CSA B44.7 CCD, tests shall be performed

- (a) on equipment applied under alternative arrangements [see 8.6.1.2.2(~~b~~)(3)(c)(2)]
- (b) on equipment specified in an ASME A17.7/CSA B44.7 CCD [see 8.6.1.2.2(~~b~~)(3)(c)(3)]

Rationale: To update the references.

8.6.11.10.3 Alternative Test Method Procedure. The alternative test method shall

- ...
- (e) include the information required by 8.6.1.2.2(~~b~~)(5)(c)(2) where applicable

Rationale: To update the references.

8.6.11.11 Examination After Shutdown Due to Traction Loss. Where the traction-loss detection means has been actuated [see 2.20.8.1 and 8.6.1.2.2(~~b~~)(~~5~~)(c)(4)], the elevator shall not be returned to service until a physical examination of the drive sheave and suspension means has been conducted. The elevator shall not be moved until all passengers are out of the elevator and the elevator is posted out-of-service. In addition to the suspension means evaluation criteria in 8.11.2.1.3(cc), any suspension-means or drive-sheave condition that would adversely affect the traction capability of the system (see 2.24.2.3) shall be corrected before returning the elevator to service.

Rationale: To update the references.

8.7.1.10 Executable Software Verification and Witness Test. Where executable software for functions listed in 2.26.1.7.1 or 3.26.11.1 is changed as part of an alteration, the software changed shall have a new USI that shall be logged in the on-site documentation [8.6.1.2.2(~~e~~)(~~f~~)].

Rationale: To update the references.

8.10.1.5 Unique or Product-Specific Procedures or Methods. Where unique or product-specific procedures or methods are required to maintain, repair, replace, inspect, or test equipment, such procedures or methods shall be provided by the manufacturer or installer [see 8.6.1.2.2(b) and 8.6.1.2.2(c)].

Rationale: To update the references.

8.10.2.2.1 Inside the Car

...

(j) Power Opening of Doors or Gates (Item 1.10)

(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.

(2) *Leveling Zone (2.26.1.6.3) and Leveling Speed (2.26.1.6.6).* 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 (2.26.1.6.6).

The written checkout procedure shall be left on site as part of the on-site documentation (see 8.6.1.2.2(d)(4)).

Rationale: To add the requirement that written checkout procedures are required to be part of the on-site documentation and are to be left on the job site after their use for turnover testing

8.10.2.2.2 Machine Rooms, Machinery Spaces, and Control Rooms/Space

...

2.20.8.1 shall be (-c) Conformance with the traction-loss detection means specified in demonstrated by either
suspension means by (-1) causing relative motion between the drive sheave and bottoming either the car or the counterweight [see (-b)]
8.6.1.2.2(~~b~~)(5)(c)(4)] (-2) an alternative test provided in the on-site documentation [see or by the installer and acceptable to the authority having jurisdiction

Rationale: To update the references

8.10.2.2.8 Functional Safety of SIL Rated Device(s). Where an installation or alteration contains SIL rated devices, verify the Code data plate is marked (see Section 8.9) and that SIL rated devices used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.3.2(b), 2.26.9.5.1(b), and 2.26.9.6.1(b) are identifiable on wiring diagrams (see 8.6.1.6.3) with part identification, certification identification information, and an SIL equal to or greater than the values indicated for the devices in Table 2.26.4.3.2, and 2.26.8.2 and 2.26.9, as applicable. The person or firm installing the equipment shall provide a written checkout procedure and shall demonstrate that SIL rated devices, safety functions (see Table 2.26.4.3.2), and related circuits operate as intended.

The written checkout procedure shall be left on site as part of the on-site documentation (see 8.6.1.2.2(c)(1)).

Rationale: To add the requirement that written checkout procedures are required to be part of the on-site documentation and are to be left on the job site after their use for turnover testing

8.10.3.2.4 Outside Hoistway

...

(n) A plunger gripper, where provided, shall be inspected and tested at rated load at not less than operating speed in the down direction. The means for the actuation of the gripper shall be verified by overspeeding the car or by alternative means. Where multiple means of actuation are provided, each means shall be individual tested. The date of this test shall be permanently marked on the plunger gripper marking plate and recorded in the acceptance test records (see 3.17.3.8 and 8.10.1.1.4) (Item 5.17.3). The person or firm installing or maintaining the equipment shall provide a written procedure in the on-site documentation [see 8.6.1.2.2(~~b~~)(1)(e)(3)] and demonstrate that the plunger gripper shall function as required by 3.17.3.

The written procedure shall be left on site as part of the on-site documentation (see 8.6.1.2.2(e)(3)).

(o) *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 (Item 5.15.3.2).

The written procedure shall be left on site as part of the on-site documentation (see 8.6.1.2.2(e)(4)).

Rationale: To add the requirement that written procedures are required to be part of the on-site documentation and are to be left on the job site after their use for turnover testing.

Update Code requirement references.

8.10.3.2.5 Pit

...

(n) A plunger gripper, where provided, shall be inspected and tested at rated load at not less than operating speed in the down direction. The means for the actuation of the gripper shall be verified by overspeeding the car or by alternative means. Where multiple means of actuation are provided, each means shall be individually tested. The date of this test shall be permanently marked on the plunger gripper marking plate and recorded in the acceptance test records (see 3.17.3.8 and 8.10.1.1.4) (Item 5.17.3). The person or firm installing or maintaining the equipment shall provide a written procedure in the on-site documentation [see 8.6.1.2.2~~(b)~~(1)(e)(3)] and demonstrate that the plunger gripper shall function as required by 3.17.3.

The written procedure shall be left on site as part of the on-site documentation (see 8.6.1.2.2(e)(3)).

(o) *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 (Item 5.15.3.2).

The written procedure shall be left on site as part of the on-site documentation (see 8.6.1.2.2(e)(4)).

Rationale: To add the requirement that written procedures are required to be part of the on-site documentation and are to be left on the job site after their use for turnover testing.

Update Code requirement references.

8.10.4.1.1 External Inspection and Tests

...

(c) Handrails (Items 7.3 and 9.3)

(1) *Speed (6.1.3.4.1 or 6.2.3.4.1).* Running tests shall be performed, in each direction, to determine conformance with 6.1.3.4.1 or 6.2.3.4.1.

(2) extension (6.1.3.4.2 or 6.2.3.4.2)

(3) guards (6.1.3.4.3 or 6.2.3.4.3)

(4) splice (6.1.3.4.4 or 6.2.3.4.4)

(5) height (6.1.3.4.5)

(6) clearance (6.1.3.4.6 or 6.2.3.4.5)

(7) the person or firm installing the equipment shall provide a written checkout procedure and demonstrate that the handrail speed does not change when a retarding force, up to the maximum required by the Code, is applied opposite to the direction of travel (6.1.3.4.1 or 6.2.3.4.1)

The written checkout procedure shall be left on site as part of the on-site documentation (see 8.6.1.2.2(d)(7)).

...

(g) *Reversal Stop Switch.* The reversal stop switch (to prevent reversal when operating in the ascending direction) shall be tested by manually operating it to determine that it functions properly (6.1.6.3.8 or 6.2.6.3.7 and 6.2.6.3.8) (Items 8.7 and 10.7).

If the device cannot be manually operated, the person or firm installing the equipment shall provide a written checkout procedure and demonstrate the device complies with 6.1.6.3.8 or 6.2.6.3.7.

The written checkout procedure shall be left on site as part of the on-site documentation (see 8.6.1.2.2(d)(6)).

...

(p) Skirt Panels (Items 7.17 and 9.17)

(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)]. The person or firm installing the equipment shall provide engineering test documentation [see 8.3(b)(7) and 8.3.15] to be left in the on-site documentation (see 8.6.1.2.2(g)) to verify conformance with the deflection requirements of not more than 1.6 mm (0.0625 in.) under a force of 667 N (150 lb).

Rationale: To add the requirement that written checkout procedures and engineering test documentation be part of the on-site documentation and are to be left on the job site after their use for turnover testing.

Update Code requirement references.

8.11.1.7 Unique or Product-Specific Procedures or Methods. Where unique or product-specific procedures or methods are required to maintain, repair, replace, inspect, or test equipment, such procedures or methods shall be provided by the manufacturer or installer. These procedures and any unique devices required by the procedures for inspection and testing shall be accessible on-site to elevator personnel [see also 8.6.1.2.2(b) and 8.6.1.2.2(c)].

Rationale: Update Code requirement references

8.11.2.1.2 Machine Rooms, Machinery Spaces, and Control Rooms/Spaces

...

(oo) The USI of the installed software matches the onsite documentation. See 2.26.1.7.1 and 8.6.1.2.2(e)(f)

Rationale: Update Code requirement references

8.11.3.1.1 Inside the Car

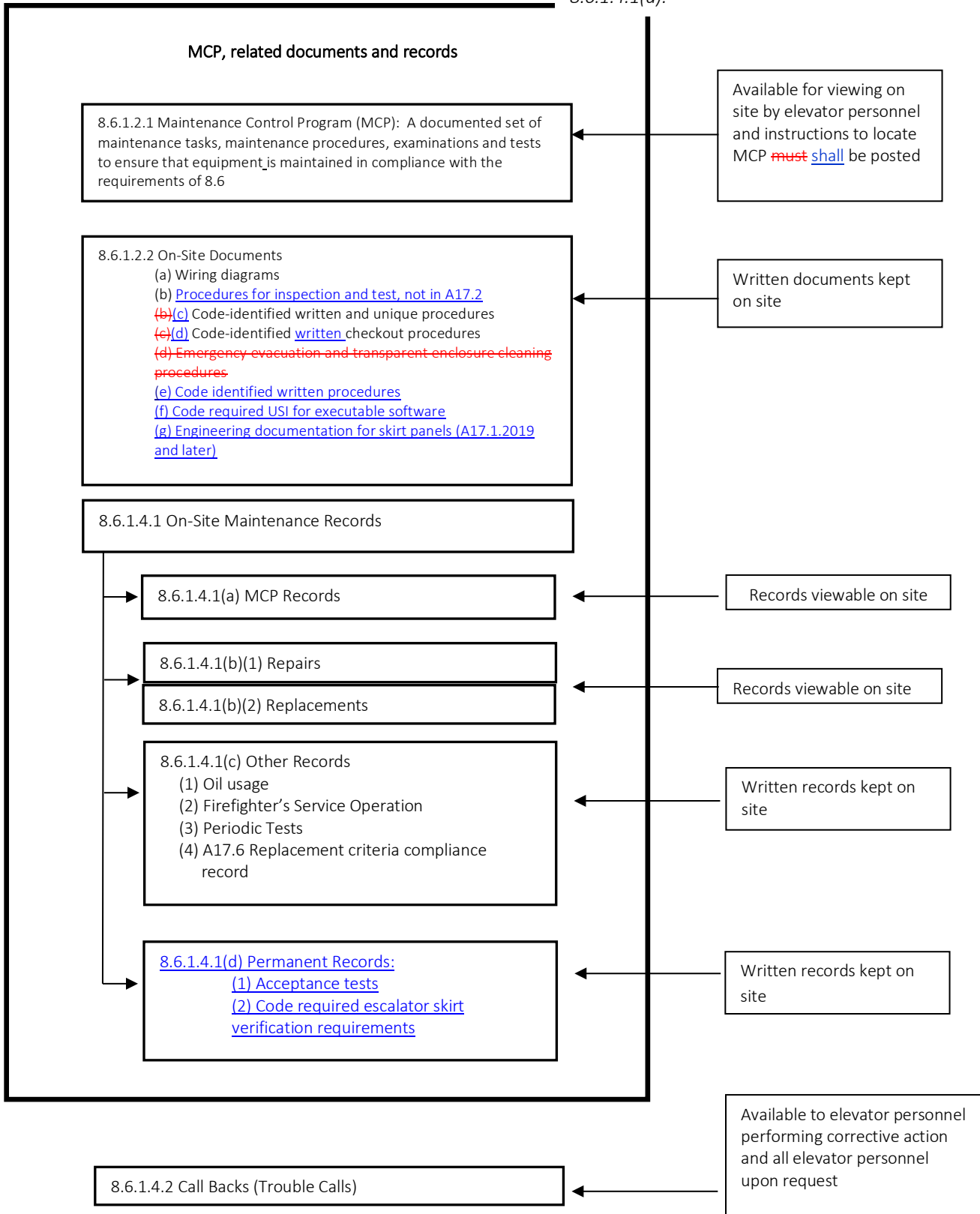
...

(dd) The USI of the installed software matches the onsite documentation. See 2.26.1.7.1 and 8.6.1.2.2(e)(f)

Rationale: Update Code requirement references

Figure Y-1 Maintenance Control Program Records

Rationale: Update appendix and references based on proposal. Add Permanent Records requirement 8.6.1.4.1(d).



Record 20-1186

Revise A17.1-2019 as follows:

Add the System to Monitor and Prevent Automatic Operation of Passenger and Freight Elevators with Faulty Door Contact Circuits (aka Door Lock Monitoring) retroactively to the Electric/Hydraulic Maintenance Sections, modeled after modified A17.1 & NYC requirements

(Note: Coordinate proposal with active Records 13-806 and 17-2250).

8.6.1.1.3 It is not the intent of Section 8.6 to require changes to the equipment to meet the design, equipment nameplate(s), or performance standard other than those specified in 8.6.1.1.2, unless specifically stated in Section 8.6 (see 8.6.3.2, 8.6.4.24, 8.6.5.8, 8.6.5.18, 8.6.8.3, and 8.6.8.4.3).

8.6.4.24 System to Monitor and Prevent Automatic Operation of Passenger and Freight Elevators with Faulty Door Contact Circuits. All automatic passenger and freight elevators shall comply with 2.26.5.

8.6.5.18 System to Monitor and Prevent Automatic Operation of Passenger and Freight Elevators with Faulty Door Contact Circuits. All automatic passenger and freight elevators shall comply with 2.26.5.

***Rationale:** Door contact monitoring requirement 2.26.5 has been in the ASME A17.1\B44 code since 2000. However, there are potentially hundreds of thousands of existing elevators that lack this crucial safety function. These systems are designed to prevent fatal accidents caused by an elevator running with the car door/gate and/or the landing door open. Multiple component suppliers have developed solutions to meet the needs of jurisdictions that have mandated all existing elevators in their jurisdiction to be updated with this safety function. The safety benefits far outweigh the costs.*

Note on Requirement 2.26.5: As modified by Record 13-806 that covers Swing Doors and TN 17-2250 that covers NYC FEO Phase II exception.

Record 20-1287

Proposed Revision to A17.1, 8.10.2.2.4 and 8.11.2.1.4 Outside Hoistway - AGP Marking:

8.10.2.2.4 Outside Hoistway

(p) Motor Controllers Not Installed in a Machine Room, Control Room, Control Space or Machinery Space (Item 11.23)

- (1) cabinet enclosure
- (2) AGP marking
- (3) cabinet doors and security
- (4) lighting
- (5) temperature and humidity control
- (6) Signage

8.11.2.1.4 Outside Hoistway

(p) Motor Controllers Not Installed in a Machine Room, Control Room, Control Space or Machinery Space (Item 11.23)

- (1) cabinet enclosure
- (2) AGP marking
- (3) cabinet doors and security
- (4) lighting
- (5) temperature and humidity control
- (6) Signage

Rationale: *Added inspection of motor controllers not installed in a machine room, control room, machinery space or control space.*

Record 20-1563

Proposed Revision to A17.1, Requirements 6.1.6.4 and 6.2.6.4 Handrail Speed-Monitoring Device:

6.1.6.4 Handrail Speed-Monitoring Device. A handrail speed-monitoring device shall be provided that will cause the activation of the alarm required by 6.1.6.3.1(b) without any intentional delay, whenever the speed of either handrail deviates from the step speed by 15% or more. The device shall also cause initiation of dynamic braking (6.1.5.3.4) or electric power to be removed from the driving-machine motor and brake when the speed deviation of 15% or more is continuous within a 2 s to 6 s range. The device shall be the manual reset type, or it shall be permitted to automatically reset not more than one time within 24 h of operation and thereafter require a manual reset before the next restart. Interruption of power during operation ~~should~~ shall not cause the device to lose the status of the timer nor the count of events.

6.2.6.4 Handrail Speed-Monitoring Device. A handrail speed-monitoring device shall be provided that will cause the activation of the alarm required by 6.2.6.3.1(b) without any intentional delay whenever the speed of either handrail deviates from the treadway speed by 15% or more. The device shall also cause electric power to be removed from the driving-machine motor and brake when the speed deviation of 15% or more is continuous within a 2 s to 6 s range. The device shall be of the manual-reset type or it shall be permitted to automatically reset not more than one time within 24 hr of operation and thereafter require a manual reset before the next restart. Interruption of power during operation ~~should~~ shall not cause the device to lose the status of the timer nor the count of events.

Rationale: *to make the requirements mandatory.*

Record 20-1675

Proposed Revision to A17.1-2019/CSA B44:19:

2.27.11.6.1 The variable message signs required by 2.27.11.2.2 shall indicate one of the following messages:

- (a) On all floors in the elevator evacuation zone, with the exception of (d), they shall indicate that the elevators are available for evacuation and once a landing call is registered at the floor, the estimated time duration in minutes for the next elevator to arrive, including when the estimate time is less than a minute.

NOTE [2.27.11.6.1(a)]: Example text: “Press button for evacuation”; “Next elevator in about 2 minutes”

~~Example text: “Elevators and stairs available for evacuation, Next car in about 2 minutes.”~~

...

Rationale: To assist in the use of elevators the phrase, “Press button for evacuation” on the variable message displays is more instructive to the occupants that a landing call must be placed in order for the elevator system to be used. Once the landing call is placed the appropriate ETA will be displayed on the variable message display. The ETA being displayed after that landing call has been registered is a byproduct of the demand and only information for the potential passenger to help make a decision on which route to take, stairs or elevator.

Record 20-1715

Proposed revision to A17.1-2019/CSA B44:19

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

...

- (c) located in the lobby, installed a minimum of 915 mm (36 in.) and a maximum of 1680 mm (66 in.) above the floor as measured to the center line of the switch, within sight of the elevator or all elevators in that group and shall be readily accessible.

***Rationale:** To specify an acceptable range for the height of the “FIRE RECALL” switch above the finished floor to be readily accessible to firefighters. This is based on established heights for Phone-Jack in NFPA 72.*

Record 20-2624

General rationale: *Currently, there are no requirements in A17.1/B44 that address connecting an elevator control to the Internet. This proposal enhances safety by adding cyber-security requirements to limit access to elevator control systems via the Internet. The proposal also defines what control elements are permitted and not permitted to be accessed if the elevator control were connected to the Internet. The proposal also provides guidance to users of this code to use the cyber threat risk assessment of the referenced IEC 62443 series of standards to determine if additional requirement enhancements (REs) are necessary for the needs of their assets.*

Proposed revisions to A17.1-2019/B44:19:

SECTION 1.3 DEFINITIONS:

...

listed/certified: process, equipment or materials accepted for inclusion in a publication by a certifying organization.

NOTE: The means for identifying listed/certified equipment may vary for each organization concerned with product evaluation, some of which do not recognize equipment as listed/certified unless it is also labeled/marked. The authority having jurisdiction uses the system employed by the listing/certifying organization to identify a listed/certified product.

Rationale: *The word “process” in this definition is needed to be consistent with the proposal in 8.14.1(a)(1).*

...

Remote Interaction Operation (RIO): any operation where signals are exchanged between an elevator and off-site systems.

Rationale: *To add a definition for remote interaction operation to ensure there is a common understanding of the term as it is referenced in the RIO proposal for this interactive functional operation.*

...

Security Level Rated: An elevator control system, or component that is rated to a security level in accordance with the applicable requirements in IEC 62443-2-4, 62443-3-3, 62443-4-1, and 62443-4-2.

Rationale: *Added for use in specifying a prescriptive parameter for the security level under section 8.14. Basis of the definition taken from IEC 62443-4-2.*

2.26.1.7.1 Executable software used in performing one or more of the functions listed below shall have a unique software identifier (USI) for each software version. Changes in executable software for any of the following functions shall require a new USI:

...

(o) any operating mode restricted to Group 1 (8.1.2)

(p) restricted Opening of Car Doors (2.14.5.7)

(q) the additional requirements for passenger overload in the down direction (2.16.8)

(r) a function, device or means that is required by the code to be manually reset

2.26.1.7.2 Software-based parameters are permitted and shall not modify the USI when adjusted or selected in the field. See also 8.14.1(b).

***Rationale:** To point to the requirements for the means to permit on-site software download or to modify parameters of executable software requiring a USI and to add additional critical software functions not covered in the current code.*

2.26.9.3 Protection Against Failures

2.26.9.3.1 The occurrence of a single ground; the failure of any single magnetically operated switch, contactor, or relay; the failure of any single device that limits the leveling or truck zone; the failure of any single solid-state device not a part of a software system; or a failure of a software system in circuits not in conformance with 2.26.9.3.2(b), shall not:

...

(f) render ineffective the means in 8.14.1(b) that prevents changes to executable software or its related parameters.

***Rationale:** To require single failure protection of the means that will prevent changes to executable software or safety related parameters*

2.26.13 Remote Interaction Operation (RIO)

When RIO is provided, requirements 2.26.13.1 through 2.26.13.5 shall apply (see also 8.14):

2.26.13.1 When RIO is provided: A sign conforming to 8.13.2 shall be provided in letters not less than 25 mm (1 in.) high on the outside surface of the elevator controller or not less than 6 mm (0.25 in.) high at the inspection and test panel if provided stating, “REMOTE INTERACTION OPERATION PROVIDED”.

Rationale: Provide notification to on-site elevator personnel that RIO functionality is provided.

2.26.13.2 RIO shall only be permitted to perform the following actions on elevators on automatic operation:

- (a) register a car or hall call to cause a car to move to a non-secured floor.
- (b) activate, deactivate, or set the state of features, operations or functions associated with automatic or group automatic operation subject to the limitations identified in 2.26.13.3, 2.26.13.4 and 2.26.13.5, and
- (c) remove the car from group automatic operation, except as limited by 2.26.13.3 and 2.26.13.4.

Rationale: *To identify actions RIO is permitted to perform when an elevator is on automatic operation.*

NOTE 1: [2.26.13.2(b)] Examples of features include but are not limited to: parking the elevator, door dwell time, actuating sabbath or penthouse operation, actuation or deactivation of the automatic car lighting power saving feature (see 2.14.7.2.2) and changing the car parking floor. The ICC A117.1 minimum door dwell time requirement is an example of a limit specified in a referenced standard.

NOTE 2: [2.26.13.2(b)] Documentation should be provided to confirm the request to remove service to any floor prior to using RIO for this function (see 8.6.11.16).

Rationale: *To specify the possible interactive functions of RIO during automatic operation and help to prevent miscommunication of requested changes to secured floor(s) between authorized persons in the building with those utilizing RIO.*

2.26.13.3 RIO shall not enable, disable, override, reset or interfere with any of the following:

- (a) Hoistway Access Operation (2.12.7.3)
- (b) Inspection Operation (2.26.1.4)
- (c) Emergency or Standby Power System (2.27.2)
- (d) Firefighters' Emergency Operation and Signaling (2.27.3, 2.27.4, 2.27.5, 2.27.6, and 2.27.10)
- (e) Occupant Evacuation Operation (2.27.11)
- (f) Operation of Elevators Under Earthquake Emergency Conditions (8.4.10.1)
- (g) Operation in leveling or truck zone (2.26.1.6)
- (h) any operating mode restricted to Group 1 (8.1.2)
- (i) Any operation established by a non-momentary switch in the car or on site.
- (j) designated attendant operation (see Section 1.3. See also 2.27.5)
- (k) power operated car and hoistway door or panel closing speed or force (see 2.13.3 and 2.13.4)

Rationale: *To specify restrictions for RIO for electric elevators*

Note (2.26.13.3(i)): Where elevator status information is displayed on the status of the automatic operation of the elevators in other building information systems, such as building management systems or traffic displays, the information should be consistent on all systems.

Rationale: *To provide guidance that there should not be conflict in the information displayed in other building information systems, such as building management systems or traffic displays, on the status of the automatic operation of the elevators.*

2.26.13.4 RIO shall not interfere with, modify, reset, render ineffective, nor render inoperative:

- (a) any electrical protective device (2.26.2)
- (b) the System to Monitor and Prevent Automatic Operation of the Elevator with Faulty Door Contact Circuits (2.26.5)
- (c) Protection Against Traction Loss (2.20.8.1)
- (d) Broken Suspension Member detection means (2.20.8.2)
- (e) Suspension Member Residual-Strength detection means (2.20.8.3)
- (f) Normal Terminal Stopping (2.25.2)
- (g) in-car door open buttons (2.13.3.3.2)
- (h) car door reopening devices (2.13.5, 2.13)
- (i) Restricted Opening of Car Doors (2.14.5.7)
- (j) the additional requirements for passenger overload in the down direction (2.16.8)
- (k) any safety device or means incorporated through application of ASME A17.7
- (l) motion control parameters.
- (m) _____ a function or device that is required by the code to be manually reset
- (n) software system or software in circuits used to comply with requirements in 2.26.9.3.2 and 2.26.9.4
- (o) Inspection Operation with Open Door Circuit (2.26.1.5)

Rationale: *To specify restrictions for RIO for electric elevators.*

2.26.13.5 RIO shall be designed to prohibit activation, deactivation, setting, or resetting the state of features, operations or functions associated with automatic or group automatic operation that would violate any requirements of this code or reference standards (see Section 9).

Rationale: *To specify design criteria on RIO*

Note (2.26.13.5): Where RIO is utilized and the elevator is connected to an elevator management system, the status and initiated functions of automatic operation should be consistent between these systems.

Rationale: *To provide guidance that there should not be conflict in the information displayed in other building information systems, such as building management systems or traffic displays, on the status of the automatic operation of the elevators.*

2.26.13.6 RIO shall be restricted to and utilized by Elevator or Authorized Personnel only.

Rationale: *To specify personnel restrictions when utilizing RIO.*

3.26.1 Operating Devices and Control Equipment

Operating devices and control equipment shall conform to Section 2.26, except as modified by the following:

...

(j) Requirement 2.26.13 applies as modified by 3.26.12.

Rationale: *To specify requirements for RIO for hydraulic elevators*

3.26.11.1 Executable software used in performing one or more of the following functions shall have a USI for each software version. Changes in executable software for any of the following functions shall require a new USI:

....

(m) anti-Creep Releveling (3.26.3)

(n) plunger follower (3.18.2.7)

(o) any operating mode restricted to Group 1 (8.1.2)

(p) restricted Opening of Car Doors (2.14.5.7)

(q) a function, device or means that is required by the code to be manually reset

Rationale: *To add safety relevant functions to executable software requiring a USI and to add additional critical software functions not covered in the current code.*

3.26.11.2 Software-based parameters are permitted and shall not modify the USI when adjusted or selected in the field. See also 8.14.1(b).

Rationale: *To point to the requirements for the means to permit on-site software download or to modify parameters of executable software requiring a USI.*

3.26.12 Remote Interaction Operation (RIO)

3.26.12.1 When remote interaction is provided, in addition to applicable functions indicated in 2.26.13.3, RIO shall not enable, disable, override, reset, or interfere with any of the following operations:

- (a) Auxiliary Power Lowering Operation (3.26.10)
- (b) Anti-Creep Releveling (3.26.3)
- (c) Recycling Operation (3.26.7)

3.26.12.2 When remote interaction is provided, in addition to the applicable functions indicated in 2.26.13.4, RIO shall not interfere with, modify, reset, render ineffective, nor render inoperative:

- (a) Low Oil Protection (3.26.9)
- (b) Phase Reversal Protection (3.26.5)
- (c) plunger gripper electrical actuation means (3.17.3.2.1)
- (d) plunger follower (3.18.2.7)
- (e) pressure sensing means (3.26.8)

Rationale: To specify restrictions for RIO for hydraulic elevators.

SECTION 5.2 LIMITED-USE/LIMITED-APPLICATION ELEVATORS

...

5.2.1.26 Operating Devices and Control Equipment. Operating devices and control equipment shall conform to Section 2.26, except as modified by the following:

...

(f) Remote interaction operation is prohibited (2.26.13)

Rationale: To exclude RIO use on LULA applications until such time that the LULA Committee develops requirements, limitations, etc., for the application of RIO.

5.5.1 Electric Sidewalk Elevators

...

5.5.1.25 Operating Devices and Control Equipment.

Operating devices and control equipment shall conform to Section 2.26, except as modified by 5.5.1.25.1 through 5.5.1.25.45. Where the top opening is located in an area exterior to the building, all electrical equipment on the car shall be weatherproof.

...

5.5.21.25.5 Remote interaction operation is prohibited (2.26.13)

Rationale: To exclude RIO use on Sidewalk Elevators until such time that the Hand and Sidewalk Elevator Committee develops requirements, limitations, etc., for the application of RIO.

SECTION 5.6 - ROOFTOP ELEVATORS

...

5.6.1.25 Operating Devices and Control Equipment.

Operating devices and control equipment shall conform to Section 2.26, except as modified by 5.6.1.25.1 through 5.6.1.25.56

...

5.6.1.25.6 Remote interaction operation is prohibited (2.26.13)

***Rationale:** To exclude RIO use on Roof Top Elevators until such time that the Hand and Sidewalk Elevator Committee develops requirements, limitations, etc., for the application of RIO.*

SECTION 5.9 - MINE ELEVATORS

...

5.9.26 Operating Devices and Control Equipment

Operating devices and control equipment shall conform to Section 2.26, except 2.26.2.5, 2.26.2.21, ~~and 2.26.12~~ and 2.26.13.

...

5.9.26.3 Remote Interaction Operation. Remote interaction operation is prohibited (2.26.13)

***Rationale:** To exclude RIO use on Mine Elevators until such time that the Mine Elevator Committee develops requirements, limitations, etc., for the application of RIO.*

5.10.1 Electric Elevators Used for Construction

...

5.10.1.21 Operating Devices and Control Equipment

5.10.1.21.1 Applicable Requirements

(a) Operating devices and control equipment on elevators with a car speed of up to 1.75 m/s (350 ft/min) shall conform to Section 2.26, except that 2.26.1.6, 2.26.2.14, 2.26.4.4, ~~and 2.26.12~~ and 2.26.13 do not apply. See 5.10.1.21.3 regarding temporary wiring requirements.

...

(d) Remote interaction operation is prohibited (2.26.13).

***Rationale:** To exclude RIO use on Electric and hydraulic Elevators Used for Construction until such time that the Elevator Used for Construction Committee develops requirements, limitations, etc., for the application of RIO.*

SECTION 7.2 ELECTRIC DUMBWAITERS WITHOUT AUTOMATIC TRANSFER DEVICES

...

7.2.12 Operating Devices and Control Equipment Operating devices of power dumbwaiters shall be the automatic or continuous-pressure type. Operating devices and control equipment shall comply with Section 2.26, except as modified by 7.2.12.1 through 7.2.12.410

...

7.2.12.41 Remote interaction operation is prohibited (2.26.13)

Rationale: *To exclude RIO use on Electric Dumbwaiters Without Automatic Transfer Devices until such time that the Dumbwaiter and ATD Committee develops requirements, limitations, etc., for the application of RIO.*

SECTION 7.5 ELECTRIC MATERIAL LIFTS WITHOUT AUTOMATIC TRANSFER DEVICES

...

7.5.12 Operating Devices and Control Equipment

7.5.12.1 Type A material lift operating devices and control equipment shall conform to Section 2.26, except as modified by 7.5.12.1.1 through 7.5.12.1.256

...

7.5.12.1.26 Remote interaction operation is prohibited (2.26.13).

Rationale: *To exclude RIO use on Type A Electric Material Lifts Without Automatic Transfer Devices until such time that the Dumbwaiter and ATD Committee develops requirements, limitations, etc., for the application of RIO.*

7.5.12.2 Type B material lift operating devices and control equipment shall conform to Section 2.26, except as modified by 7.5.12.2.1 through 7.5.12.2.345

...

7.5.12.2.35 Remote interaction operation is prohibited (2.26.13).

Rationale: *To exclude RIO use on Type B Electric Material Lifts Without Automatic Transfer Devices until such time that the Dumbwaiter and ATD Committee develops requirements, limitations, etc., for the application of RIO.*

SECTION 7.6 HYDRAULIC MATERIAL LIFTS WITHOUT AUTOMATIC TRANSFER DEVICES

...

7.6.8.1 Operating Devices and Control Equipment.

Operating devices and control equipment shall conform to Section 2.26 as specified by 7.5.12, except as modified by the following:

...

(g) Remote interaction operation is prohibited (2.26.13).

Rationale: *To exclude RIO use on Hydraulic Material Lifts Without Automatic Transfer Devices until such time that the Dumbwaiter and ATD Committee develops requirements, limitations, etc., for the application of RIO.*

Section 8.3 ENGINEERING TESTS, TYPE TESTS, AND CERTIFICATION

Section 8.3 covers

(a) type of tests and certification of

...

(b) engineering tests of

...

(8) cybersecurity for elevators as required in 8.14 (see 8.3.16)

...

8.3.16 Engineering Test for Cybersecurity

An internet connected or connectivity enabled device interfaced (directly or indirectly) to an elevator controller, or an elevator controller connected to the internet shall be tested to ensure conformance with Security Level specified in 8.14.1(a)(1) and 8.14.1(a)(2) rating in accordance with the applicable requirements in IEC 62443-3-3 and IEC 62443-4-2.

Rationale: *To define the engineering test required in 8.14.1 for cybersecurity for elevator components.*

8.6.1.2.2 On-Site Documentation. The following documents specified in 8.6.1.2.2(a), (b), and (c) shall be written and permanently kept on-site in the machine room, machinery space, control room, control space, or in the means necessary for test (2.7.6.4) in hard copy for each unit for elevator personnel.

The documentation specified in 8.6.1.2.2(d) shall be on-site and available to the specified personnel...

(a) Up-to-date wiring diagrams detailing circuits of all electrical protective devices (see 2.26.2) and critical operating circuits (see 2.26.3). Where RIO is provided, circuits relevant to 2.26.2, 2.26.3, 3.26.4 and 3.26.6 shall be provided on the diagrams (see 2.26.13 and 3.26.12).

(b) Procedures for inspections and tests not described in ASME A17.2 and procedures or methods required for elevator personnel to perform maintenance, repairs, replacements, and adjustments, as follows:

...

(d) Written procedures for the following:

...

(3) the procedures for the means to prevent software or parameter changes to executable software. (see 8.14.1(b),

(4) the procedures for the means to disable RIO actions and connectivity by elevator, authorized, and emergency personnel (see 8.14.1(a)(2).

...

(g) The elevator manufacturer or supplier of installed internet capable device and internet capable elevator controller shall provide on-site documentation for cybersecurity maintenance and inspection requirements for the internet capable equipment in accordance with the applicable requirements of IEC 62443.

***Rationale:** to require on-site procedures for the means to accept executable software having a USI and related parameters, the one or more means to disable RIO actions and connectivity, and for cybersecurity maintenance and inspection.*

8.6.3.1 Replacement Parts. Replacements shall be made with parts of at least equivalent material, strength, and design. An internet connected or connectivity enabled device that is interfaced (directly or indirectly) to an elevator controller, or an elevator controller is connected to the internet, shall conform to 8.14.1.

***Rationale:** To ensure replacement of internet connected or connectivity enabled device(s) or elevator controller(s) meets the requirements of 8.14.1.*

8.6.4.23 Executable Software Verification. Where executable software for functions listed in 2.26.1.7.1 ~~or 3.26.11.1~~ has changed as the result of repair or replacement, requiring a new USI, the related safety function(s) shall be tested on-site for the applicable installation and logged in the repair and replacement record [see 8.6.1.2.2(e)].

8.6.5.18 Executable Software Verification. Where executable software for functions listed in 3.26.11.1 has changed as the result of repair or replacement, requiring a new USI, the related safety function(s) shall be tested on-site for the applicable installation and logged in the repair and replacement record [see 8.6.1.2.2(e)].

***Rationale:** to separately specify executable software verification for electric and hydraulic elevators.*

8.6.11 Special Provisions

...

8.6.11.4.2 A written cleaning procedure shall be made and kept on the premises where the elevator is located and shall be available to the authority having jurisdiction. Instructions shall include directions for authorized personnel to remove power from the elevator.

***Rationale:** To enhance existing requirement that cleaning procedures must include instructions to secure elevator from all automatic operation.*

8.6.11.16 Remote Interaction Operation.

A documented time and date stamped record to confirm each change to secure access to floor(s) made through RIO shall be required prior to changes. Changes to secured access floor(s) shall be confirmed to the authorized personnel. The confirmation shall include a warning of possible stranded occupants, which shall be acknowledged by the authorized personnel. These records shall be either hard copy or electronic format, retained for the most recent 5yrs from the date of occurrence; and made available to the authority having jurisdiction and to elevator personnel servicing the equipment.

NOTE (8.6.11.16): The building should include procedures to have authorized personnel using RIO check that no one is on a locked-out floor before the personnel use RIO to disable hall calls. The procedure is facilitated by a message informing the authorized personnel that the floor is being disabled.

***Rationale:** In order to ensure that occupants are not stranded on a floor where hall calls become disabled by authorized personnel through RIO, a message should be sent to the authorized personnel by the elevator system that the floor will be disabled. The authorized personnel have to acknowledge this message and is expected to check that the floor is unoccupied before disabling the hall calls.*

8.7.2.27.10 Remote Interaction Operation. Where there is an alteration to or the addition of Remote Interaction Operation, the alteration shall conform to the requirements in 2.26.9.3.1, 2.26.9.4, 2.26.13, 8.14.1, and 8.6.11.16.

Rationale: To specify the requirements that apply when Remote Interaction Operation is added to or altered on an existing electric elevator system.

8.7.3.31.14 Remote Interaction Operation. Where there is an alteration to or the addition of Remote Interaction Operation, the alteration shall conform to the requirements in 2.26.9.3.1, 2.26.9.4, 3.26.1(j), 8.14.1, and 8.6.11.16.

Rationale: To specify the requirements that apply when Remote Interaction Operation is added to or altered on an existing hydraulic elevator system.

8.7.3.31.15 Internet connectivity enabled devices or elevator controllers. Where there is an alteration to or the addition of an internet connected or connectivity enabled device that is interfaced (directly or indirectly) to an elevator controller, or where an elevator controller is connected to the internet, it shall conform to 8.14.1.

Rationale: To ensure that the alteration of internet connected, or connectivity enabled device(s) of elevator controller(s) meet the requirements of 8.14.1.

8.10.2.2.2 Machine Rooms, Machinery Spaces, and Control Rooms/Spaces

...

(uu) Verify conformance with 2.26.13. See also 8.6.1.2.2(d)(4).

(ww) Verify conformance with 8.14.1. See also 8.6.1.2.2(g).

8.10.3.2.2 Machine Rooms, Machinery Spaces, and Control Rooms/Spaces

...

(kk) Verify conformance with 3.26.12. See also 8.6.1.2.2(d)(4)

(ll) Verify conformance with 8.14.1. See also 8.6.1.2.2(g).

8.10.2.3.2 Inspection and Test Requirements for Altered Installations

...

(ss) Verify conformance with 2.26.13. See also 8.6.1.2.2(d)(4).

(tt) Verify conformance with 8.14.1. See also 8.6.1.2.2(g).

8.10.3.3.2 Inspection and Test Requirements for Altered Installations

...

(qq) Verify conformance with 3.26.12. See also 8.6.1.2.2(d)(4)

(hh) Verify conformance with 8.14.1. See also 8.6.1.2.2(g).

***Rationale:** to provide acceptance inspection for RIO and 8.14.1.*

8.11.2.1.2 Machine Rooms, Machinery Spaces, and Control Rooms/Spaces

...

(pp) Verify conformance with 2.26.13. See also 8.6.1.2.2(d)(4)

(qq) Verify conformance with 8.14.1. See also 8.6.1.2.2(g).

8.11.3.1.2 Machine Rooms, Machinery Spaces, and Control Rooms/Spaces

...

(ee) Verify conformance with 3.26.12. See also 8.6.1.2.2(d)(4)

(ff) Verify conformance with 8.14.1. See also 8.6.1.2.2(g).

***Rationale:** to provide periodic inspection for RIO and 8.14.1.*

SECTION 8.14 CYBERSECURITY FOR ELECTRIC ELEVATORS IN PART 2 AND HYDRAULIC ELEVATORS IN PART 3.

8.14.1 Where an internet connected or connectivity enabled device is interfaced (directly or indirectly) to an elevator controller, or an elevator controller is connected (directly or indirectly) to the internet, all points of connectivity to the internet (physical ports or wireless ports or conduits) for the device or elevator controller shall have security features. Security features shall comply with 8.14.1(a) and 8.14.1(b), unless the elevator's use, configuration or environment requires an increased level of cybersecurity protection be provided (see note 8.14.1):

a) Such device(s) or elevator controller(s) shall have cybersecurity protection that conforms to sound engineering practice, conform to requirements 8.14.1(a)(1) and 8.14(a)(2), and:

(1) shall have a listed/certified secure product development life cycle process to the relevant requirements of IEC 62443-4-1 and be engineering tested to demonstrate compliance with the requirements of 8.14.1(a)(1)(-a) and 8.14(a)(1)(-b):

(-a) emergency communication systems shall be security level rated to a minimum of SLC-1, (see 2.7.8.4 and 2.27.1.1),

(-b) except for emergency communications systems, be security level rated to a SLC-2 or higher rating that conforms to the applicable requirements in IEC 62443-2-4, 62443-3-3, 62443-4-1, and 62443-4-2, and conforms to the requirements of SR 1.1 RE 2 for multifactor authentication for untrusted users and networks specified in these standards,

NOTE [(8.14.1)(a)(1)]: The cybersecurity requirements specified under 8.14.1(a)(1) are minimum requirements. Specialized building, structures, or use environment, e.g., government facilities, critical care facilities etc., may require that the application of the facility be considered to determine if higher levels of cybersecurity or complete isolation from the internet are required. For example, protection against cyber threats that could result in a denial of elevator service may be necessary. See note in section 4.2 in IEC 62443-3-3 for guidance on cyber risk (threat) assessment.

***Rationale to NOTE [(8.14.1)(a)(1)]:** To alert users of this code to review the risk of cyber threats to help determine the appropriate measures for their particular asset needs.*

(2) except for emergency communications systems, be provided with a manual means on-site, that is not self-resetting and that is accessible to elevator, authorized, and emergency personnel to disable the actions permitted by 2.26.13.2 and to disable connectivity as permitted in 8.14.1.

***Rationale:** To provide one or more manual means to disable RIO actions and connectivity.*

(b) Where executable software is used in conjunction with any operation, means or a device listed in 2.26.1.7.1 and 3.26.11.1, the security features used to satisfy 8.14.1 shall include a means that will prevent changes to the executable software via a remote source. Only on-site elevator personnel shall initiate changes to executable software delivered remotely utilizing the means. This means shall conform to 8.14.1(b)(1) through 8.14.1(b)(5):

(1) the means shall only allow changes to the executable software when the elevator controller is not in automatic operation and a stop switch is actuated;

(2) be accessible to elevator personnel only with a key that is group 1 security (see section 8.1);

(3) be located in machinery spaces outside the hoistway or spaces within sight of the hoistway, or a machine room, or a control space outside the hoistway, or a control room, or at an inspection and test panel (see also 2.8.1);

(4) be portably connected or permanently attached to the device, or elevator controller, or within the inspection and test panel (see also 8.6.4.23); and

(5) shall prevent parameter changes to any of the functions, means or device listed in 2.26.1.7.1, 3.26.11.1 unless the on-site elevator personnel initiates change to executable software delivered remotely utilizing the means.

Rationale: *To add requirements for a means that is accessible only to elevator personnel on-site that will prevent changes from a remote source of executable software requiring a USI or changes in related parameters addressed in 2.26.1.7, 3.26.11 without the use of the means by elevator personnel.*

Add new references to Section 9:

Section 9.1 Reference Documents

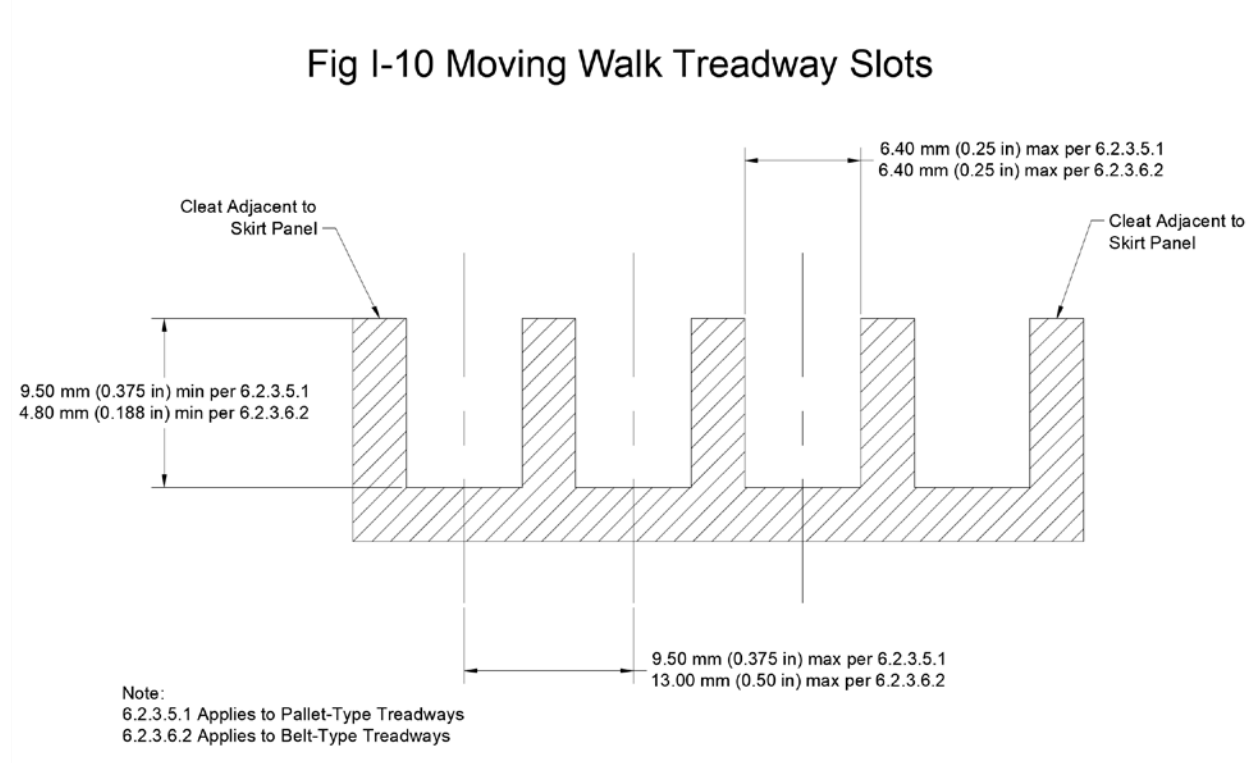
Designation	Standard	Publisher	Applicable to
...			
IEC 62443-2-4 (latest edition)	Security for industrial automation and control systems – Part 2-4: Security program requirements for IACS Service providers	ANSI	US, Canada
IEC 62443-3-3 (latest edition)	Industrial communication networks – Network and system security - Part 3-3: System security requirements and security levels	ANSI	US, Canada
IEC 62443-4-1 (latest edition)	Security for industrial automation and control Systems - Part 4-1: Secure Product development Lifecycle requirements	ANSI	US, Canada
IEC 62443-4-2 (latest edition)	Security for industrial automation and control Systems - Part 4-2: Technical security requirements for IACS components	ANSI	US, Canada

Rationale: *to add referenced IEC standards on cybersecurity.*

Record 20-2917

Proposed Revision to A17.1 Nonmandatory Appendix I, Figure I-10 and Requirement 6.2.3.5.1, 6.2.3.6.2 Belt-Type Treadway:

Replace current figure with the following:



Revise 6.2.3.6.2 (Belt-Type Treadway) as follows:

6.2.3.6.2 Slotting of the Treadway. The Treadway surface shall be slotted in a direction parallel to its travel for purposes of meshing with combplates at the landings. Each slot shall be not more than 6.4 mm (0.25 in.) wide at the treadway surface and not less than 4.8 mm (0.188 in.) deep, and the distance from center to center of adjoining slots shall be not more than 13 mm (0.50 in.). Sides of slots shall be permitted to slope for mold draft purposes and shall be permitted to be filleted at the bottom. Slots shall be located on each side of the belt to form a cleat adjacent to the skirt panel. (See Nonmandatory Appendix I, Figure I-10.)

Revise 6.2.3.5.1 (Pallet-Type Treadway) as follows:

6.2.3.5.1 Slotting of Treadway. The treadway surface of each pallet shall be slotted in a direction parallel to its travel. Each slot shall be not more than ~~6.5~~ 6.4 mm (0.25 in.) wide at the treadway surface and not less than 9.5 mm (0.375 in.) deep; and the distance from center to center of adjoining slots shall be not more than 9.5 mm (0.375 in.). Sides of the slots shall be permitted to slope for mold draft purposes and shall be permitted to be filleted at the bottom. Slots shall be located on each side of the pallet to form a cleat adjacent to the skirt panel. (See Nonmandatory Appendix I, Figure I-10.)

Rationale: *The current Nonmandatory Appendix I, Figure I-10 contains a mixture of dimensional information from 6.2.3.5.1 for pallet type treadways and 6.2.3.6.2 for Belt-Type treadways. A17.1 currently only references the figure in 6.2.3.5.1. The revised graphic clarifies the requirements for the two different treadway types and adds the reference to Figure I-10 in 6.2.3.6.2 for consistency with reference included in 6.2.3.5.1. 6.2.3.5.1 is revised for consistency of SI and US Customary units between 6.2.3.5.1 and 6.2.3.6.2.*

Record 20-2919

Proposed Revision to A17.1, Requirements 6.1.5.3 and 6.2.5.3 Data Plate for Escalators and Moving Walks:

6.1.5.3 Brakes

6.1.5.3.1 Escalator Driving-Machine Brake

(d) The escalator brake shall be provided with a data plate conforming to 8.13.1 that is readily visible and located on the machine brake, and when necessary, a duplicate data plate with the certification mark shall be placed adjacent to the machine brake. The data plate shall indicate ...

6.2.5.3 Brakes

6.2.5.3.1 Moving Walk Driving-Machine Brakes

(d) The moving walk brake shall be provided with a data plate conforming to 8.13.1 that is readily visible and located on the machine brake and, when necessary, a duplicate data plate with the certification mark shall be placed adjacent to the machine brake. The data plate shall indicate ...

***Rationale:** To require the brake data plate to conform with the new requirements added in A17.1/B44-2019 Requirement 8.13.1.*