IN THE MATTER OF:

THE TECHNICAL STANDARDS AND SAFETY ACT 2000, S.O. 2000, c. 16 (the “Act”)  
- and -  
ONTARIO REGULATION 223/01 (Codes and Standards Adopted by Reference) made under the Act  
- and -  
ONTARIO REGULATION 209/01 (Elevating Devices) made under the Act

Subject: Adoption of ASME A17.1-2010 / CSA B44-10 Safety Code for Elevators
Applicable to: Elevating Device Contractors, Owners, Consultants and Elevating Device Mechanics

The Director of Ontario Regulation 209/01 (Elevating Devices), pursuant to section 4 of Ontario Regulation 223/01 (Codes and Standard Adopted by Reference), hereby provides notice that the Elevating Devices Code Adoption Document dated June 1, 2001 (CAD), as amended, published by the Technical Standards and Safety Authority is further amended as follows:

Effective May 1, 2012 the Elevating Device Code Adoption Document, dated June 1, 2001 as amended is further amended as follows:

A. Changes to Part 1
   a.1 Part 1, Section 1.1.3 is supplemented with the following:

   (i) "dedicated function fire alarm system" means a protected premises fire alarm system installed specifically to perform fire safety function(s) [CAD Amendment 250-11]

   (j) "minor alteration – type A" means a minor alteration per O.Reg 209/01 which requires the signature and seal of a professional engineer per O.Reg 209/01 15.(6) [CAD Amendment 250-11]

   (k) "minor alteration – type B" means a minor alteration per O.Reg 209/01 19.(1) which may be signed as per O.Reg 209/01 15.(9) [CAD Amendment 250-11]

B. Changes to Part 2
   b.1 Part 2, section 2.6.1 is revoked, and the following substituted:

2.6.1 Where an alteration is made to an elevating device the altered components and functions and those components and functions that are affected by the alterations shall conform to the requirements of codes or standards adopted in this document, including any changes set out in this document.

b.2 Part 2, is supplemented with the following:
2.11 Component Fastenings *(10/84) (36/86) (125/96)(193/05)*

2.11.1 Where components are fastened or retained via machine threads, roll pins, c-clips, or similar, precautions must be taken to ensure that the fastenings can satisfactorily remain secure while resisting movement or vibration of the equipment.

2.11.2 Where the effectiveness of a fastener is rapidly degraded as a result of removal and reinstallation during maintenance activities, such fasteners shall be replaced and not reused. [CAD Amendment 250-11]

2.12 Passage Across Roofs *(231/08)*

2.12.1 In addition to O.Reg 209/01, s.37, if passage across a roof is required for access to elevating device equipment where there is no parapet or guardrail at least 1070mm (42 in.) high around the roof or passageway, the following shall apply to facilitate safe passage from the roof top access point to the elevating device equipment:

(a) buildings with elevating device installations commissioned on or after December 27, 1985 (effective date of B44-M85) shall be provided with:

(1) a permanent, unobstructed and substantial walkway not less than 600 mm (24 in.) wide,

(2) a guardrail, on all sides of the walkway design to meet the requirements of the Occupational Health and Safety Regulations, where there is an exposure to a fall hazard, except

(b) buildings with elevating device installations commissioned before December 27, 1985 shall be provided with:

(1) the requirements of 2.12.1(a)(1) and 2.12.1(a)(2), or

(2) the requirements of 2.12.1(a)(1) and an engineered lifeline in lieu of a guardrail, provided the lifeline is designed to accommodate a travel restraint (safety belt) or fall arrest system in accordance to current requirements of the Occupational Health and Safety Regulations. [CAD Amendment 250-11]

C. Changes to Part 3

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c.1 Part 3 is revoked in its entirety, and the following substituted:

Part 3

3 ELEVATORS, DUMBWAITERS, ESCALATORS, MOVING WALKS, MATERIAL LIFTS AND FREIGHT PLATFORM LIFTS

3.1 Applied Codes and Standards [CAD Amendment 250-11]
Every elevator, dumbwaiter, escalator, moving walk, material lift, and freight platform lift shall conform to the requirements of:

(a) ASME A17.1-2010/CSA B44-10 Safety Code for Elevators and Escalators,

Note: Parts 1, 5.10, 8.1, 8.6, 8.7, 8.8, 8.9, 8.10 and 8.11 apply to both new and existing installations. For the purpose of these parts, existing installations means devices installed under the 2010 code and prior editions.

(b) ASME A17.6-2010 Standard for Elevator Suspension, Compensation, and Governor Systems.

(c) The requirements of 3.1(a) are adopted with the following modifications and clarifications:

1. Requirements which are identified as applicable to “jurisdictions not enforcing NBCC” are not adopted, unless otherwise stated. Note: NBCC means the National Building Code of Canada;

2. Requirements identified as applicable “in jurisdictions enforcing NBCC” are adopted;

3. Any reference to the “building code” or to the National Building Code of Canada or “NBCC” in this definition and throughout the Code shall be deemed to refer to the Ontario Regulation 350/06 made under the Building Code Act 1992, as amended, commonly known as Ontario Building Code or OBC;

4. Where there is inconsistency between the Regulations and this Code (e.g. Requirement 2.15.9.2 related to the car-platform guards or aprons) the Regulation prevails, unless otherwise specified in this Amendment;

5. Any reference containing a star ★ notation (example 8.7.3.31★) is a TSSA defined alteration or additional requirement;

6. Requirement 2.5.1.6 is revoked and the following substituted:

2.5.1.6 Clearance Between Car Platform Apron and Pit Enclosure.
Where the lowest landing sill, on each side of the hoistway, projects into the hoistway, the clearance between the car platform apron and the pit enclosure or fascia plate shall be not more than 32mm (1.25 in.). This clearance shall be maintained, between the bottom face of the apron and the pit fascia, until the car is resting on its fully compressed buffer.

7. Requirement 2.7.3.2.2 is revoked and the following substituted:

2.7.3.2.2 Where the passage is over a roof having a slope exceeding 15 deg from the horizontal, or over a roof where there is no parapet or guardrail at least 1 070 mm (42 in.) high around the roof or passageway, a permanent, unobstructed and substantial walkway not less than 600 mm (24 in.) wide, equipped with a railing conforming to 2.10.2.1, 2.10.2.2, 2.10.2.3 and 2.10.2.4 or 2.12.1(a)(2) of the CAD on all sides, shall be provided from the building exit door at the roof level to the means of access.

8. Requirement 2.7.8.4 is revoked and the following substituted:

2.7.8.4 A permanent means of communication between the elevator car and a remote machine room, control space or control room shall be provided.

9. Requirement 2.10.2 is revoked and the following substituted: (245/10)

2.10.2 Standard Railing / Guard Rail
A standard railing / guard rail shall be substantially constructed of metal and shall consist of a top rail, intermediate rail or equivalent structural member or solid panel, and toe-board.
2.10.2.1 Top Rail
The top rail shall have a smooth surface, and the upper surface shall be located at a vertical height of 1070 mm (42 in.) from the working surface. For alterations only: On elevator car tops of existing devices where a guard rail is being added, this dimension is permitted to be reduced to a height between 910 mm (36 in.) and 1070 mm (42 in.).

2.10.2.2 Intermediate Rail, Member, or Panel
The intermediate rail or equivalent structural member or solid panel shall be located approximately centered between the top rail and the working surface.

2.10.2.3 Toe-Board
The toe-board shall be securely fastened and have a height not less than 125 mm (5 in.) above the working surface.

2.10.2.4 Strength of Standard Railing / Guard Rail
2.10.2.4.1 Strength
In jurisdictions enforcing NBCC, guards shall be fixed in position and designed to resist the following:
(a) a horizontal load applied inward or outward, of 750N/m (52 lbf/ft) or a concentrated load of 1000 N (225 lbf) applied at any point, whichever governs, at the top of every guard rail
(b) elements within the guard, including solid panels and pickets, shall be designed for a load of 500 N (112 lbf) applied over an area of 100 mm by 100 mm (4 in. x 4 in.) located at any point in the element or elements so as to produce the most critical effect. These loads need not be considered to act simultaneously with the loads provided for in (a) and (c).
(c) The minimum specified load applied vertically at the top of every required guard shall be 1500 N/m (103 lbf/ft) and need not be considered to act simultaneously with the horizontal load provided for in (a)

Note: The loads specified in 2.10.2.4.1 are extracted from O. Reg. 350/06 (Building Code) Article 4.1.5.15, as required by Reg. 851 (Regulations for Industrial Establishments) Section14(2).
For Limit States Design a principal load factor of 1.5 applies per sentence 4.1.3.2(5) of O. Reg. 350/06 (Building Code). For Allowable Stress Design, typically 66% of ultimate stress (1.5 safety factor) is applied to material strength, in which case the stated loads are not factored.

2.10.2.4.2 Deflection
A standard railing shall be capable of resisting anywhere along its length the following forces when applied separately, without deflecting more than 75 mm (3 in.) and without permanent deformation:
(a) a force of at least 890 N (200 lbf) applied in any lateral or downward vertical direction, at any point along the top rail.
(b) a force of at least 666 N (150 lbf) applied in any lateral or downward vertical direction at any point along the center of the intermediate rail, member, or panel. If the standard railing is a solid panel extending from the top rail to the toe-board, the application of the force specified in 2.10.2.4(a) shall be considered to meet the requirements of 2.10.2.4(b).
(c) a force of 225 N (50 lbf) applied in a lateral direction to the toe-board.

(10) Requirement 2.14.1.7 is supplemented with the following: (245/10)

2.14.1.7.5 Where a standard guardrail per 2.10.2 cannot be provided due to overhead clearance issues, a foldable, collapsible or other stowable design shall be acceptable provided that:
(1) the car will not operate in “top-of-car inspection operation” unless the railing is in the fully extended position,
(2) the car will not operate in; “normal operation”, “hoistway access operation”, or any type of “inspection operation” other than “top-of-car inspection operation”, unless the railing is in the fully retracted position,
(3) switches used to monitor the fully collapsed position shall have contacts that are positively opened mechanically when the railing is moved from its fully collapsed position (leaving the collapsed position will forcibly/positively remove the car from all modes of operation and top-of-car operation cannot be engaged until the extended position is reached),

(4) the switch used to monitor the fully collapsed position shall comply with the requirements of the car top transfer switch when in the open position, except the top-of-car operation shall not be permitted until the guardrail is in the fully extended position,

(5) switches used to monitor the fully extended position shall have contacts that are positively opened mechanically when the railing is moved from its fully extended position (leaving the extended position will forcibly/positively remove the car from top-of-car operation and other modes of operation cannot be engaged until the collapsed position is reached),

(6) related circuits for switches used to monitor the fully collapsed and fully extended position of the guardrail shall comply with 2.26.9.3 and 2.26.9.4 of A17.1-2007/B44-07,

(7) electrical means shall be provided to prevent upward movement of the car beyond the point required to maintain top of car clearances when the railing is not in the fully collapsed position,

(8) when in the fully extended position the handrail shall meet the requirements of 2.10.2.

(9) a suitably designed and marked fall arrest anchor point shall be provided if there is worker exposure to a fall hazard (per Section 85 of Reg. 851, Regulations for Industrial Establishments) while engaging or lowering the alternative height guardrail provided for in 2.14.1.7.5

(11) Requirement 2.14.2.1.2 is revoked and the following substituted:

2.14.2.1.2 In jurisdictions enforcing the NBCC,
(a) materials in their end-use configuration, other than those covered by 2.14.2.1.2(b), 2.14.2.1.3, and 2.14.2.1.4, shall conform to the following requirements, based on the tests conducted in accordance with the requirements of ASTM E 84, ANSI/UL 723, or CAN/ULC-S102:
   (1) flame spread rating of 0 to 75
   (2) smoke development classification of 0 to 450
(b) floor surfaces shall have a flame spread rating of 0 to 300 with smoke development classification of 0 to 450, based on the test conducted in accordance with the requirements of CAN/ULC-S102.2
(c) not adopted

(12) Requirement 2.27.3.2.2 is revoked and the following substituted:

2.27.3.2.2 In jurisdictions enforcing the NBCC, the requirements of (a) through (c) are applicable to new installations and the requirements of (a) through (h) are applicable for alterations as amended below:

(a) smoke detectors, or heat detectors in environments not suitable for smoke detectors (fire alarm initiating devices), used to initiate Phase I Emergency Recall Operation, shall be installed in conformance with the requirements of the NBCC, and shall be located
   (1) at each floor served by the elevator
   (2) in the associated elevator machine room, machinery space containing a motor controller or electric driving machine, control space, or control room
   (3) in elevator and dumbwaiter shafts per O.Reg 350/06 Article 3.2.4.10.(e) if a fire alarm system is required by O.Reg 350/06 Article 3.2.4.1, except as provided in O.Reg 350/06 Article 3.2.4.15.,
(b) alternate floor recall required by 2.27.3.2.4 is not required if the floor area containing the recall level is sprinklered. (ref OBC 3.2.4.14(3)) Note: If fire detectors are provided in the hoistway at or
below the lowest landing of recall, an alternate (upper) recall shall be provided in accordance with 2.27.3.2.3(d).

(c) where a building fire alarm system is not required by OBC or where an alteration is being performed and the existing building fire alarm system does not provide suitable signaling, the devices referred to in 2.27.3.2.2(a) shall be installed and shall be connected to a Dedicated Function Fire Alarm System.

NOTE (2.27.3.2.2(a) (b) and (c) ): Smoke and heat detectors (fire alarm initiating devices) are referred to as fire detectors in the NBCC. Pull stations are not deemed to be fire detectors.

(ALTERATIONS)

(d) for alterations 8.7.2.16, 8.7.3.17(change in type of service) and 8.7.2.27.6, 8.7.3.31.7 (operation control), that require conformance to 2.27,
1) requirements 2.27.3.2.2(a)(1), 2.27.3.2.2(a)(2) and 2.27.3.2.2(c) do not apply within a floor area if the floor area is sprinklered and the sprinkler system is electrically supervised in conformance with O.Reg 350/06 Sentence 3.2.4.9.(2). The activation of the electrically supervised system shall cause automatic recall.
2) requirements 2.27.3.2.2(a)(3) does not apply.

(e) for alterations 8.7.2.27.4 and 8.7.3.31.5 (controllers), if firefighters’ emergency operation was required or provided at the time of the original installation, or required or provided by a subsequent alteration, the requirements of (1) apply, otherwise the requirements of (2) apply:
1) requirements, 2.27.3.2.2(a), 2.27.3.2.2(b) and 2.27.3.2.2(c)
2) the installation shall as a minimum conform to the requirements of 2.27.3.1 (manual recall), unless the introductory exemption in 2.27.3 applies.

(f) for alterations 8.7.2.27.5 and 8.7.3.31.6 (motion control), emergency operation and signaling devices where required by NBCC at the time of the original installation, or required or provided by a subsequent alteration, the requirements of (1) apply, otherwise the requirements of (2) apply:
1) requirements of 2.27.3.2.2(a), 2.27.3.2.2(b) and 2.27.3.2.2(c)
2) the installation shall as a minimum conform to the requirements of 2.27.3.1 (manual recall), unless the introductory exemption in 2.27.3 applies.

(g) for alterations under 8.7.2.28 or 8.7.3.31.8 (emergency operation and signaling devices) or 8.7.2.28*2 or 8.7.3.31*9 (fire code retrofit) that require conformance to all or part of 2.27 the requirements of 2.27.3.2.2(a), 2.27.3.2.2(b) and 2.27.3.2.2(c) apply.

(h) In all cases the level of activation shall not be diminished per 8.7.1.2.

(13) The opening requirement of 3.7 – Machinery Spaces, Machine Rooms, Control Spaces and Control Rooms, is revoked and the following substituted:

A machinery space outside the hoistway containing a hydraulic machine and a motor controller shall be a machine room, or a machinery space with headroom of not less than 2130 mm(84”).

(14) Requirement 5.2.1.4.4 – Alternative to Top Car Clearance Requirement, is adopted for new and existing buildings

(15) Requirement 5.2.1.14 is supplemented with the following:
(n) where conformance to 2.14.1.7 is required, the provisions of 2.10.2.1 or 2.14.1.7.5 are permitted for new installations.

(16) Requirement 5.2.1.15.2 is revoked and the following substituted: *(166/01)*

**5.2.1.15.2 Platform Guards.**

(a) Requirement 2.15.9.2 applies to LU/LA elevators that utilize traction drives and that serve 3 or more floors.

(b) Requirement 2.15.9.2 does not apply to LU/LA elevators utilizing hydraulic or roped hydraulic drive and serving 2 or more floors, provided that the following requirements are met:

1. The platform guard shall have a straight vertical face, extending below the floor surface of the platform of not less than the depth of the unlocking zone plus 75 mm (3 in.) but in no case less than the maximum distance from the landing that it takes to stop and hold the car upon detection and actuation of the device as prescribed in 2.19.2.

2. Owners of LULA elevators shall complete and sign a SUPPLEMENTARY OWNERS REPORT FOR LULA ELEVATORS indicating their understanding that:
   - only elevator personnel are permitted to unlock hoistway doors
   - only emergency personnel are permitted to perform emergency evacuations.
   - access to the unlocking device is controlled or has a controlled procedure
   - owners shall ensure the appropriate building personnel are made aware of these requirements

3. Signage shall be provided on the apron plate that meets the following criteria:
   - lettering shall be a minimum of 16mm in height
   - the sign shall remain permanent and readily legible, viewable from the hall
   - the Context of the message shall convey the following information:
     - a ‘warning’ advising of the potential fall hazard that exists below when the car is above the floor level
     - lower the car prior to attempting rescue of trapped passengers
     - lowering and Rescue by trained personnel only.

(17) Requirement 5.2.1.16.5 - Maximum Rise limitation for LULA elevators is not adopted;

(18) Sections 5.3, 8.6.7.3 and 8.7.5.3 – Private Residence Elevators, are not adopted;

(19) Sections 5.4, 8.6.7.4 and 8.7.5.4 – Private Residence Inclined Elevators, are not adopted;

(20) Sections 5.7, 8.6.7.7 and 8.7.5.7 – Special Purpose Personnel Elevators, are not adopted;

(21) Sections 5.8, 8.6.7.8 and 8.7.5.8 – Marine Elevators, are not adopted;

(22) Sections 5.9, 8.6.7.9 and 8.7.5.9 – Mine Elevators, are not adopted;

(23) Section 5.10 “Elevators Used for Construction” is adopted with the following modifications:

a) “Elevators Used for Construction” shall have the same meaning as “temporary elevator” used in Ontario Regulation 209/01;

b) 5.10.1.9.5(a) is not adopted,
c) 5.10.1.9.5(b) is revoked and the following substituted:

5.10.1.9.5(b)
(b) regardless of car speed, hoistway doors shall be provided with either of the following:
(1) interlocks conforming to 2.12.2
(2) combination mechanical locks and electric contacts conforming to 2.12.3

(24) "Material lift – type B" shall mean the same as the term “freight platform lift – type B” used in Ontario Regulation 209/01;

(25) Requirement 7.4.2.2 is revoked and the following substituted: (48/87) (189/05)

7.4.2.2
Type B Material Lifts shall be permitted to carry one operator and be provided with in-car mounted operating devices, subject to the following limitations:

(a) Access to and usage of Type B Material Lifts is restricted to authorized personnel.
(b) The rated speed is not to exceed 0.15 m/s (30 ft/min).
(c) not adopted
(d) Travel does not exceed 7 600 mm (300 in.).
(e) They are operated only by continuous-pressure control devices.
(f) They shall not be accessible to the general public.
(g) The upper limit of travel shall be
   (1) level with the top penetrated floor; or
   (2) level with the top landing where no floor is penetrated.
(h) They are permitted to serve one or more intermediate landings, provided that these landings have doors as required in 7.4.14.

(26) Requirement 7.4.14.8 is added:

7.4.14.8
Requirement 2.12.3 applies only to Type A Material Lifts.

(27) Requirement 7.5.12.2.6 is revoked and the following substituted:

7.5.12.2.6
Requirement 2.26.2.5 does not apply. Each control station shall be provided with an emergency stop switch (switches) conforming to 2.26.2.5(a), (b), and (c), except that the emergency stop switch located at each landing may be of a constant-pressure type. And it shall cause the power to be removed from the driving machine when operated.

(28) Sections 7.8 to 7.11 – Dumbwaiters and Material Lifts with Automatic Transfer Devices, that meet the requirements as specified in item 2(3)(j) of the Elevating Device Regulation 209/01, are not adopted;

(29) The requirements of Section 8.6. Maintenance, Repair, Replacement and Testing is adopted as modified and clarified in 3.3 of the Code Adoption Document;

(30) The requirements of Section 8.7 – Alterations, is adopted, as modified and clarified in 3.4 of the Code Adoption Document;

(31) Section 8.7.7.3 Material Lifts and Dumbwaiters with Automatic Transfer Devices, is not adopted, except 8.7.7.3.2 is adopted;
(32) Section 8.9 – Code Data Plate, is adopted except that the requirements shall not apply to the existing devices installed or altered to versions of the B44 Code earlier than B44-00;

(33) Section 8.11 - Periodic Inspection and Test Requirements are not adopted.

3.2 Performance Based Safety Code

3.2.1 Where conformance with the prescriptive requirements in 3.1 are not strictly met, conformance may be demonstrated through compliance to the requirements in ASME A17.7-2007/CSA B44.7-07 Performance-based safety code for elevators and escalators.

3.3 Maintenance, Repair, Replacement, and Testing

3.3.1 A Maintenance Control Program (MCP) referred to in the code adopted in 3.1 shall have the same meaning as “general instructions for maintenance’ referred to in O.Reg 209/01 s.25.(2)

3.3.2 A copy of the Maintenance Control Program shall be provided for every new elevating device installation as required in O.Reg 209/01 s.15.(4)(c), where a Maintenance Control Program has been implemented. The Maintenance Control Program shall be available to the inspector at the time of the acceptance inspection, and a copy shall be forwarded to the elevating devices program prior to the inspection. Where appropriate, versions of MCP’s may be filed with the director.

3.3.3 Where a Maintenance Control Program has been implemented on an existing device, a copy of the Maintenance Control Program (MCP) shall be supplied to the owner of the elevating device.

3.3.4 Section 8.6 Maintenance, Repair, Replacement, and Testing is revoked and the following substituted:

8.6 MAINTENANCE, REPAIR, REPLACEMENT, AND TESTING
Requirement 8.6 applies to maintenance, repairs, replacements, and testing.
NOTES:
(1) See 8.7 for alteration requirements.
(2) See “General” in Preface for assignment of responsibilities.

8.6.1 General Requirements
8.6.1.1 Maintenance, Repair, and Replacement
8.6.1.1.1 Equipment covered within the scope of this Code shall be maintained in accordance with (a) 8.6 and an established Maintenance Control Program including any requirements specified in the Code Adoption Document or (b) 8.6.1, 8.6.2, 8.6.3, 8.6.11 and the supplemental maintenance requirements and intervals specified in CSA standard B44.2-07 Maintenance requirements and intervals for elevators, dumbwaiters, escalators, and moving walks, including any requirements specified in the Code Adoption Document.

8.6.1.2 Maintenance, repairs, replacements, and tests shall conform to 8.6 and the applicable (a) Code at the time of the installation; and (b) Code requirements at the time of any alteration; and (c) ASME A17.3 if adopted by the authority having jurisdiction

8.6.1.3 It is not the intent of 8.6 to require changes to the equipment to meet the design, nameplate or performance standard other than those specified in 8.6.1.2, unless specifically stated in 8.6.

8.6.1.2 General Maintenance Requirements
8.6.1.2.1
Not later than 12 months, after the adoption of the code in part 3.1 of the CAD, a written Maintenance Control Program shall be in place to maintain the equipment in compliance with the requirements of 8.6, except until that date, devices may continue to be maintained according to 8.6.1.1.1(b).

(a) The Maintenance Control Program or maintenance tasks implemented to align with 8.6.1.1.1(b) shall consist of but not be limited to

(1) examinations and maintenance of equipment at scheduled intervals in order to ensure that the installation conforms to the requirements of 8.6. The maintenance procedures and intervals shall be based on
   (a) equipment age, condition, and accumulated wear
   (b) design and inherent quality of the equipment
   (c) usage
   (d) environmental conditions
   (e) improved technology
   (f) the manufacturer’s recommendations for any SIL rated devices or circuits

(2) cleaning, lubricating, and adjusting applicable components at regular intervals and repairing or replacing all worn or defective components where necessary to maintain the installation in compliance with the requirements of 8.6.

(3) tests of equipment at scheduled intervals (8.6.1.7 or B44.2-07 where this maintenance method is followed) in order to ensure that the installation conforms to the requirements of 8.6

(4) all Code required written procedures (e.g., check out, inspection, testing, and maintenance).

(b) The instructions for locating the Maintenance Control Program where implemented shall be provided in or on the controller along with instructions on how to report any corrective action that might be necessary to the responsible party.

(c) The log book of maintenance records required by 8.6.1.4 shall be kept in the machine room, control room, control space or at the device location. If it is kept in another location in the building, a notice will be posted in the machine room indicating the alternate location.

(d) The Maintenance Control Program where implemented shall be accessible to the elevator personnel and shall document compliance with 8.6.

(e) Procedures for tests, periodic inspections, maintenance, replacements, adjustments, and repairs for all SIL rated E/E/PES electrical protective devices and circuits shall be incorporated into and made part of the Maintenance Control Program where implemented, otherwise shall form part of any new or alteration design submission, submitted for registration (if applicable to the installation). 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).

(f) Where unique or product specific procedures or methods are required to inspect or test equipment, such procedures or methods shall be included in the Maintenance Control Program where implemented, otherwise shall form part of any new or alteration design submission, submitted for registration (if applicable to the installation).

(g) 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 shall be incorporated into and made part of the Maintenance Control Program where implemented, otherwise shall form part of any new or alteration design submission, submitted for registration (if applicable to the installation). [See 2.20.8.1, 2.20.8.2, 2.20.8.3, 8.6.11.10, 8.10.2.2.2(cc)(3)(c)(2), 8.10.2.2.2(ss), and 8.6.4.19.12.]

8.6.1.2.2 Where a defective part directly affecting the safety of the operation is identified, the equipment shall be taken out of service until the defective part has been adjusted, repaired, or replaced.

8.6.1.3 Maintenance Personnel.
Maintenance, repairs, replacements, and tests shall be performed only by elevator personnel (see 1.3).

8.6.1.4 Log Book of Maintenance Records

8.6.1.4.1 Maintenance records in the form of a log book shall document compliance with 8.6 of the Code and shall include records on the following activities:

(a) description of maintenance task performed and dates

(b1) description and dates of examinations, tests,

(b2) description and dates of adjustments, repairs, and replacements when the activity is safety related and is covered under:

(1) Repairs per 8.6.2.1 through 8.6.2.5, including repairs of components and devices listed in 8.6.4, 8.6.5, 8.6.6, 8.6.7, 8.6.8, 8.6.9, and 8.6.10.

(2) Replacements per 8.6.3.1 through 8.6.3.11 except 8.6.3.7 and 8.6.3.10, but including the replacement of components listed in 8.6.4, 8.6.5, 8.6.6, 8.6.7, 8.6.8, 8.6.9, and 8.6.10.

(c) description and dates of call backs (trouble calls) or reports that are reported to elevator personnel by any means, including corrective action taken where a maintenance control program is implemented, shall be recorded as required in 8.6.1.4.3

(d) written record of the findings on the firefighters’ emergency operation required by 8.6.11.1

(e) written record to document compliance with replacement criteria specified in ASME A17.6 where a maintenance control program is implemented,

(f) log records to document compliance with the maintenance, examinations and test activities listed in (a) and (b) shall also include:

(1) Building name and/or address,
(2) TSSA or MCCR installation number,
(3) Contractor’s name
(4) Contractor’s Registration Number and
(5) the code section, reference or requirement / clause number associated with a task,
(6) a description of the task performed,
(7) the prescribed maintenance frequency of the task, where specified by the maintenance control program (where implemented), or by B44.2-07,
(8) year and month when the task was performed
(9) the printed name and signature of the persons who completed the task, except that where tasks are not yet completed, or where a part directly affecting the safety of the operation is found to be defective, the record of the maintenance task shall not be signed off until the task is complete or the defect is adjusted repaired or replaced.

8.6.1.4.2 Log Book and Maintenance Record Availability.
The log book and maintenance records shall be available to the elevator personnel.

8.6.1.4.3 Call Backs and Trouble Call Record Availability.
The service provider shall maintain a record of call backs or reports including the date and nature of the call or report. This information shall be made available to elevator personal performing corrective action and shall be maintained for a minimum of one year to be available to the AHJ upon request. Corrective actions related to adjustments, repairs and replacements shall be recorded as required in 8.6.1.4.1(b2).

8.6.1.6 General Maintenance Methods and Procedures
8.6.1.6.1 Making Safety Devices Inoperative or Ineffective.
No person shall at any time make inoperative or ineffective any device on which safety of users is dependent, including any electrical protective device, except where necessary during tests, inspections (see 8.10 and 8.11), maintenance, repair, and replacement, provided that the installation is first removed from normal operation. Such devices shall be restored to their normal operating condition in conformity with the applicable requirements prior to returning the equipment to service (see 2.26.7 and 8.6.1.6).

8.6.1.6.2 Lubrication.
All parts of the machinery and equipment requiring lubrication shall be lubricated with lubricants equivalent to the type and grade recommended by the manufacturer. Alternative lubricants shall be permitted when intended lubrication effects are achieved. All excess lubricant shall be cleaned from the equipment. Containers used to catch leakage shall not be allowed to overflow.

8.6.1.6.3 Controllers, Wiring, and Wiring Diagrams
(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) shall be available in the machinery space, machine room, control space, or control room as appropriate to the installation.
(b) The interiors of controllers and their components shall be cleaned when necessary to minimize the accumulation of foreign matter that can interfere with the operation of the equipment.
(c) Temporary wiring and insulators or blocks in the armatures or poles of magnetically operated switches, contactors, or relays on equipment in service are prohibited.
(d) When jumpers are used during maintenance, repairs, or testing, all jumpers shall be removed and the equipment tested prior to returning it to service. Jumpers shall not be stored in machine rooms, control rooms, hoistways, machinery spaces, control spaces, escalator/moving walk wellways, or pits (see also 8.6.1.6.1).

NOTE [8.6.1.6.3(d)]: See “Elevator Industry Field Employees’ Safety Handbook” for jumper control procedures.
(e) Control and operating circuits and devices shall be maintained in compliance with applicable Code requirements (see 8.6.1.1.2).
(f) Substitution of any wire or current-carrying device for the correct fuse or circuit breaker in an elevator circuit shall not be permitted.

8.6.1.6.4 Painting.
Care shall be used in the painting of the equipment to make certain that it does not interfere with the proper functioning of any component. Painted components shall be tested for proper operation upon completion of painting.

8.6.1.6.6 Workmanship.
Care should be taken during operations such as torquing, drilling, cutting, and welding to ensure that no component of the assembly is damaged or weakened. Rotating parts shall be properly aligned.

8.6.1.6.7 Signs and Data Plates.
Required signs and data plates that are damaged or missing shall be repaired or replaced.

8.6.1.7 Periodic Tests.
The frequency of maintenance and tests shall conform to the following:

(a) Where a Maintenance Control Program is in effect,
   (1) the maintenance frequency shall be established as prescribed in 8.6, but in no case shall maintenance visits extend beyond three months, and in no case beyond the limit specified by a manufacturers limit or other imposed which is less than three months (see CAD 2.9 for example of a one month limit)
   (2) testing shall be performed at intervals specified in Appendix N, such that;
      (a) category 1 tests are performed annually,
      (b) category 3 tests are performed every 3 years and
      (c) category 5 tests are performed every 5 years,
(b) Where the maintenance method follows B44.2-07
   (1) the maintenance frequency shall be established as prescribed in B44.2-07, but in no case shall maintenance visits extend beyond three months.
   (2) Where frequencies of maintenance, examinations or inspections identified in B44.2-07 are extended:
      (a) the altered maintenance, examination and/or inspection frequencies must take into account the age and inherent quality of the equipment, the frequency and method of usage, and the recommendation(s) by either the original manufacturer, or manufacturer’s agent, or the maintaining contractor;
      (b) the owner and maintenance contractor shall agree in writing to the altered maintenance, examination and/or inspection frequencies;
      (c) the log book shall either capture this agreement or make reference to another document where such an agreement is made;
      (d) a copy of the altered maintenance, examination and/or inspection frequency agreement shall be made available to TSSA upon request;
      (e) the interval between maintenance visits shall not exceed three (3) months;
      (f) the frequency of tests** identified in B44.2 shall not be altered; and
      (g) despite the allowance to adjust maintenance, examination or inspection frequencies as stated above, the frequency of activities listed in B44.2-07 section 5.2.1 shall not be altered.

**where the terms: ‘operate’-(or equivalent thereof), such as “governors shall be operated by hand” or ‘check’-(or equivalent thereof), such as “skirt switches shall be checked” are used, the frequency of these tests shall not be altered.

The frequency of periodic tests shall be established by the authority having jurisdiction as required by 8.11.1.3. NOTE: Recommended intervals for periodic tests can be found in Nonmandatory Appendix N.

8.6.1.7.1 Not adopted

8.6.1.7.2 Periodic Test Records
A periodic test record in the form of a log book, shall be provided and contain the applicable code requirement(s) and date(s) performed, and the name of the person performing the test, shall be kept in accordance with requirement 8.6.1.4.

8.6.1.7.3 No person shall at any time make any required safety device or electrical protective device ineffective, except where necessary during tests. Such devices shall be restored to their normal operating condition in conformity with the applicable requirements prior to returning the equipment to service (see 2.26.7).

8.6.1.7.4 All references to “Items” and “Parts” are to Items in A17.2.

8.6.2 Repairs
See 8.6.2.1 through 8.6.2.5 for general requirements for repairs.

8.6.2.1 Repair Parts. Repairs shall be made with parts of at least equivalent material, strength, and design (see 8.6.3.1).

8.6.2.2 Welding and Design.
Welding and design of welding shall conform to 8.7.1.4 and 8.7.1.5.
8.6.2.3 Repair of Speed Governors.
Where a repair is made to a speed governor that affects the tripping linkage or speed adjustment mechanism, the governor shall be checked in conformance with 8.6.4.19.2. Where a repair is made to the governor jaws or associated parts that affect the pull-through force, the governor pull-through force shall be checked in conformance with 8.6.4.19.2(b). A test tag shall be attached, indicating the date the pull-through test was performed.

8.6.2.4 Repair of Releasing Carrier.
When a repair is made to a releasing carrier, the governor rope pull-out and pull-through forces shall be verified in conformance with 8.6.4.20.2(b).

8.6.2.5 Repair of Suspension and Compensating Means and Governor Ropes.
Suspension and compensating members and governor ropes shall not be lengthened or repaired by splicing (see 8.7.2.21).

8.6.3 Replacements
8.6.3.1 Replacement Parts.
Replacements shall be made with parts of at least equivalent material, strength, and design.

8.6.3.2 Replacement Suspension Means.
Suspension means, compensation means, and governor ropes shall be replaced when they no longer conform to the requirements of ASME A17.6. Replacement of suspension means, compensation means, and governor ropes shall conform to the requirements of ASME A17.6 as stated in 8.6.3.2.1 through 8.6.3.2.3.

8.6.3.2.1 For steel wire rope, ASME A17.6, Section 1.10 shall apply.
NOTE (8.6.3.2.1): See Nonmandatory Appendix T for inspection and replacement of steel wire ropes.

8.6.3.2.2 For aramid fiber ropes, ASME A17.6, Section 2.9 shall apply.

8.6.3.2.3 For noncircular elastomeric-coated steel suspension members, ASME A17.6, Section 3.7 shall apply.

8.6.3.3 Replacement of Suspension-Means Fastenings and Hitch Plates.
Replacement of suspension-means fastenings and hitch plates shall conform to the requirements in 8.6.3.3.1 through 8.6.3.3.5.

8.6.3.3.1 When the suspension-means fastenings are replaced with an alternate means that conforms to 2.20.9, load-carrying ropes shall be in line with the shackle rod.

8.6.3.3.2 Existing hitch plates that do not permit the load-carrying ropes to remain in line with the shackle rods shall have the replacement fastening staggered in the direction of travel of the elevator and counterweight, or the hitch plates shall be replaced.

8.6.3.3.3 Replacement hitch plates shall conform to 2.15.13 and shall provide proper alignment of load carrying ropes and shackle rods.

8.6.3.3.4 Replacement fastenings shall be permitted to be installed on the car only, the counterweight only, at either of the dead-end hitches, or at both attachment points.

8.6.3.3.5 Rope fastenings at the drum connection of winding-drum machines shall comply with 8.6.4.10.2.

8.6.3.4 Replacement of Governor or Safety Rope
8.6.3.4.1 Governor ropes shall be of the same size, material, and construction as the rope specified by the governor manufacturer, except that a rope of the same size but of different material or construction shall be permitted to be installed in conformance with 8.7.2.19.
8.6.3.4.2 The replaced governor ropes shall comply with 2.18.5.

8.6.3.4.3 After a governor rope is replaced, the governor pull-through force shall be checked as specified in 8.6.4.20.2(b).

8.6.3.4.4 The date when the pull-through test was performed shall be recorded in the log book.

8.6.3.4.5 The safety rope shall comply with 2.17.12.4 and 2.17.12.5.

8.6.3.4.6 A new rope data tag conforming to 2.18.5.3 shall be installed at each rope replacement, and the date of the rope replacement shall be recorded in the maintenance records (8.6.1.4).

8.6.3.5 Belts and Chains.
If one belt or chain of a set is worn or stretched beyond that specified in the manufacturer’s recommendation, or is damaged so as to require replacement, the entire set shall be replaced.
Sprockets and toothed sheaves shall also be replaced if worn beyond that specified in the manufacturer’s recommendations.

8.6.3.6 Replacement of Speed Governor.
When a speed governor is replaced with a governor of the same make and model (see also 8.7.2.19), it shall conform to 2.18. When a releasing carrier is provided, it shall conform to 2.17.15. The governor rope shall be of the type and size specified by the governor manufacturer. The governor shall be checked in conformance with 8.6.4.20.2. Drum-operated safeties that require continuous tension in the governor rope to achieve full safety application shall be checked as specified in 8.6.4.20.1 and 8.7.2.19.

8.6.3.7 Listed/Certified Devices
8.6.3.7.1 Where a listed/certified device is replaced, the replacement shall be subject to the applicable engineering or type test as specified in 8.3, or the requirements of CSA B44.1/ASME A17.5. Hoistway door interlocks, hoistway door combination mechanical lock and electric contact, and door or gate electric contact, shall conform to the type tests specified in 2.12.4.1. The device shall be labeled by the certifying organization (see 8.6.1.1). In jurisdictions not enforcing NBCC, door panels, frames, and entrances hardware shall be provided with the instructions required by 2.11.18.

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

8.6.3.8 Replacement of Door Reopening Device.
Where a reopening device for power-operated car doors or gates is replaced (see also 8.7.2.13), the following requirements shall apply:
(a) The door closing force shall comply with the Code in effect at the time of the installation or alteration.
(b) The kinetic energy shall comply with the Code in effect at the time of the installation or alteration.
(c) When firefighters’ emergency operation is provided, door reopening devices and door closing on Phase I and Phase II shall comply with the requirements applicable at the time of installation of the firefighters’ emergency operation.

8.6.3.9 Replacement of Releasing Carrier.
Where a replacement is made to a releasing carrier, the governor rope pull-out and pull-through forces shall be verified in conformance with 8.6.4.20.2(b).
8.6.3.10 Replacement of Hydraulic Jack, Plunger, Cylinder, Tanks, and Anticreep Leveling Device
8.6.3.10.1 A hydraulic jack replacement shall be classified as an alteration and shall comply with 8.7.3.23.1.

8.6.3.10.2 A plunger replacement shall be classified as an alteration and shall comply with 8.7.3.23.2.

8.6.3.10.3 A cylinder replacement shall be classified as an alteration and shall comply with 8.7.3.23.3.

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

8.6.3.10.5 An anticreep leveling device replacement shall be classified as an alteration and shall comply with 8.7.3.31.3.

8.6.3.11 Replacement of Valves and Piping.
(a) Where any piping, or fittings are replaced, replacements shall conform to 3.19.
(b) Where any valve is replaced with a valve of the same make and model, the replacement shall conform to 3.19.
(c) Where any control or overspeed valve is replaced with a valve of different make or model, the replacement shall be classified as an alteration and shall comply with 8.7.3.24.

8.6.3.12 Runby and Clearances After Reroping or Shortening.
The minimum car and counterweight clearances specified in 2.4.6 and 2.4.9 shall 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 described in 8.6.3.12.1 through 8.6.3.12.3 (see 8.6.4.11). (see also CAD 2.4)

8.6.3.12.1 Limit the length that the suspension means are shortened.

8.6.3.12.2 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 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).

8.6.3.13 Replacement of Driving Machine (226/07)
Where a driving machine is replaced it shall be considered an alteration and shall conform to the requirements of 8.7.2.25.1(a) except that:
(a) if the elevator controllers are pre-B44-00 and the installation had ascending car overspeed and unintended car movement protection existing
   (1) ascending car overspeed and unintended car movement protection shall be retained
   (2) the detection means are permitted to meet the requirements of B44-M90 clause 3.16 or later
   (3) the means shall require manual reset

(b) if the elevator controllers are pre-B44-00 and the installation had only ascending car overspeed protection existing
   (1) ascending car overspeed protection shall be retained
   (2) the addition of unintended car movement protection is permitted
   (3) the detection means are permitted to meet the requirements of B44-M90 clause 3.16 or later
   (3) the means shall require manual reset
(c) if the elevator controllers are pre-B44-00 and ascending car overspeed and unintended car movement protection was not previously existing
   (1) ascending car overspeed and unintended car movement protection shall be provided
   (2) the detection means are permitted to meet the requirements of B44-M90 clause 3.16 or later
   (3) the means shall require manual reset

8.6.3.14 Replacement of Controller (226/07)
Where an elevator controller is replaced it shall conform to the requirements specified in 8.7.2.27.4(a) or 8.7.3.31.5(a) whichever is applicable.

8.6.3.15 Replacement of Anticreep Leveling Device (226/07)
Where an anticreep leveling device is replaced it shall conform to 8.7.3.31.3.

8.6.4 Maintenance and Testing of Electric Elevators
The maintenance and testing of electric elevators shall conform to 8.6.1 through 8.6.4.

8.6.4.1 Suspension and Compensating Means
8.6.4.1.1 Suspension and compensating means shall be kept sufficiently clean so that they can be visually inspected. Suspension Means shall be inspected at intervals not exceeding 12 months and replaced per the replacement criterion specified in A17.6 or B44.2.

8.6.4.1.2 Steel wire ropes shall be lightly lubricated. Precautions shall be taken in lubricating suspension steel wire ropes to prevent the loss of traction. Lubrication shall be in accordance with instructions on the rope data tag [see 2.20.2.2.2(n)], if provided.

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

8.6.4.2 Governor Wire Ropes
8.6.4.2.1 The ropes shall be kept clean.

8.6.4.2.2 Governor wire ropes shall not be lubricated after installation. If lubricants have been applied to governor ropes, they shall be replaced, or the lubricant removed, and the governor and safety shall be tested as specified in 8.6.4.19.2(b) and 8.6.4.18.2.

8.6.4.3 Lubrication of Guide Rails
8.6.4.3.1 The lubrication of guide rails shall be in accordance with the requirements on the crosshead data plate (see 2.17.16), where provided.

8.6.4.3.2 Where a data plate is not provided, the lubrication of guide rails shall conform to the following:
   (a) Guide rails, except those of elevators equipped with roller or other types of guiding members not requiring lubrication, shall be kept lubricated.
   (b) Where sliding-type safeties are used, the guiderail lubricants, or prelubricated or impregnated guideshoe gibs, where used, shall be of a type recommended by the manufacturer of the safety (see 8.6.1.2.3).

8.6.4.3.3 If lubricants other than those recommended by the manufacturer are used, a safety test conforming to 8.6.4.19.1 shall be made to demonstrate that the safety will function as required by 2.17.3.

8.6.4.3.4 Rails shall be kept clean and free of lint and dirt accumulation and excessive lubricant. Means shall be provided at the base of the rails to collect excess lubricant.
8.6.4.3.5 Rust-preventive compounds such as paint, mixtures of graphite and oil, and similar coatings shall not be applied to the guiding surfaces, unless recommended by the manufacturer of the safety. Once applied, the safety shall be checked as specified in 8.6.4.19.1.

8.6.4.4 Oil Buffers
8.6.4.4.1 The oil level shall be maintained at the level indicated by the manufacturer. The grade of oil to be used shall be as indicated on the buffer marking plate, where required (see 2.22.4.10 and 2.22.4.11).

8.6.4.4.2 Buffer plungers shall be kept clean and shall not be coated or painted with a substance that will interfere with their operation.

8.6.4.4.3 Buffer oil shall not be stored in the pit or hoistway or on top of the car.

8.6.4.5 Safety Mechanisms
8.6.4.5.1 Safety mechanisms shall be kept lubricated and free of rust, corrosion, and dirt that can interfere with the operation of the safety.

8.6.4.5.2 The required clearance between the safety jaws and the rail shall be maintained.

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) discs and drums
(g) brake coil and plunger

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 and checked by means that will verify its proper function and holding capacity.

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.

8.6.4.7 Cleaning of Hoistways and Pits
8.6.4.7.1 Hoistways and pits shall be kept free of dirt and rubbish and shall not be used for storage purposes.

8.6.4.7.2 Landing blocks and pipe stands shall be permitted to be stored in the pit, provided that they do not interfere with the operation of the elevator and do not present a hazard for persons working in the pit.

8.6.4.7.3 Pit access doors shall be kept closed and locked.

8.6.4.7.4 Water and oil shall not be allowed to accumulate on pit floors.

8.6.4.8 Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms
8.6.4.8.1 Floors and machinery and control spaces shall be kept free of water, dirt, rubbish, oil, and grease.

8.6.4.8.2 Articles or materials not necessary for the maintenance or operation of the elevator shall not be stored in machinery spaces, machine rooms, control spaces, and control rooms.
8.6.4.8.3 Flammable liquids having a flashpoint of less than 44°C (110°F) shall not be kept in such rooms or spaces.

8.6.4.8.4 Access doors shall be kept closed and locked.
8.6.4.8.5 Machinery spaces and control spaces located in the hoistway shall not be used for storage purposes (see also 8.6.4.7.1).

8.6.4.9 Cleaning of Top of Cars.
The tops of cars shall be kept free of oil, water, dirt, and rubbish, and shall not be used for storing lubricants, spare parts, tools, or other items.

8.6.4.10 Refastening or Resocketing of Car-Hoisting Ropes on Winding-Drum Machines

8.6.4.10.1 General.
The hoisting ropes of elevators having winding-drum driving-machines with 1:1 roping, if of the babbitted rope socket type, shall be resocketed, or for other type of fastenings, replaced or moved on the rope to a point above the existing fastening at the car ends at intervals no longer than
(a) 1 year, for machines located over the hoistway.
(b) 2 years, for machines located below or at the side of the hoistway.
(c) where auxiliary rope-fastening devices conforming to 2.20.10 are installed, refastening at the periods specified is not required, provided that, where such devices are installed, all hoisting ropes shall be refastened on the failure or indication of failure of any rope fastening.
(d) where the elevator is equipped with a drum counterweight, the fastenings shall be examined for fatigue or damage at the socket. Where fatigue or damage is detected, the ropes shall be refastened in conformance with 8.6.4.10.2.

8.6.4.10.2 Procedure.
In resocketing babbitted rope sockets or replacing other types of fastenings, a sufficient length shall be cut from the end of the rope to remove damaged or fatigued portions. The fastenings shall conform to 2.20.9. Where the drum ends of the ropes extend beyond their clamps or sockets, means shall be provided to prevent the rope ends from coming out of the inside of the drum and to prevent interference with other parts of the machine.

8.6.4.10.3 Tags. A legible metal tag shall be securely attached to one of the wire rope fastenings after each resocketing or changing to other types of fastenings and shall bear the following information:
(a) the name of the person or firm who performed the resocketing or changing of other types of fastenings and the date on which the rope was resocketed or other types of fastening changed.
(b) The material and marking of the tags shall conform to 2.16.3.3; except that the height of the letters and figures shall be not less than 1.5 mm (0.0625 in.).

8.6.4.11 Runby
8.6.4.11.1 The car and counterweight runby shall be 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 final terminal stopping device 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.

8.6.4.12 Governors
8.6.4.12.1 Governors shall be examined to ensure that all seals are intact and manually operated to determine that all moving parts, including the rope-grip jaws and switches, operate freely.

8.6.4.12.2 Governors, governor ropes, and all sheaves shall be free from contaminants or obstructions, or both, that interfere with operation or function, including the accumulation of rope lubricant or materials, or both, in the grooves of governors or sheaves.
8.6.4.13 Door Systems
8.6.4.13.1 General. All landing and car-door or gate mechanical and electrical components shall be maintained to ensure safe and proper operation at an interval not exceeding 6 months, including but not limited to, the following:
(a) hoistway door interlocks or mechanical locks and electric contacts
(b) car door electric contacts or car door interlocks, where required
(c) door reopening devices
(d) vision panels and grilles, where required
(e) hoistway door unlocking devices and escutcheons
(f) hangers, tracks, door rollers, up-thrusts, and door safety retainers, where required
(g) astragals and resilient members, door space guards, and sight guards, where required
(h) sills and bottom guides, fastenings, condition, and engagement
(i) clutches, engaging vanes, retiring cams, and engaging rollers
(j) interconnecting means
(k) door closers, where required
(l) door restrictors, where required

8.6.4.13.2 Kinetic Energy and Force Limitation for Automatic Closing, Horizontal Sliding Car and Hoistway Doors or Gates.
Where a power-operated horizontally sliding door is closed by momentary pressure or by automatic means, the closing kinetic energy and closing force shall be maintained to conform to 2.13.4 and 2.13.5.

8.6.4.14 Hoistway Access Switches.
Hoistway access switches, where provided, shall be maintained.

8.6.4.15 Car Emergency System.
Emergency operation of signaling devices (see 2.27), lighting (see 2.14.7), communication (see 2.27.1.1.2, 2.27.1.1.3, and 2.27.1.2) and ventilation (see 2.14.2.3), shall be maintained.

8.6.4.16 Stopping Accuracy.
The elevator shall be maintained to provide a stopping accuracy at the landings during normal operation as appropriate for the type of control, in accordance with applicable Code requirements.

8.6.4.17 Ascending Car Overspeed and Unintended Car Movement Protection.
Devices for ascending car overspeed and unintended car movement protection shall be maintained (see 2.19).

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

8.6.4.19 Periodic Test Requirements — Category 1.
NOTE: For test frequency, see 8.11.1.3.

8.6.4.19.1 Oil Buffers. Car and counterweight buffers shall be tested to determine conformance with the applicable plunger return requirements (Item 5.9.2.1).

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

Safeties shall be subjected to the following tests with no load in the car:

1. Type A, B, or C governor-operated safeties shall be operated by manually tripping the governor with the car operating at the slowest operating speed in the down direction. In this test, the safety shall bring the car to rest promptly. In the case of Type B safeties, the stopping distance is not required to conform to 2.17.3. In the case of Type C safeties, full oil buffer compression is not required. In the case of Type A, B, or C safeties employing rollers or dogs for application of the safety, the rollers or dogs are not required to operate their full travel (Item 2.29.2.1).

2. Governor-operated wood guide-rail safeties shall be tested by manually tripping the governor with the car at rest and moving the car in the down direction until it is brought to rest by the safety and the hoisting ropes slip on traction sheaves or become slack on winding drum sheaves (Item 2.29.2.1).

3. Type A and wood guide-rail safeties without governors which are operated as a result of the breaking or slackening of the hoisting ropes shall be tested by obtaining the necessary slack rope to cause it to function (Item 2.29.2.1).

8.6.4.19.3 Governors.
Governors shall be operated manually to determine that all parts, including those which impart the governor pull-through tension to the governor rope, operate freely [Item 2.13.2.1(a)].

8.6.4.19.4 Slack-Rope Devices on Winding Drum Machines.
Slack-rope devices on winding drum machines shall be operated manually and tested to determine conformance with the applicable requirements (Item 2.20.2.1).

8.6.4.19.5 Normal and Final Terminal Stopping Devices.
Normal and final terminal stopping devices shall be examined and tested to determine conformance with the applicable requirements (2.25) (Items 3.5.2.1 and 3.6.2.1).

8.6.4.19.6 Firefighters’ Emergency Operation.
Firefighters’ emergency operation shall be tested annually to the requirements of 8.6.11.1.
Additional testing may be performed to determine conformance with the applicable requirements (see Part 6 of A17.2).

8.6.4.19.7 Standby or Emergency Power or Emergency Lowering Operation.
Operation of elevators equipped with standby or emergency power shall be tested to determine conformance with the applicable requirements (Item 1.17.2.1). Tests shall be performed with no load in the car. Elevators equipped with auxiliary power lowering shall be tested to ensure that they comply with 3.26.10 of ASME A17.1/CSA B44. The main disconnect switch auxiliary contact shall be tested to ensure compliance with Section 38 of the Canadian Electrical Code, Part I.

8.6.4.19.8 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 1.8.1). 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.

8.6.4.19.9 Broken Rope, Tape, or Chain Switch.
Where a rope, tape, or chain is used to connect the motion of the car to the machine room normal limit, the switch that senses failure of this connection shall be tested for compliance with 2.26.2.6 (Item 3.26.1.1).

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

8.6.4.19.11 Ascending Car Overspeed Protection and Unintended Car Movement
(a) Examinations.
All working parts of ascending car overspeed protection and unintended car motion devices shall be examined to determine that they are in satisfactory operating condition and that they conform to the applicable requirements of 2.19.1.2(a) and 2.19.2.2(a).

(b) Tests.
These devices shall be subjected to tests with no load in the car at the slowest operating speed in the up direction.

Where provided, conformance with the traction-loss detection means specified in 2.20.8.1 shall be demonstrated by

(a) causing relative motion between the drive sheave and the suspension means either by bottoming the car or counterweight [see 8.6.4.20.10(b)], or

(b) an alternative test provided in the Maintenance Control Program [see 8.6.1.2.1(g)]

8.6.4.19.13 Broken-Suspension-Member and Residual-Strength Detection Means
Where provided, testing of broken-suspension and residual-strength detection means shall comply with the following:

(a) The broken-suspension-member detection means shall be tested by simulating a slack suspension member or a loss of a suspension member as appropriate (see 2.20.8.2).

(b) Suspension-member residual-strength detection means shall be tested to simulate a reduction of residual strength to 2.20.8.3.

8.6.4.19.14 Driving Machine Brakes
Testing shall be performed to ensure that the car decelerates from the rated speed when power is removed from the driving machine and brakes while empty and travelling upward at the rated speed. Any rate of deceleration shall be considered acceptable. A means other than the disconnect switch should be used to remove the power.

Where the annual testing per 8.6.4.19.14 occurs after the first five year load test conducted under 8.6.4.20.4 or 8.6.4.20.10, the following additional actions are required. [Note: Successful demonstration of 8.6.4.20.4 and 8.6.4.20.10 testing confirms proper adjustment of the driving machine brake.]

(a) Marking plates for brakes (see 2.24.8.5) shall be checked and modified where necessary to reflect a brake setting method which specifies either;
   (1) the required no load torque for both the clockwise and counter clockwise directions,
   (2) the no load braking slide distance associated with the car travelling in the up direction or
   (3) the requirements to test the driving machine brake annually with rated load.

(b) Marking plates utilizing spring length or spring force shall be replaced.

(c) Following the first five year load test, driving machine brakes shall be tested annually to ensure they are adjusted properly per the marking plate for brakes requirements.

8.6.4.20 Periodic Test Requirements — Category 5
NOTE: For test frequency, see 8.11.1.3.

Where category 5 tests require the use of load for testing purposes, alternative no load methods shall be permitted where the alternative method is acceptable to the Director.

8.6.4.20.1 Car and Counterweight Safeties.
Types A, B, and C car safeties, except those operating on wood guide rails, and their governors, shall be tested with either rated load (100% load) in the car or no load in the car. Counterweight safety tests shall be made with no load in the car. Tests for governor operated safeties shall be made by manually tripping the governor at the rated speed. The overspeed switch on the governor shall be made ineffective during the test. Type A safeties without governors that are operated as a result of the
breaking or slackening of the hoisting ropes shall be tested by obtaining the necessary slack rope to cause it to function (Item 2.29.2). The following operational conditions shall be checked (Item 2.29.2):

(a) Type B safeties (if tested with rated load) shall stop the car with the rated load within the required range of stopping distances for which the governor is tripped (Item 2.29.2).

(b) Safeties tested with no load in the car shall bring the car to rest promptly. In the case of Type B safeties, the stopping distance is not required to conform to 2.17.3. (Note: Aligns with 4.2.2.1 of B44.2-10)

(b) For Type A safeties and Type A safety parts of Type C safeties, there shall be sufficient travel of the safety rollers or dogs remaining after the test to bring the car and its rated load to rest on safety application at governor tripping speed.

Governor-operated wood guide-rail safeties shall be tested by tripping the governor by hand with the car at rest and moving the car in the down direction until it is brought to rest by the safety and the hoisting ropes slip on traction sheaves or become slack on winding drum sheaves (Item 2.29.2.). (Note: Aligns with 4.2.2.1 of B44.2-10)

NOTE: To ensure that the safety will retard the car with the minimum assistance from the elevator driving machine and minimize the development of slack rope and fallback of the counterweight, the switch on the car operated by the car safety mechanism should, for the duration of the test, be temporarily adjusted to open as close as possible to the position at which the car safety mechanism is in the fully applied position.

8.6.4.20.2 Governors

(a) The tripping speed of the governor and the speed at which the governor overspeed switch, where provided, operates shall be tested to determine conformance with the applicable requirements and the adjustable means shall be sealed (Item 2.13.2.1).

(b) The governor rope pull-through and pull-out forces shall be tested to determine conformance with the applicable requirements, and the adjustment means shall be sealed (Item 2.13.2.1).

(c) not adopted.

8.6.4.20.3 Oil Buffers

(a) Car oil buffers shall be tested to determine conformance with the applicable requirements by running the car with any load from no load up to its rated load (100% load) onto the buffer at rated speed, except as specified in 8.6.4.20.3(b) and (c) (Item 5.9.2.1). Counterweight oil buffers shall be tested by running the counterweight onto its buffer at rated speed with no load in the car, except as specified in 8.6.4.20.3(b) and (c) (Item 5.9.2.1).

(b) For reduced stroke buffers, this test shall be made at the reduced striking speed permitted (Item 5.9.2.1).

(c) This test is not required where a Type C safety is used (see 8.6.4.20.1).

(d) In making these tests, the normal and emergency terminal stopping devices shall be made temporarily inoperative. The final terminal stopping devices shall remain operative and be temporarily relocated, if necessary, to permit full compression of the buffer during the test.

8.6.4.20.4 Braking System.

For all passenger elevators and all freight elevators, the brake shall be tested for compliance with applicable requirements. Place the load as shown in Table 8.6.4.20.4 (125% load for passenger elevator) in the car and run it to the lowest landing by normal operating means. The driving machine shall safely lower, stop, and hold the car with this load. Also, see 8.6.4.20.10(a).
Freight elevators of Class C2 loading shall sustain and level the elevator car with the maximum load shown on the freight elevator loading sign (Item 2.17.2.1). (Note: Aligns with 4.6.4 of B44.2-10) For elevators installed under A17.1-2000/B44-00 and later editions, have the brake setting verified in accordance with the data on the brake marking plate.

8.6.4.20.5 Emergency and Standby Power Operation.
Not adopted. (see 8.6.4.19.5)

8.6.4.20.6 Emergency Terminal Stopping and Speed-Limiting Devices.
Emergency terminal speed-limiting devices, where provided, shall be tested for conformance with applicable requirements (2.25.4; and Item 5.3.2.1). For static control elevators, emergency terminal stopping devices, when provided, shall be tested for conformance with applicable requirements (2.25.4) (Item 2.28.2.1).

8.6.4.20.7 Power Opening of Doors.
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 power shall not be applied until the car is within 300 mm (12 in.) of the landing (Item 1.10.2).

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<thead>
<tr>
<th>Class of Service</th>
<th>Not Permitted to Carry Passengers</th>
<th>Permitted to Carry Passengers</th>
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<tbody>
<tr>
<td>Passenger</td>
<td>Not applicable</td>
<td>125% rated load</td>
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<tr>
<td>Freight</td>
<td>Rated load</td>
<td>125% rated load</td>
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<tr>
<td>One Piece Load by 2.16.7</td>
<td>Rated load or one piece load,</td>
<td>125% rated load or one piece load,</td>
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8.6.4.20.8 Leveling Zone and Leveling Speed.
Check that the leveling zone does not exceed the maximum allowable distance. Check that the leveling speed does not exceed 0.75 m/s (150 ft/min). For static control elevators, the person or firm installing or maintaining the equipment shall provide a written checkout procedure and demonstrate that the leveling speed with the doors open is limited to a maximum of 0.75 m/s (150 ft/min) and that the speed-limiting (or speed monitor) means is independent of the normal means of controlling this speed [Item 1.10.2(b)].

8.6.4.20.9 Inner Landing Zone.
For static control elevators, check that the zone in which the car can move with the doors open is not more than 75 mm (3 in.) above or below the landing (Item 1.10.2.1).

8.6.4.20.10 Emergency Stopping Distance. (Note: Aligns with 4.6.3 of B44.2-10)
Counterweight traction elevators shall be tested for traction drive limits to ensure that

(a) during an emergency stop initiated by any of the electrical protective device(s) listed in 2.26.2 (except 2.26.2.13) (except buffer switches for oil buffers used with Type C car safeties), at the rated speed in the down direction, with passenger elevators and freight elevators permitted to carry passengers carrying 125% of their rated load, or with freight elevators carrying their rated load, cars shall stop and safely hold the load.

(b) if either the car or the counterweight bottoms on its buffers or becomes otherwise immovable
(1) the ropes shall slip in the drive sheave and not allow the car or counterweight to be raised; or
(2) the driving system shall stall and not allow the car or counterweight to be raised.

8.6.4.20.11 Emergency Brake. (Note: Aligns with 4.29 of B44.2-10)
For passenger elevators and all freight elevators, the emergency brake shall be tested at rated speed in the up direction with no load in the car for compliance with 2.19.3.2.

8.6.4.21 Drive Sheaves With Nonmetallic Groove Surfaces and Steel Wire Ropes.
Where steel wire ropes have worn through a nonmetallic drive-sheave groove surface and have not damaged the supporting sheave surface beneath the nonmetallic sheave groove surface, the groove surfaces shall be replaced and the steel wire ropes shall be inspected for conformance to the criteria of ASME A17.6, Section 1.10, and replaced, if necessary. Where the sheave-supporting surfaces have been damaged, the drive sheave shall also be replaced or repaired and the groove surfaces shall be replaced.

8.6.5 Maintenance and Testing of Hydraulic Elevators
The maintenance and testing of hydraulic elevators shall conform to 8.6.1 through 8.6.3, and the applicable requirements of 8.6.4 and 8.6.5.

8.6.5.1 Pressure Tanks
8.6.5.1.1 Cleaning.
Pressure tanks shall be thoroughly cleaned internally at least every 3 years and prior to the inspection and test required by 8.6.5.15.

8.6.5.1.2 Level.
The liquid level in pressure tanks should be maintained at about two-thirds of the capacity of the tank.

8.6.5.2 Piston Rods.
Piston rods of roped-hydraulic elevators shall be thoroughly cleaned prior to the test required by 8.6.5.15.

8.6.5.3 Water-Hydraulic Plungers.
Plungers of water-hydraulic elevators shall be thoroughly cleaned to remove any buildup of rust and scale prior to the test required by 8.6.5.15.

8.6.5.4 Tank Levels.
The level of oil in the oil tanks shall be checked and, where necessary, adjusted to comply with the prescribed minimum and maximum level.

8.6.5.5 Gland Packings and Seals
8.6.5.5.1 Examination and Maintenance.
Where pressure piping, valves, and cylinders use packing glands or seals, they shall be examined and maintained to prevent excessive loss of fluid. When a cylinder packing or seal or a pressure-piping seal is replaced, the integrity of the entire hydraulic system shall be verified by operating it at relief-valve pressure for not less than 15 sec.

8.6.5.5.2 Collection of Oil Leakage.
Oil leakage collected from each cylinder head seals or packing gland shall not exceed 19 L (5 gal) before removal. The container shall be covered and shall not be permitted to overflow.

8.6.5.6 Flexible Hoses and Fittings.
Flexible hose and fittings assemblies installed between the check valve or control valve and the cylinder, and that are not equipped with an overspeed valve conforming to 3.19.4.7, shall be replaced not more than 6 years beyond the installation date. Existing hose assemblies that do not indicate an installation or replacement date shall be replaced. Replacements shall conform to 3.19.3.3.1(a) through (e) and 3.19.3.3.2.

8.6.5.7 Record of Oil Usage.
(a) Oil monitoring shall conform to 2.9 of the Code Adoption Document.
(b) When the quantity of hydraulic fluid loss cannot be accounted for, the test specified in 8.6.5.14.1 and 8.6.5.14.2 shall be made.

8.6.5.8 Safety Bulkhead.
Not later than 3 years, after the adoption of the code in part 3.1 of the CAD, Hydraulic cylinders installed below ground shall conform to 3.18.3.4, or the elevator shall conform to 8.6.5.8(a) or 8.6.5.8(b):
(a) the elevator shall be provided with car safeties conforming to 3.17.1 and guide rails, guide-rail supports, and fastenings conforming to 3.23.1; or
(b) the elevator shall be provided with a plunger gripper conforming to 3.17.3. The plunger gripper shall grip the plunger when the applicable maximum governor tripping speed in Table 2.18.2.1 is achieved.

8.6.5.9 Relief-Valve Setting.
The relief-valve adjustment shall be examined to ensure that the seal is intact. If the relief-valve seal is not intact, checks shall be conducted in accordance with 8.11.3.2.1.

8.6.5.10 Runby and Clearances After Reroping or Shortening.
The minimum car and counterweight clearances and runby shall be maintained in compliance with the applicable code when replacement suspension ropes are installed or when existing suspension ropes are shortened.

8.6.5.11 Cylinder Corrosion Protection and Monitoring
8.6.5.11.1 Corrosion Protection Monitoring.
Where monitored cylinder corrosion protection is required, the monitoring means shall be examined and maintained.

8.6.5.11.2 Corrosion Protection Loss.
If the monitoring means detects that loss of corrosion protection has occurred, the means of corrosion protection shall be repaired or replaced.

8.6.5.12 Anticreep and Low Oil Protection.
The anticreep function and low oil protection shall be maintained to operate in compliance with the applicable code.

8.6.5.13 Overspeed Valve Setting.
All elevators provided with field adjustable overspeed valves shall have the adjustment means examined to ensure the seal is intact. If the overspeed adjustment seal is not intact, compliance with 8.6.5.16.5 shall be verified and a new seal shall be installed.

8.6.5.14 Periodic Test Requirements — Category 1
NOTE: For test frequency, see 8.11.1.3.

8.6.5.14.1 Relief Valve Setting and System Pressure Test.
The relief valve setting shall be tested to determine that it will bypass the full output of the pump before the pressure exceeds 150% of the working pressure and that the system will withstand this pressure. It shall be sealed if the relief valve setting is altered or if the seal is broken (Item 2.31).

8.6.5.14.2 Hydraulic Cylinders and Pressure Piping.
This test shall be performed after the relief valve setting and system pressure test in 8.6.5.14.1:
(a) Cylinders and pressure piping that are exposed shall be visually examined.
(b) Cylinders and pressure piping that are not exposed shall be tested for leakage, which cannot be accounted for by the visual examination in 8.6.5.14.2(a) (Item 2.36.2). The duration of the test shall be for a minimum of 15 min (Item 2.36.2).

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)
(e) Firefighters’ Emergency Operation (8.6.4.19.6) (Items 6.3 and 6.4)
(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)

8.6.5.14.4 Flexible Hose and Fitting Assemblies.
Flexible hose and fitting assemblies shall be tested at the relief valve setting pressure for a minimum of 30 s. Any signs of leakage, slippage of hose fittings, damage to outer hose covering sufficient to expose reinforcement, or bulging, or distortions of the hose body is cause for replacement.

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

8.6.5.14.5 Pressure Switch.
The pressure switch and its related circuits shall be tested for conformance with applicable requirements (3.26.8) (Item 2.37).

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.

8.6.5.14.7 Slack-Rope Device.
The slack-rope device shall be tested on a roped hydraulic elevator by causing a slack-rope condition to occur and verify that it will remove power in compliance with 3.18.1.2.7 (Item 3.31.2).

8.6.5.14.8 Plunger Gripper
A plunger gripper, where provided, shall be examined and tested per 8.10.3.2.5(n), except testing is permitted to be performed without rated load.

8.6.5.15 Periodic Test Requirements — Category 3
NOTE: For test frequency, see 8.11.1.3.

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

8.6.5.15.2 Pressure Vessels.
Pressure vessels shall be checked to determine conformance with the applicable requirements, thoroughly cleaned, internally examined, and then subjected to a hydrostatic test at 150% of the working pressure for 1 min (3.24.4) (Item 2.33).

8.6.5.16 Periodic Test Requirements — Category 5
NOTE: For test frequency, see 8.11.1.3.

8.6.5.16.1 Governors, safeties, and oil buffers, where provided, shall be inspected and tested as specified in 8.6.4.20.1, 8.6.4.20.2, and 8.6.4.20.3 at intervals specified by the authority having jurisdiction. Where activation is allowed or required both by overspeed and slack rope, the safety shall have both means of activation tested.

8.6.5.16.2 Coated ropes shall be required to have a magnetic flux test capable of detecting broken wires, in addition to a visual examination.

8.6.5.16.3 Wire rope fastenings shall be examined in accordance with Item 3.23 of A17.2. Fastenings on roped-hydraulic elevators utilizing pistons that are hidden by cylinder head seals shall also be examined, even if it is temporarily necessary to support the car by other means and disassemble the cylinder head.

8.6.5.16.4 Not adopted (see 8.6.5.14.8).
8.6.5.16.5 Overspeed valves, where provided, shall be inspected and tested to verify that they will stop the car, traveling down with rated load, within the specified limits of 3.19.4.7.5(a) using a written procedure supplied by the valve manufacturer or the person or firm maintaining the equipment. If the seal has been altered or broken, the overspeed valve shall be resealed after successful test (Item 5.15.2).

8.6.5.16.6 Freight elevators of Class C2 loading shall sustain and level the elevator car with the maximum load shown on the freight elevator loading sign (Item 2.17.2.2).

8.6.6 Maintenance and Testing of Elevators With Other Types of Driving Machines

8.6.6.1 Rack-and-Pinion Elevators.
The maintenance of rack-and-pinion elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6. Where the car and/or counterweight safeties are sealed to prevent field adjustment and examination, they shall be returned to the manufacturer for replacement of components and calibration at the interval recommended by the manufacturer. A data plate shall be installed to show the date that the next maintenance/calibration is due.

8.6.6.1.1 Rack-and-Pinion Elevator Periodic Test.
Rack-and-pinion elevators shall be subject to the applicable periodic tests specified in 8.6.4.19, 8.6.4.20, and 8.6.5.14 through 8.6.5.16. The test requirements shall apply to the corresponding requirements of 4.1. Any additional requirements for this equipment shall also be checked during these tests.

8.6.6.2 Screw-Column Elevators.
The maintenance of screw-column elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

8.6.6.2.1 Screw-Column Elevator Periodic Test.
Screw-column elevators shall be subject to the applicable periodic tests specified in 8.6.4.19, 8.6.4.20, and 8.6.5.14 through 8.6.5.16. The test requirements shall apply to the corresponding requirements of 4.2. Any additional requirements for this equipment shall also be checked during these tests.

8.6.6.3 Hand Elevators.
The maintenance of hand elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

8.6.6.3.1 Hand Elevator Periodic Test.
Hand elevators shall be subject to the applicable periodic tests specified in 8.6.4.19 and 8.6.4.20. The test requirements shall apply to the corresponding requirements in 4.3. Any additional requirements for this equipment shall also be checked during these tests. The driving-machine brake required by 4.3.19.2 shall be tested with both empty car and rated load in the car.

8.6.7 Maintenance and Testing of Special Application Elevators

8.6.7.1 Inclined Elevators.
The maintenance of inclined elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

8.6.7.1.1 Periodic Test.
Inclined elevators shall be subject to the applicable periodic tests specified in 8.6.4.19, 8.6.4.20, and 8.6.5.14 through 8.6.5.16. The test requirements shall apply to the corresponding requirements in 5.1. Any additional requirements for this equipment shall also be checked during these tests.

8.6.7.2 Limited-Use/Limited-Application Elevators.
The maintenance of limited-use/limited-application elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

8.6.7.2.1 Periodic Test.
Limited-use/limited applications elevators shall be subject to the applicable periodic tests specified in 8.6.4.19, 8.6.4.20, and 8.6.5.14 through 8.6.5.16. The test requirements shall apply to the corresponding requirements of 5.2. Any additional requirements for this equipment shall also be checked during these tests.

8.6.7.5 Power Sidewalk Elevators.
The maintenance of power sidewalk elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

8.6.7.5.1 Periodic Test.
Sidewalk elevators shall be subject to the applicable periodic tests specified in 8.6.4.19, 8.6.4.20, and 8.6.5.14 through 8.6.5.16. The test requirements shall apply to the corresponding requirements in 5.5. Any additional requirements for this equipment shall also be checked during these tests.

8.6.7.6 Rooftop Elevators.
The maintenance of rooftop elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

8.6.7.6.1 Periodic Test.
Rooftop elevators shall be subject to the applicable periodic tests specified in 8.6.4.19, 8.6.4.20, and 8.6.5.14 through 8.6.5.16. The test requirements shall apply to the corresponding requirements of 5.6. Any additional requirements for this equipment shall also be checked during these tests.

8.6.7.10 Elevators Used for Construction.
The maintenance of elevators used for construction shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

8.6.7.10.1 Periodic Test Requirements — Category 1.
For electric elevators, test as specified in 8.6.4.19.1 through 8.6.4.19.5. For hydraulic elevators, test as specified in 8.6.5.14.1, 8.6.5.14.2, 8.6.5.14.3(a) through (d), and 8.6.5.14.4. Where permanent doors have been installed, test as specified in 8.6.4.19.8.

8.6.7.10.2 Periodic Test Requirements — Category 3.
For hydraulic elevators, test as specified in 8.6.5.15.

8.6.7.10.3 Periodic Test Requirements — Category 5.
For electric elevators, test as specified in 8.6.4.20.1 through 8.6.4.20.4, and 8.6.4.20.6. For hydraulic elevators, test as specified in 8.6.5.16.

8.6.8 Maintenance and Testing of Escalators and Moving Walks
(a) The maintenance of escalators shall conform to 8.6.1 through 8.6.3 and 8.6.8.

(b) Not later than 3 years after the adoption of the code in part 3.1 of the CAD, escalators shall be brought into conformance with the requirements of 8.6.8.2 and 8.6.8.3.3.

(1) Until that time, escalators installed to CSA B44-75s3 (1982) or earlier, and for escalators where the skirt panels are not made of low-friction material or have not been permanently treated with a friction-reducing material, a friction-reducing agent shall be applied monthly by authorized personnel. [241/10]

(2) Skirt panels brought into conformance with 8.6.8.2 and 8.6.8.3.3, shall be maintained to these requirements and the application of friction-reducing agents will no longer be permitted.

8.6.8.1 Handrails.
Handrails shall operate at the speed specified in the applicable codes. The handrail speed monitoring device, when provided, shall cause electric power to be removed from the driving-machine motor and brake when the speed of either handrail deviates from the step speed by 15% or more and continuously within a 2 s to 6 s range. Cracked or damaged handrails that present a pinching effect shall be repaired or replaced. Splicing of handrails shall be done in such a manner that the joint is free of pinching effect.
8.6.8.2 Step-to-Skirt Clearance.
Clearances shall be maintained in compliance with the applicable codes. Alternatively, the clearance on either side of the steps and between the steps and the adjacent skirt guard shall not exceed 4 mm (0.16 in.) and the sum of the clearances on both sides shall not exceed 7 mm (0.28 in.).

NOTE (on CSA B44 Requirements): The allowable clearances are applicable as follows:
(a) B44-1960 through B44S3-1982 — not more than 4.8 mm (0.1875 in.) on each side. Sum of both sides not more than 6.4 mm (0.25 in.).
(b) B44-1985 through B44S2-1998 — Not more than 5 mm (0.197 in.) on each side. Sum of both sides not more than 6 mm (0.236 in.).
(c) For equipment installed under CSA B44-00—not more than 4 mm (0.157 in.) on each side. Sum of both sides not more than 7 mm (0.28 in.)
(d) For equipment installed under CSA B44-00 Update 1 and later editions — clearance (loaded gap) shall be not more than 5 mm (0.2 in.) when 110 N (25 lbf) force is laterally applied from the step to the adjacent skirt panel. See 6.1.3.3.5.

8.6.8.3 Step/Skirt Performance Index
8.6.8.3.1 The step/skirt performance index, when the escalator is subjected to the test specified in 8.6.8.15.19, shall be the maximum value of the recorded instantaneous step/skirt index $e^y/(e^y + 1)$, where
(SI Units)
\[ e = 2.7183 \]
\[ y = -3.77 + 2.37 (u) + 0.37 (Lg) \]
u = the sliding coefficient of friction of a polycarbonate test specimen on the skirt panel at the measurement point calculated when subjected to a 110 N normal load. The coefficient of friction shall be measured without addition of any field-applied lubricant.
Lg = the clearance between the step and the adjacent skirt panel when 110 N is applied from the step to skirt panel, mm

The applied load shall not deviate from 110 N by more than ±11 N. The load shall be distributed over a round or square area not less than 1 940 mm² and not more than 3 870 mm².

(Imperial Units)
\[ e = 2.7183 \]
\[ y = -3.77 + 2.37 (u) + 9.3 (Lg) \]
u = the sliding coefficient of friction of a polycarbonate test specimen on the skirt panel at the measurement point calculated when subjected to a 25 lbf normal load. The coefficient of friction shall be measured without addition of any field-applied lubricant.
Lg = the clearance between the step and the adjacent skirt panel when 25 lbf is applied from the step to skirt panel, in.

The applied load shall not deviate from 25 lbf by more than ±2.5 lbf. The load shall be distributed over a round or square area not less than 3 in.² and not more than 6 in.²

8.6.8.3.2 The step/skirt performance index polycarbonate test specimen shall conform to the following specifications:
(a) Material: Polycarbonate without fillers
(b) Color: Natural, no pigments
(c) Finish: Glossy (roughness less than 0.8 µm (32 µin.)
(d) Area in contact with skirt panel: 2 900 ± 325 mm² (4.5 ± 0.5 in.²) and at least 0.8 mm (0.03 in.) thick
(e) Specification: GE Lexan 100 series or equivalent polycarbonate

8.6.8.3.3 The escalator step/skirt performance index shall be one of the following, whichever is applicable:
(a) $\leq 0.15$
(b) \( \leq 0.25 \) for escalators installed under ASME A17.1a-2002/CSA B44-00 Update 1 and later editions and when a skirt deflector device complying with the requirements of 6.1.3.7 is provided
(c) \( \leq 0.4 \) for escalators installed under ASME A17.1-2000/CSA B44-00 and earlier editions and a skirt deflector device is provided

8.6.8.4 Combs
8.6.8.4.1 Combs with any broken teeth shall be repaired or replaced. Where two adjacent teeth are missing, the escalator shall be removed from operation.

8.6.8.4.2 Combs shall be adjusted and maintained in mesh with the slots in the step surface so that the points of the teeth are always below the upper surface of the treads.

8.6.8.4.3 For units installed under A17.1b-1992 and later editions of the Code, comb-step impact devices shall be adjusted to operate in compliance with the forces specified in 6.1.6.3.13.

8.6.8.5 Escalator Skirt Panels and Skirt Obstruction Devices
(a) The exposed surface of the skirt panels adjacent to the steps, if not made from, shall be treated with, a friction-reducing material. Damaged skirt or dynamic skirt panels shall be replaced or repaired.
(b) The skirt obstruction devices shall be checked for proper adjustment and operation.

8.6.8.6 Steps
8.6.8.6.1 Steps with broken treads shall be repaired or replaced.
8.6.8.6.2 Steps with dented or damaged risers shall be repaired or replaced.
8.6.8.6.3 Steps that are worn or damaged and that do not provide proper engagement with the combs shall be repaired or replaced.
8.6.8.6.4 The width or depth of the slots in the tread surface of steps that do not meet the applicable Code requirements shall be repaired or replaced.

8.6.8.7 Rollers, Tracks, and Chains. Rollers, tracks, and chains shall be examined, repaired, or replaced when necessary to ensure required clearances.

8.6.8.8 Signs. Caution signs shall be provided in compliance with 6.1.6.9. Damaged or missing signs shall be replaced. Additional signs, if provided, shall comply with 6.1.6.9.

8.6.8.9 Guards at Ceiling Intersections. Damaged or missing guards shall be repaired or replaced in compliance with 6.1.3.3.11.

8.6.8.10 Antislide Devices. Damaged or missing antislide devices shall be repaired or replaced.

8.6.8.11 Handrail Guards. Damaged or missing hand or finger guards shall be repaired or replaced.

8.6.8.12 Brakes. Brakes shall be maintained in compliance with the applicable requirements of 8.6.4.6, and adjusted to the torque shown on the data plate, where provided.

8.6.8.13 Cleaning. The interiors of escalators and their components shall be cleaned to prevent an accumulation of oil, grease, lint, dirt, and refuse. The frequency of the cleaning will depend on service and conditions, but an examination to determine if cleaning is necessary shall be required at least once a year.
8.6.8.14 Entrance and Egress Ends.
Escalator landing plates shall be properly secured in place. Landing plates shall be kept free of tripping hazards and maintained to provide a secure foothold. All required entrance and exit safety zones shall be kept free from obstructions.

8.6.8.15 Periodic Test Requirements — Category 1
NOTE: For test frequency, see 8.11.1.3.

8.6.8.15.1 Machine Space.
The machine space access, lighting, receptacles, operation, and conditions shall be examined (Items 8.1 and 10.1). All escalator components shall be cleaned and examined. These components shall include, but not be limited to:
(a) oil drip pans
(b) upper and lower stations
(c) steps and rollers
(d) step frames, risers, and treads
(e) tracks
(f) truss components

8.6.8.15.2 Stop Switch.
The machine space stop switches shall be tested (Items 8.2 and 10.2).

8.6.8.15.3 Controller and Wiring.
Controller and wiring shall be examined (Items 8.3 and 10.3).

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).

8.6.8.15.5 Speed Governor.
The mechanical speed governor, if required, shall be tested by manually operating the trip mechanism (Items 8.5 and 10.5).

8.6.8.15.6 Broken Drive-Chain Device.
Operation of the broken drive-chain device, on the drive chain, shall be tested by manually operating the actuating mechanism (Items 8.6 and 10.6).

8.6.8.15.7 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 (Items 8.7 and 10.7). If the device cannot be manually operated, the person or firm maintaining the equipment shall provide a written checkout procedure and demonstrate the device complies with the requirements of the Code.

8.6.8.15.8 Broken Step-Chain or Treadway Device.
The broken or slack step-chain or treadway device shall be tested by manual operation (Items 8.8 and 10.8).

8.6.8.15.9 Step Upthrust Device.
The operation of the step upthrust device shall be tested by manually displacing the step, causing the device to operate (Items 7.9 and 8.9).

8.6.8.15.10 Missing Step or Pallet Device.
The missing step or pallet device shall be tested by removing a step or pallet and verifying that the device will properly function (Items 8.10 and 10.10).

8.6.8.15.11 Step or Pallet Level Device.
The step, or pallet level device shall be tested by simulating an out of level step or pallet and verifying that the device functions properly (Items 8.11 and 10.11).

### 8.6.8.15.12 Steps, Pallet, Step or Pallet Chain, and Trusses.
The steps, pallet, step or pallet chain, and trusses shall be visually examined for structural defects, mechanical condition, and buildup of combustible materials (Items 8.12 and 10.12).

### 8.6.8.15.13 Handrail Safety Systems.
The handrail operating system shall be visually examined for condition. The handrail entry device, and the stopped handrail or handrail speed monitoring device, shall be tested by disconnecting of handrail motion sensor (Items 8.13 and 10.13). The person or firm maintaining 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 code, is applied opposite to the direction of travel (Items 7.3 and 9.3).

### 8.6.8.15.14 For outdoor escalators and moving walks that require heaters, test the heaters for condition and operation (Items 8.3 and 10.3).

### 8.6.8.15.15 Permissible Stretch in Escalator Chains.
Escalators shall have periodic examination of the clearance between successive steps to detect wear or stretch of the step chains. The clearance shall not exceed 6 mm (0.25 in.) (Item 7.9).

### 8.6.8.15.16 Disconnected Motor Safety Device.
Operation of the device shall be tested and verified (see 6.1.6.3.10 or 6.2.6.3.8) (Item 8.6 or 10.6).

### 8.6.8.15.17 Response to Smoke Detectors (6.1.6.8 or 6.2.6.7) (Items 8.15 and 10.15)

### 8.6.8.15.18 Comb-Step or Comb-Pallet Impact Device.
For escalator or moving walks required to comply with Rules 805.1u, 805.3n, 905.1r, or 905.3k in A17.1d-2000 or earlier editions, or requirements 6.1.6.3.13 or 6.2.6.3.11, the comb-step/pallet-impact devices shall be tested in both the vertical and horizontal directions by placing a vertical and horizontal force on the combplate to cause operation of the device. The vertical and horizontal tests shall be independent of each other. The horizontal force shall be applied at the front edge center and both sides; the force shall be applied in the direction of travel into the combplate. The vertical force shall be applied at the front edge center. Both the vertical and horizontal forces required to operate the device shall be recorded (6.1.6.3.13 and 6.2.6.3.11; Items 7.7.2 and 9.7.2). See 8.6.9.2.3 for horizontal forces required.

### 8.6.8.15.19 Step/Skirt Performance Index
(a) The escalator skirt shall not be cleaned, lubricated, or otherwise modified in preparation for testing. The escalator instantaneous step/skirt index measurements [6.1.3.3.9(a)] shall be recorded at intervals no larger than 150 mm (6 in.) from each side of two distinct steps along the inclined portion of the escalator, where the steps are fully extended. Test steps shall be separated by a minimum of 8 steps.

(b) A load of 110 N (25 lbf) shall be laterally applied from the step to the adjacent skirt panel. The applied load shall not deviate from 110 N (25 lbf) by more than ±11 N (2.5 lbf). The load shall be distributed over a round or square area not less than 1 940 mm² (3 in.²) and not more than 3 870 mm² (6 in.²).

(c) No vertical load exceeding 220 N (50 lbf) shall be applied to the test step and adjacent steps.

(d) The coefficient of friction shall be measured with the test specimen conforming to the requirements of 8.6.8.3.2 sliding in the direction of the step motion under a 110 N (25 lbf) normal force at the operating speed of the escalator and shall be measured with devices having sensitivity better than ±2.2 N (0.5 lbf). The direction of step motion shall be the direction of normal operation. If the escalator is operated in both directions, the down direction shall be used for the test.
(e) For both the coefficient of friction measurement and the loaded gap measurements, the center of the applied load shall be between 25 mm (1 in.) and 100 mm (4 in.) below the nose line of the steps. The center of the applied load shall be not more than 250 mm (10 in.) from the nose of the step. See Fig. 8.6.8.15.19(e).

(f) The step/skirt performance index shall conform to the requirements in 8.6.8.3 or A17.3, Requirement 5.1.11 (Item 7.17).

8.6.8.15.20 Clearance Between Step and Skirt (Loaded Gap).
Escalators installed under ASME A17.1d–2000 shall be tested as follows (Item 7.17):
(a) Loaded gap measurements shall be taken at intervals not exceeding 300 mm (12 in.) in transition region (6.1.3.6.5) and before the steps are fully extended. These measurements shall be made independently on each side of the escalator.

(b) The applied load shall not deviate from 110 N (25 lbf) by more than ±11 N (2.5 lbf) (6.1.3.3.5). The load shall be distributed over a round or square area no less than 1 940 mm2 (3 in.2) and no more than 3 870 mm2 (6 in.2).

(c) For the loaded gap measurements, the center of the applied load shall be between 25 mm (1 in.) and 100 mm (4 in.) below the nose line of the steps. The center of the applied load shall be not more than 250 mm (10 in.) from the nose of the step. See Fig. 8.6.8.15.19(e).

8.6.8.15.21 Inspection control devices shall be tested and inspected to determine conformance with the requirements of 6.1.6.2.2 for escalators and 6.2.6.2.2 for moving walks.

8.6.8.15.22 Step Lateral Displacement Device (6.1.6.3.14).
For curved escalators, manually test the device.

8.6.8.15.23 Seismic Risk Zones 2 or Greater.
Verify that operation of the seismic switch complies with requirements of 8.5.4 (Items 7.20.2 and 9.20.2).

8.6.9 Maintenance of Moving Walks
The maintenance of moving walks shall conform to 8.6.1 through 8.6.3 and 8.6.9.

8.6.9.1 Handrails.
Handrails shall operate at the speed specified in applicable codes. The handrail speed monitoring device, when provided, shall cause electric power to be removed from the driving machine motor and brake when the speed of either handrail deviates from the treadway by 15% or more and continuously within a 2 s to 6 s range. Cracked or damaged handrails that present a pinching effect shall be repaired or replaced. Splicing of handrails shall be done in such a manner that the joint is free of pinching effect.

8.6.9.2 Combs
8.6.9.2.1 Combs with any broken teeth shall be repaired or replaced.

8.6.9.2.2 Combs shall be adjusted and maintained in mesh with the slots in the treadway surface so that the points of the teeth are always below the upper surface of the treads.

8.6.9.2.3 For units installed under A17.1b–1992 and later editions of the Code, comb-pallet impact devices shall be adjusted to operate in compliance with the forces specified in 6.2.6.3.11.

8.6.9.3 Pallets
8.6.9.3.1 Pallets with broken treads shall be repaired or replaced.

8.6.9.3.2 Intermeshing moving walk pallets that are damaged at the mesh shall be repaired or replaced.

8.6.9.3.3 Pallets that are worn or damaged and that do not provide proper engagement with the
complates shall be repaired or replaced.

8.6.9.3.4 The width or depth of the slots in the tread surface of pallets that do not meet the applicable Code requirements shall be repaired or replaced.

8.6.9.4 Rollers, Tracks, and Chains.
Rollers, tracks, and chains shall be examined, repaired, or replaced when necessary to ensure required clearances.

8.6.9.5 Belt-Type Treadway.
Belt-type treadways that are damaged or worn in such a manner that the treadmill does not provide a continuous unbroken treadway surface or proper engagement with the complates shall be repaired or replaced.

8.6.9.6 Signs.
Caution signs shall be provided in compliance with 6.2.6.8. Damaged or missing signs shall be replaced. Additional signs, if provided, shall comply with 6.2.6.8.

8.6.9.7 Guards at Ceiling Intersections.
Damaged or missing guards shall be repaired or replaced in compliance with 6.2.3.3.7.

8.6.9.8 Antislide Devices.
Damaged or missing antislide devices shall be repaired or replaced.

8.6.9.9 Handrail Guards.
Damaged or missing hand or finger guards shall be repaired or replaced.

8.6.9.10 Brakes.
Brakes shall be maintained in compliance with the applicable requirements of 8.6.4.6, and adjusted to the torque shown on the data plate, where provided.

8.6.9.11 Cleaning.
The interiors of moving walks, and their components shall be cleaned to prevent an accumulation of oil, grease, lint, dirt, and refuse. The frequency of the cleaning will depend on service and conditions, but an examination to determine if cleaning is necessary shall be required at least once a year.

8.6.9.12 Entrance and Egress Ends.
Moving walk landing plates shall be properly secured in place. Landing plates shall be kept free of tripping hazards and maintained to provide a secure foothold. All required entrance and exit safety zones shall be kept free from obstructions.

8.6.9.13 Clearances.
The clearance between each side of the treadway and the adjacent skirt panels, when provided, shall be maintained in compliance with 6.2.3.3.6. The clearance between the top surface of the treadway and the underside of the balustrade shall be maintained in compliance with 6.2.3.3.5 for skirtless balustrades.

8.6.10 Maintenance and Testing of Dumbwaiters and Material Lifts
8.6.10.1 Material Lifts and Dumbwaiters Without Automatic Transfer Devices.
The maintenance of material lifts and dumbwaiters without automatic transfer devices shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

8.6.10.1.1 Periodic Test.
Dumbwaiters shall be subject to the applicable periodic tests specified in 8.6.4.19 and 8.6.5.14. The test requirements shall apply to the corresponding requirements in Part 7. Any additional requirements for this equipment shall also be checked during these tests. On winding drum machines, the slack-rope devices required by 2.26.2.1 shall be permitted to be tested as specified in Item 2.18. The driving-machine brake shall be tested to determine conformance with 7.2.10 (Item 2.18).
8.6.10.2 Material Lifts and Dumbwaiters With Automatic Transfer Devices.
The maintenance of material lifts and dumbwaiters with automatic transfer devices shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

8.6.10.2.1 Periodic Test.
Material lifts and dumbwaiters with automatic transfer devices shall be subject to the applicable periodic tests specified in 8.6.4.19 and 8.6.5.14. The test requirements shall apply to the corresponding requirements in Part 7. Any additional requirements for this equipment shall also be checked during these tests.

8.6.11 Special Provisions
8.6.11.1 Firefighters’ Emergency Operation. (239/10)
(a) Elevators that incorporate any form of Firefighters’ Emergency Operation are required to have this operating mode tested on an annual basis to verify that the firefighters’ feature is operational and ready for use by firefighters or emergency personnel if required during a fire or other emergency.
(b) The minimum required inspection checks shall be those listed on the form “Maintenance Checklist for Firefighters’ Emergency Operation - Record of Inspection Checks”
(c) The owner or the owner’s authorized agent may perform the necessary annual testing provided they are trained and instructed in the use of Firefighters’ Emergency Operation and the testing requirements.
(d) The owner or the owner’s authorized agent shall record the results of the test on the form provided by the designated administrative authority or on a form containing not less than the tests prescribed on this form, and shall leave a copy at the location of the log book.
(e) A record of findings shall be recorded and shall be available to elevator personnel and to the authority having jurisdiction.
(f) Any deficiencies found during the testing shall be recorded and rectified.
(g) Despite, (d) and (e) where the owner’s authorized agent is a registered elevating devices contractor employing an appropriately qualified EDM mechanic capable of rectifying deficiencies’, a single log book entry shall be permitted to indicate a successful test of Firefighters’ Emergency Operation.

Note:
1) It is the responsibility of the elevating devices owner to ensure firefighters’ emergency operation testing is performed annually.
2) Section 7.2 of the Ontario Fire Code requires testing at three month intervals in high buildings.

8.6.11.2 Two-Way Communications Means. The two-way communications means shall be checked annually by authorized personnel in accordance with the following:
(a) Two-way communications means shall be checked to verify that two-way communications is established; or
(b) All elevators installed under ASME A17.1a-2002/ CSA B44-00 Update 1 and later editions shall have the two-way communications means checked by pressing the “HELP” button in the car to verify that the visual indicator [2.27.1.1.3(c)] is functional and that the answering authorized personnel can receive the building location and elevator number [2.27.1.1.3(d)]; and
(c) Where communications from the building into the elevator is provided, check the two-way communications means to each car.
8.6.11.3 Access Keys.
Keys required for access, operation, inspection, maintenance, repair, and emergency access shall be made available only to personnel in the assigned security level, in accordance with 8.1.

8.6.11.4 Cleaning of a Car and Hoistway Transparent Enclosure
8.6.11.4.1 The cleaning of the exterior of transparent car enclosures or transparent hoistway enclosures from inside the hoistway shall be performed only by authorized personnel (see 1.3) trained in compliance with the procedures specified in 8.6.11.4.2 and 8.6.11.4.3.

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.

8.6.11.4.3 The procedure shall identify the hazards and detail the safety precautions to be utilized.

8.6.11.4.4 All personnel assigned to cleaning shall be given a copy of these procedures and all necessary training to assure that they understand and comply with the procedures.

8.6.11.4.5 A record of authorized personnel trained as specified in 8.6.11.4.4 shall be kept on the premises where the elevator is located and shall be available to the authority having jurisdiction.

8.6.11.5 Emergency Evacuation Procedures for Elevators
8.6.11.5.1 The evacuation of passengers from stalled elevators shall be performed only by authorized, elevator and emergency personnel (see 1.3) in compliance with the procedures specified in 8.6.11.5.2 through 8.6.11.5.6.

8.6.11.5.2 A written emergency evacuation procedure shall be made and kept on the premises where an elevator is located.

8.6.11.5.3 The procedure shall identify the hazards. The procedure shall also detail the safety precautions utilized in evacuating passengers from a stalled elevator.

8.6.11.5.4 All authorized personnel who are assigned to assist in evacuating passengers from a stalled elevator, and all persons who use special purpose personnel elevators, shall be given a copy of these procedures and all necessary training to assure that they understand and comply with the procedures.

8.6.11.5.5 These procedures shall be available to authorized elevator and emergency personnel.

8.6.11.5.6 A record of authorized personnel trained, and all persons who use special purpose personnel elevators, as specified in 8.6.11.5.4, shall be kept on the premises where the elevator is located and shall be available to the authority having jurisdiction.


8.6.11.6 Escalator or Moving Walk Startup
8.6.11.6.1 Escalators and moving walks shall be started only by authorized personnel (see 1.3) trained in compliance with the procedures specified in 8.6.11.6.2 through 8.6.11.6.5.

8.6.11.6.2 The following procedure shall be utilized when starting an escalator or moving walk:
(a) Prior to starting the unit, observe the steps or pallets and both landing areas to ensure no persons are on the unit or about to board. Run the unit away from the landing.
(b) Verify correct operation of the starting switch.
(c1) Verify correct operation of the stop buttons.
(c2) Observe steps stop within the distance on the daily stopping distance check sign (usually one step length or less).
(d) Verify correct operation of each stop button cover alarm, if furnished.
(e) Visually examine the steps or treadmill for damaged or missing components; combplates for broken or missing teeth; skirt or dynamic skirt panels and balustrades for damage.
(f) Verify that both handrails travel at substantially the same speed as the steps or the treadway, are free from damage or pinch points, and that entry guards are in place.

(g) Visually verify that all steps, pallets, or the treadway is properly positioned.

(h) Verify that ceiling intersection guards, anti-slide devices, deck barricades, and caution signs are securely in place.

(i) Verify that demarcation lighting is illuminated, if furnished.

(j) Check for uniform lighting on steps/tread not contrasting with surrounding areas.

(k) Verify that the safety zone is clear of obstacles and that the landing area and adjacent floor area are free from foreign matter and slipping or tripping hazards.

(l) Check for any unusual noise or vibration during operation.

If any of these conditions is unsatisfactory in 8.6.11.6.2(a) through (l), the unit shall be placed out of service. Barricade the landing areas and notify the responsible party of the problem.

8.6.11.6.3 Escalators and moving walks subject to 24-h operation shall be checked daily by authorized personnel.

8.6.11.6.4 A record of authorized personnel trained as specified in 8.6.11.6.2 shall be kept on the premises where the escalator(s) or moving walk(s) or both is located and shall be available to the authority having jurisdiction.

8.6.11.7 Operating Instructions for Means Specified in 2.7.5.1.1 or 2.7.5.2.1.
A written procedure for operating the means shall be posted in a permanent manner in plain view at an appropriate location on or adjacent to the means (see 2.7.5.1.1 or 2.7.5.2.1). The posting shall conform to ANSI Z535.4 or CAN/CSA Z321, whichever is applicable (see Part 9).

8.6.11.8 Egress and Reentry Procedure From Working Areas in 2.7.5.1.3 or 2.7.5.2.3.
A written procedure to outline the method for egress and reentry shall be posted in a permanent manner in plain view at an appropriate location at the egress/reentry point (see 2.7.5.1.3 or 2.7.5.2.3). The posting shall conform to ANSI Z535.4 or CAN/CSA Z321, whichever is applicable (see Part 9).

8.6.11.9 Operating Instructions for Retractable Platforms.
A written procedure to outline the method for the use of retractable platforms shall be posted in a permanent manner in plain view at an appropriate location on or adjacent to the retractable platform (see 2.7.5.3.1). The posting shall conform to ANSI Z535.4 or CAN/CSA Z321, whichever is applicable (see Part 9).

8.6.11.10 Examination After Shutdown Due to Traction Loss.
Where the traction-loss detection means has been actuated [see 2.20.8.1 and 8.6.1.2.1(g)], 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.
NOTE: See lockout/tagout procedures in Elevator Industry Field Employees’ Safety Handbook for procedure for removing the elevator from service.

8.6.11.11 Examination After Safety Application.
After any safety application on a traction elevator has occurred, whether due to testing or during normal service, the driving-machine sheave, all other sheaves, where furnished, and retainers and suspension members shall be examined throughout their complete length to ensure that all suspension members are properly seated in their respective sheaves, and that no damage has occurred to sheaves, suspension members, or retainers. The elevator shall not be returned to service until this physical examination has been conducted and any repairs made, if necessary.

8.6.11.12 Examination After Shutdown Due to Broken-Suspension-Member Detection Means.
After any application of the broken-suspension-member detection means, whether due to testing or during normal service, the driving-machine sheave, all other sheaves, where furnished, and retainers and suspension members shall be examined throughout their complete length to ensure that all suspension members are properly seated in their respective sheaves, and
that no damage has occurred to sheaves, suspension members, or retainers. The elevator shall not be returned to service until this physical examination has been conducted and any repairs made, if necessary. Where a single suspension member has been damaged or broken, the entire suspension means shall be replaced in accordance with 8.6.3.2.

3.4 Alterations

3.4.1 Notwithstanding section 2.6, alterations of an elevator, dumbwaiter, escalator, moving walk, and material lifts shall conform to the requirements of the code adopted in subsection 3.1 and as specified by the director.

3.4.2 Alterations to freight platform lifts type - B shall conform to the requirements for Material Lifts Type - B as required by the code adopted in subsection 3.1 and as specified by the director.

3.4.3 Alterations to freight platform lifts type - A shall conform to the requirements for Material Lifts Type - B as required by the code adopted in subsection 3.1 and as specified by the director, except that ‘in-car’ controls are prohibited and no persons shall be permitted to ride.

3.4.4 Alterations submission documents shall adhere to the Director’s Guideline on alterations and shall be accompanied by a completed alterations checklist.

3.4.5 Section 8.7 Alterations is revoked and the following substituted:

SECTION 8.7
ALTERATIONS
Requirement 8.7 applies to alterations.
NOTES:
(1) See Nonmandatory Appendix L for an index of the requirements for alterations.
(2) See 8.6 for maintenance, repair, and replacement requirements.

8.7.1 General Requirements
8.7.1.1 Applicability of Alteration Requirements.
When any alteration is performed, regardless of any other requirements of 8.7, the installation, as a minimum, shall conform to the following applicable Code requirements:
(a) the Code at the time of installation
(b) the Code requirements for the alteration at the time of any alteration
(c) ASME A17.3 if adopted by the authority having jurisdiction

8.7.1.2 Items Not Covered in 8.7.
Where an alteration not specifically covered in 8.7 is made, it shall not diminish the level of safety below that which existed prior to the alteration. See also 1.2.

8.7.1.3 Testing.
Where alterations are made, acceptance inspections and tests shall be conducted as required by 8.10.2.3 for electric elevators, 8.10.3.3 for hydraulic elevators, or 8.10.4.2 for escalators and moving walks.

8.7.1.4 Welding.
Welding of parts on which the support of the car, counterweight, escalator, or moving walk depends, including driving machines, escalator, or moving walks, trusses, girders, and tracks, shall conform to 8.8 and 8.7.1.5.

8.7.1.5 Design.
Design shall be verified by a licensed professional engineer for welding, repair, cutting, or splicing of members upon which the support of the car, counterweight, escalator, or moving walks, trusses, girders, and tracks depends.

8.7.1.6 Temporary Wiring.
During alterations, temporary wiring shall be permitted. The electrical protective devices of cars in normal operation shall not be rendered inoperative or ineffective.

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

8.7.1.8 Code Data Plate.
In jurisdictions enforcing NBCC, the data plate required by 8.9.1 shall include the code and edition in effect at the time of alteration and the requirements in 8.7 that were applicable to the alteration.

8.7.2 Alterations to Electric Elevators
8.7.2.1 Hoistway Enclosures
8.7.2.1.1 Hoistway Enclosure Walls.
Where alterations are made to any portion of a hoistway enclosure wall, that portion which is altered shall conform to the following:

(a) Requirement 2.1.1.
(b) Requirement 2.1.5.
(c) Requirement 2.1.6.
(d) Requirement 2.5.
(e) Requirement 2.7.3.4.6. and 2.7.3.4.7.
(f) Requirement 2.8.
(g) Requirement 8.7.2.10, where the portion of the wall that is altered includes an entrance assembly.
(h) Where a hoistway is altered so as to create a single blind hoistway, entrances and emergency doors shall be provided as required by 2.11.1.

8.7.2.1.2 Addition of Elevator to Existing Hoistway.
Where an elevator is added to an existing hoistway, the number of elevators in that multiple hoistway shall be in accordance with the requirements of the building code. The horizontal clearances for the added elevator and the clearances between the added car and adjacent cars shall conform to 2.5.

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

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

8.7.2.1.5 Control of Smoke and Hot Gases.
Alterations to a hoistway that affect the means used to prevent the accumulation of smoke and hot gases in case of fire shall conform to 2.1.4.

8.7.2.2 Pits.
Alterations made to the pit shall conform to 2.2 and 2.1.2.3. See also 8.7.2.4.

8.7.2.3 Location and Guarding of Counterweights.
Where new counterweights are installed or where counterweights are relocated, their location, guarding, and clearances shall conform to 2.3 and 2.5.1.2. The installation shall also conform to 2.6.

8.7.2.4 Vertical Car and Counterweight Clearances and Runbys.
No alteration shall reduce any clearance or runby below that required by 2.4. Existing clearances shall be permitted to be maintained, except as required by 8.7.2.17.1, 8.7.2.17.2, and 8.7.2.25.2.

8.7.2.5 Horizontal Car and Counterweight Clearances.
No alteration shall reduce any clearance below that required by 2.5. Existing clearances shall be permitted to be maintained, except as required by 8.7.2.17.2.

8.7.2.6 Protection of Spaces Below Hoistways.
Where alterations are made to an elevator or the building such that any space below the hoistway is not permanently secured against access, the affected installation shall conform to 2.6.

8.7.2.7 Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms
8.7.2.7.1 Enclosures.
Where an alteration consists of the construction of new machinery spaces, machine rooms, control spaces, or control rooms, it shall conform to 2.7. Electrical equipment clearances shall conform to NFPA 70 or CSA-C22.1, whichever is applicable.
Where alterations are made to any portion of machinery spaces, machine rooms, control spaces, or control rooms, that portion which is altered shall conform to 2.7.

8.7.2.7.2 Means of Access.
Any alteration that affects the safe and convenient means of access to a machine room or machinery space shall conform to 2.7.3.1, 2.7.3.2, and 2.7.3.3 to the extent existing conditions permit.

8.7.2.7.3 Access Doors and Openings.
Where an alteration is made to any access door or opening, it shall conform to 2.7.3.4. Where an alteration is made to an access door in an overhead machinery space, a stop switch shall be provided conforming to 2.7.3.5.

8.7.2.7.4 Headroom.
No alteration shall reduce the headroom below that required by 2.7.4, or the existing headroom, whichever is less.

8.7.2.7.5 Windows and Skylights.
Alterations made to windows and skylights shall conform to 2.1.5.

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

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

8.7.2.7 Elevator Equipment Guarding
The installation of elevator equipment guarding shall conform to the following;
(a) 2.7.2 maintenance path and clearance
(b) 2.7.3.4.2 access doors or openings in cage style guarding where full bodily entry is expected shall provide a minimum width of 750mm (29.5 in.) and a minimum clear height of 2030mm (80 in.)
(c) 2.10.1 as a minimum
(d) guarding shall be openable or removable only by use of tools
(e) operating procedures or work instructions shall be provided and available in the location of the guarding, to inform users on how to safely access the equipment for inspection, testing or maintenance
(f) working clearances in front of electrical control equipment shall not be less than 1000mm (39 in.) as per CAD requirements 2.2.1 (per Ontario Electrical Safety Code).
(g) access for the operation of the disconnecting means shall not be reduced below 750mm (29.5 in.)
(h) installation by a registered contractor (O.Reg 209/01 s.15)

8.7.2.8 Electrical Equipment, Wiring, Pipes, and Ducts in Hoistways and Machine Rooms.
The installation of any new, or the alteration of existing, electrical equipment, wiring, raceways, cables, pipes, or ducts shall conform to the applicable requirements of 2.8.

8.7.2.9 Machinery and Sheave Beams, Supports, and Foundations.
Where new machinery and sheave beams, supports, foundations, or supporting floors are installed, relocated, or where alterations increase the original building design reactions by more than 5%, they shall conform to 2.9, and the adequacy of the affected building structure to support the loads shall be verified by a licensed professional engineer.

8.7.2.10 Entrances and Hoistway Openings
8.7.2.10.1 General Requirements
(a) Where all new hoistway entrances are installed, they shall conform to 2.11, 2.12, 2.13, and 2.29.2.
(b) Where one or more, but not all, new hoistway entrances are installed, they shall conform to 2.11.2 through 2.11.8 and 8.7.2.10.5. The entire installation shall also conform to 2.11.6, 2.12, 2.13, and 2.29.2.
(c) Where an alteration is made to any hoistway entrance, it shall conform to 2.11.3, 2.11.5, 2.11.7, 2.11.8, and 8.7.2.10.5. The entire installation shall also conform to 2.12, 2.13, and 2.29.2.
(d) Where an emergency door is added or altered, it shall conform to 2.11.1 and 8.7.2.10.5.
(e) Where access openings for cleaning are installed, they shall conform to 2.11.1.4 and 8.7.2.10.5.

8.7.2.10.2 Horizontal Slide-Type Entrances.
In addition to the requirements of 8.7.2.10.1, where any new horizontal slide-type entrance is installed, it shall conform to 2.11.11.

New components that are installed as part of an alteration to an entrance shall conform as follows:
(a) Landing sills shall conform to 2.11.10.1, 2.11.11.1, and 2.11.11.6.
(b) Hanger tracks and track supports shall conform to 2.11.11.2.
(c) Entrance frames shall conform to 2.11.11.3. An applied frame shall be permitted to be fastened to an existing frame, provided that the combination of the new and existing frames conforms to 2.11.13.3, 2.11.13.5.1, 2.11.13.5.2, and 2.11.13.5.3.
(d) Hangers shall conform to 2.11.11.4.
(e) Panels shall comply with 2.11.11.5, 2.11.11.6, and 2.11.11.7, except that the overlap required by 2.11.11.5.1 shall be not less than 13 mm (0.5 in.).
(f) Door safety retainers shall conform to 2.11.11.8.

8.7.2.10.3 Vertical Slide-Type Entrances.
In addition to the requirements of 8.7.2.10.1, where any new vertical slide-type entrance is installed, it shall conform to 2.11.12.

New components that are installed as part of an alteration to an entrance shall conform as follows:
(a) Landing sills shall conform to 2.11.10.3 and 2.11.12.1.
(b) Entrance frames shall conform to 2.11.12.2.
(c) Rails shall conform to 2.11.12.3.
(d) Panels shall conform to 2.11.12.3 through 2.11.12.6, and 2.11.12.8.
(e) Guides shall conform to 2.11.12.5.
(f) Sill guards shall conform to 2.11.12.7.
(g) Pull straps shall conform to 2.11.12.8.

8.7.2.10.4 Swing-Type Entrances.
In addition to the requirements of 8.7.2.10.1, where any new swing type entrance is installed, it shall conform to 2.11.13.

New components that are installed as part of alteration to an entrance shall conform as follows:
(a) Landing sills shall conform to 2.11.10.1, 2.11.10.3, and 2.11.13.1.
(b) Entrance frames shall conform to 2.11.13.2 and 2.11.13.4.
(c) Panels shall conform to 2.11.13.3, 2.11.13.4, and 2.11.13.5.
(d) Hinges shall conform to 2.11.13.4.
8.7.2.10.5 Marking of Entrance Assemblies
(a) In jurisdictions enforcing the NBCC the following shall apply:
   (1) When an entrance or door panel is altered, it shall have the fire protection rating not less than that of the existing entrance assembly
   (2) it shall be labeled in accordance with NBCC

8.7.2.10★1 Removing Service to a Floor
Where service to a floors area is being discontinued, the following requirements shall apply;
(a) entrances shall be bolted shut
(b) the related interlock shall be removed from the safety string
(c) the rated floor buttons shall be removed from the car operating station
(d) 2.11.6.2
(e) 2.12.7 if the locked out floor contained the hoistway access switch

8.7.2.10★2 Addition of Hoistway Door Safety Retainers
The addition of hoistway door safety retainers shall comply with the requirements of 2.11.11.8.

8.7.2.11 Hoistway Door Locking Devices, Access Switches, and Parking Devices
8.7.2.11.1 Interlocks.
(a) Where the alteration consists of the installation of hoistway door interlocks, the installation shall conform to 2.12.1, 2.12.2, and 2.12.4 through 2.12.7.
(b) Despite the requirements in (a), conformance to 2.12.5, 2.12.6 and 2.12.7 is optional provided conformance to 2.12.5, 2.12.6 and 2.12.7 is not required by another alteration scope.

8.7.2.11.2 Mechanical Locks and Electric Contacts.
Where the alteration consists of the installation of hoistway-door combination mechanical locks and electric contacts, the installation shall conform to 2.12.1, 2.12.3, 2.12.4, and 2.12.6.

8.7.2.11.3 Parking Devices.
Where an alteration is performed to an elevator operated from within the car only, an elevator parking device shall be provided conforming to the following requirements:
(a) At every elevator landing that is equipped with an unlocking device, if
   (1) the doors are not automatically unlocked when the car is within the unlocking zone
   (2) the doors are not operable from the landing by a door open button or floor button
(b) Parking devices shall be permitted to be provided at other landings.
(c) Parking devices shall be located at a height not greater than 2108 mm (83 in.) above the floor.
(d) Parking devices shall conform to the following requirements:
   (1) they shall be mechanically or electrically operated
   (2) they shall be designed and installed so that friction or sticking or the breaking of any spring used in the device will not permit opening or unlocking a door when the car is outside the landing zone of that floor
   (3) springs, where used, shall be of the restrained compression type, which will prevent separation of the parts in case the spring breaks

8.7.2.11.4 Access Switches and Unlocking Devices.
Where the alteration consists of the installation of hoistway access switches and/or hoistway-door unlocking devices, the installation shall conform to
(a) requirements 2.12.6 for unlocking devices
(b) requirements 2.12.7 and 2.26.1.4 for access switches.

8.7.2.11.5 Restricted Opening of Hoistway Doors or Car Doors of Passenger Elevators.
Where a device that restricts the opening of hoistway doors or car doors is altered or installed, the device shall conform to 2.12.5.
8.7.2.12 Power Operation of Hoistway Doors.
Where the alteration consists of the addition of, or alteration to, power opening or power closing of hoistway doors, the installation shall conform to 2.13, 8.7.2.10.1, 8.7.2.10.2, 8.7.2.10.3, and 8.7.2.10.5.

8.7.2.12★1 Replacement of Door Operator
Where a door operator is replaced the replacement shall conform to the applicable requirements of 2.13.

8.7.2.13 Door Reopening Device.
Where a reopening device for power-operated car doors or gates is altered or added or replaced, the following requirements shall apply:
(a) requirement 2.13.4
(b) requirement 2.13.5
(c) when firefighters’ emergency operation is provided, door reopening devices and door closing on Phase I and Phase II shall comply with the requirements applicable at the time of installation of the firefighters’ emergency operation

8.7.2.14 Car Enclosures, Car Doors and Gates, and Car Illumination
8.7.2.14.1 Where an alteration consists of the installation of a new car, the installation shall conform to 2.14, 2.15, and 2.17 (see also 8.7.2.15.1).

8.7.2.14★1 Installation / Replacement of Car Operating Panel (COP)
The disconnect and reconnect of COP wiring shall be confirmed to verify functionality of COP features and operating devices.

8.7.2.14★2 Installation of Video/Security Cameras and Monitors
Wiring methods shall conform to 2.8.2.1. Equipment shall be securely fastened and shall not create headroom issues per 2.14.1.2.3 and 2.14.2.4.

8.7.2.14★3 Installation of Other Equipment
The installation of other equipment is not permitted per 2.14.1.9 unless otherwise permitted under by a variance request.

8.7.2.14.2 The following requirements shall be conformed to where alterations are made to existing cars:
(a) Car enclosures shall conform to 2.14.1.2.
(b) Where an alteration is made to a top emergency exit, or where a new one is installed, it shall conform to 2.14.1.5.
(c) Where an alteration consists of the installation of glass in an elevator car, it shall conform to 2.14.1.8.
(d) Any equipment added to an elevator car shall conform to 2.14.1.9.
(e) All side emergency exits shall be permanently fixed in the closed position. The corresponding side emergency exit on an adjacent car shall also be fixed in the closed position.
(f) Any alteration to passenger car ventilation shall conform to 2.14.2.3.
(g) Any alteration to car illumination or lighting fixtures shall conform to 2.14.7.
(h) Where partitions are installed in elevator cars for the purpose of reducing the inside net platform areas for passenger use, they shall conform to 2.16.1.2. Where conditions do not permit symmetrical loading, guide rails, car frames, and platforms shall be capable of sustaining the resulting stresses and deflections.
(i) Where an alteration consists of the installation of a car door or gate on an existing elevator car, the installation shall conform to 2.14.4, 2.14.5, and 2.14.6.

8.7.2.14.3 N/A - In jurisdictions not enforcing the NBCC

8.7.2.14.4 In jurisdictions enforcing the NBCC, where any alteration is made to the car enclosure, car doors, or car gates, other than as specified in 8.7.2.14.2, the installation shall conform to 2.14, except that existing car enclosure materials exposed to the hoistway are not required to conform to the flame spread ratings. The existing flame spread rating shall not be diminished.

8.7.2.14★4 Installation of Car Top Guardrail (245/10)
(a) A standard car top guardrails shall;
   (1) have a top rail not less than 1070 mm (42 in.) above the working surface, or as amended by 2.10.2.1;
   (2) have a mid rail (or equivalent structural member);
   (3) have a toe-board to a height of 125 mm (5 in.) above the working surface.
   (4) be fixed in position and designed to resist the loads specified in O. Reg. 350/06 (Building Code) Article 4.1.5.15, as required by Reg. 851 (Regulations for Industrial Establishments) Section 14(2). See table in 5.2 for reference.
   (5) not deflect beyond the perimeter of the car top [A17.1/B44 2.14.1.7.1], and in no case shall the deflection exceed 75 mm (3 in.) when the forces of A17.1/B44 2.10.2.4 are applied

   1 For Limit States Design a principal load factor of 1.5 applies per sentence 4.1.3.2(5) of O. Reg. 350/06 (Building Code).
   2 For Allowable Stress Design, typically 66% of ultimate stress (1.5 safety factor) is applied to material strength, in which case the stated loads are not factored.

(b) Where a car top railing is installed, the installation shall conform to 2.14.1.7. Where conformance with 8.7.2.14 (a) (1) is not possible due to existing overhead conditions, a foldable, collapsible or other stowable design shall be acceptable provided that;
   (1) the car will not operate in “top-of-car inspection operation” unless the railing is in the fully extended position,
   (2) the car will not operate in; “normal operation”, “hoistway access operation”, or any type of “inspection operation” other than “top-of-car inspection operation”, unless the railing is in the fully retracted position,
   (3) switches used to monitor the fully collapsed position shall have contacts that are positively opened mechanically when the railing is moved from its fully collapsed position (leaving the collapsed position will forcibly and positively remove the car from all modes of operation and top-of-car operation cannot be engaged until the extended position is reached),
   (4) the switch used to monitor the fully collapsed position shall comply with the requirements of the car top transfer switch when in the open position, except the top-of-car operation shall not be permitted until the guardrail is in the fully extended position,
   (5) switches used to monitor the fully extended position shall have contacts that are positively opened mechanically when the railing is moved from its fully extended position (leaving the extended position will forcibly and positively remove the car from top-of-car operation and other modes of operation cannot be engaged until the collapsed position is reached),
   (6) related circuits for switches used to monitor the fully collapsed and fully extended position of the guardrail shall comply with 2.26.9.3 and 2.26.9.4,
   (7) electrical means shall be provided to prevent upward movement of the car beyond the point required to maintain top of car clearances when the railing is not in the fully collapsed position,
   (8) when in the fully extended position the handrail shall meet the height requirements of 2.14.1.7.
   (9) a suitably designed and marked fall arrest anchor point shall be provided if there is worker exposure to a fall hazard (per Section 85 of Reg. 851, Regulations for Industrial Establishments) while engaging or lowering the alternative height guardrail where provided.

8.7.2.15 Car Frames and Platforms

8.7.2.15.1 Alterations to Car Frames and Platforms.
Where alterations are made to a car frame or platform, the frame and platform shall conform to 2.15. Where roller or similar-type guide shoes are installed, that allow a definite limited movement of the car with respect to the guide rails, the clearance between the safety jaws and rails of the car shall be such that the safety jaws cannot touch the rails when the car frame is pressed against the rail faces with sufficient force to take up all movement of the roller guides.

8.7.2.15★1 (171/02)
Where an alteration results in a cumulative decrease in the deadweight of the car by less than 5% of car and capacity as originally installed, or causes a cumulative increase to the deadweight of the car by 115 kg (255 lbs.) or less including all weight changes since the car was originally installed the following requirements shall apply;
(a) cars and counterweights shall be weighed prior to the alteration to establish starting weights
(b) materials added or removed during the alteration shall be weighed in or out, or the car shall be weighed after the alteration to establish final weight changes
(c) add on weight (or decreased weight) shall be recorded on an auxiliary data tag and posted on the crosshead
(d) an auxiliary data tag shall as a minimum contain;

(1) the date of the alteration,
(2) the weight added or removed from the car
(3) the weight added or removed from the counterweight
(4) the name of the alteration contractor
(5) the measured car weight prior to the alteration

(e) where glass, mirror, or overhead finishes are added to the car interior, a no load governor tripping speed safety tests or a no load rated speed buffer test shall be performed to ensure the security of finishes prior to the devices return to service (Minor A and Minor B alterations ONLY). For hydraulic elevators and emergency stop from rated speed in the up direction shall be performed.

8.7.2.15★2 (171/02)
Where an alteration results in an increase in the deadweight of the car by more than 115 kg (255 Lbs.) but less then 5% of car and capacity as originally installed including all weight changes since the car was originally installed the following requirements shall apply;

(a) requirements 8.7.2.15★1(a) through 8.7.2.15★1(e)
(b) an engineering assessment shall confirm compliance of any components affected by the weight change, including but not limited to;
   (1) machines
   (2) car and counterweight frames
   (3) buffers
   (4) traction and overbalance
   (5) ropes
   (6) plungers & working pressures
   (7) safeties

8.7.2.15.2 Increase or Decrease in Deadweight of Car.
Where an alteration results in an increase or decrease in the deadweight of the car that is sufficient to increase or decrease the sum of the deadweight and rated load, as originally installed, by more than 5%, the installation shall conform to the following requirements:

(a) requirement 2.15, except the car platform guard (apron) shall conform to 2.15.9 only to the extent the existing pit shall permit, but in no case less than the leveling or truck zone plus 75 mm (3 in.)
(b) requirement 2.16
(c) requirement 2.17
(d) requirement 2.18
(e) requirement 2.20
(f) requirement 2.21, except as covered by 8.7.2.22.2
(g) requirement 2.22, except for 2.22.4.7, provided that conformance with
   (1) requirement 2.22.4.10 is established otherwise
   (2) requirement 2.22.4.5(b) can be established by other means such as adding a buffer switch conforming to 2.26.2.22
(h) requirement 2.23
(i) requirement 2.24, except 2.24.1
(j) requirement 8.7.2.9
(k) requirement 8.7.2.15★1(a) through 8.7.2.15★1(e)
8.7.2.16 Capacity, Loading, and Classification 8.7.2.16.1 Change in Type of Service.
Where an alteration consists of a change in type of service from freight to passenger or passenger to freight, the installation shall conform to:

(a) requirements 2.11.1 through 2.11.3, and 2.11.5 through 2.11.8
(b) requirements 2.12 and 2.13
(c) requirement 2.22, except 2.22.4.5(b), 2.22.4.7, 2.22.4.10, and 2.22.4.11
(d) requirements 2.14 and as amended by 8.7.2.14 and 2.15, except the car platform guard (apron) shall conform to 2.15.9 only to the extent the existing pit shall permit, but in no case less than the leveling or truck zone, plus 75 mm (3 in.)
(e) requirement 2.17, except that where gradual wedge-clamp and drum-operated flexible guide-clamp safeties are reused, the stopping distances shall conform to the requirements of the Code at the time of installation [see ASME A17.2, Table 2.29.2(c)]
(f) requirement 2.18, except that the pitch diameters of speed governor sheaves and governor tension sheaves are not required to conform to 2.18.7
(g) requirements 2.16, 2.20, 2.24 through 2.27, except 2.24.1
(h) requirement 2.19

8.7.2.16.2 Change in Class of Loading. Where the class of loading of a freight elevator is changed, it shall conform to 2.16.2 (see also 8.7.2.16.4).

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

(a) 2.16.4
(b) CAD 3.12 or extent pit permits
(c) signage requirements in 2.16.5.

8.7.2.16.4 Increase in Rated Load.
Where an alteration involves an increase in the rated load, the installation shall conform to the following:

(a) Car doors or gates shall be provided at all car entrances. Where new car doors or gates are installed, they shall conform to 2.14.4, 2.14.5, and 2.14.6.
(b) Requirement 2.15, except the car platform guard (apron) shall conform to 2.15.9 only to the extent the existing pit shall permit, but in no case less than the leveling or truck zone, plus 75 mm (3 in.).
(c) Requirement 2.16.
(d) Requirement 2.17.
(e) Requirement 2.18, except that the pitch diameters of existing governor sheaves are not required to conform to 2.18.7.
(f) Requirement 2.19.
(g) Requirement 2.20.
(h) Requirement 2.21, except as covered by 8.7.2.22.2.
(i) Requirement 2.22, except 2.22.4.5(b), 2.22.4.7, 2.22.4.10, and 2.22.4.11.
(j) Requirement 2.23.
(k) Requirement 2.24.
(l) Requirements 2.26.1.4 and 2.26.1.5.
(m) Requirement 2.26.5.
(n) Requirement 8.7.2.9.

8.7.2.17 Change in Rise or Rated Speed
8.7.2.17.1 Increase or Decrease in Rise.
Where an alteration involves an increase or decrease in the rise without any change in the location of the driving machine, the following requirements shall be conformed to:

(a) The terminal stopping devices shall be relocated to conform to 2.25.
(b) Where the increase in rise is less than 4 570 mm (180 in.), an existing winding-drum machine shall be permitted to be retained, provided the drum is of sufficient dimensions to serve the increased rise with not less than one full turn of wire rope remaining on the winding drum when the car or counterweight has reached its extreme limits of travel.

(c) The bottom and top clearances and runbys for cars and counterweights shall conform to 2.4, except as follows:
(1) Where the increase in rise is at the upper end of the hoistway, the existing bottom car clearance and car and counterweight runby are not required to conform to 2.4. However, if existing clearances are less than as required by 2.4, they shall not be decreased by the change in rise.
(2) Where the increase in rise is at the lower end of the hoistway, the existing overhead car and counterweight clearances are not required to conform to 2.4. However, if existing clearances are less than as required by 2.4, they shall not be decreased by the change in rise.
(3) Where the decrease in rise is at the lowest end of the rise, the installation shall conform to 2.2.4, 2.2.5, and 2.2.6.

8.7.2.17.2 Increase in Rated Speed
(a) Increase in the rated speed of a winding-drum machine is prohibited, except as permitted in 8.7.2.17.2(c).
(b) Where the alteration involves an increase in the rated speed, except as specified in 8.7.2.17.2(c), the following requirements shall be conformed to:
(1) The bottom runbys and the top clearances for cars and counterweights shall conform to 2.4.2 through 2.4.11.
(2) Horizontal clearances shall conform to 2.5.
(3) The car and counterweight buffers shall conform to 2.22, except that existing buffers, where retained, are not required to conform to 2.22.4.5(b), 2.22.4.7, 2.22.4.10, and 2.22.4.11.
(4) Car doors or gates shall be provided at all car entrances. Where new car doors or gates are installed, they shall conform to 2.14.
(5) The car safety, the counterweight safety (where provided), and the governor shall conform to 2.17 and 2.18, except that the pitch diameters of speed governor sheaves and governor tension sheaves are not required to conform to 2.18.7. Where the new rated speed is greater than 3.5 m/s (700 ft/min), compensating rope tie-down shall be provided in compliance with 2.21.4.2.
(6) The capacity and loading shall conform to 2.16.
(7) The driving machine and sheaves shall conform to 2.24.
(8) The terminal stopping devices shall conform to 2.25.
(9) The operating devices and control equipment shall conform to 2.26, except that 2.26.4.1 through 2.26.4.3 shall apply only to the electrical wiring and equipment altered. Requirement 2.26.4.4 does not apply.
(10) Suspension ropes and rope connection shall conform to 2.20.
(11) Car overspeed protection and unintended car movement protection shall conform to 2.19.
(c) Where the increase in rated speed does not exceed 10% and does not exceed 0.20 m/s (40 ft/min), and is a result of a power supply change, and the new motor speed cannot match the existing motor speed, the installation is not required to conform to 8.7.2.17.2(b), except that the new rated speed shall not exceed 0.75 m/s (150 ft/min) for Type A safeties
(1) exceed 0.75 m/s (150 ft/min) for Type A safeties
(2) exceed 1 m/s (200 ft/min) when spring buffers are provided Governors shall be adjusted to conform to 2.18.2.1 and 2.18.2.2 (see also 8.7.2.27.3).

8.7.2.17.3 Decrease in Rated Speed.
Conformance with the following requirements shall be required when the alteration involves a decrease in the rated speed.
(a) Where the bottom runbys and the top clearances for cars and counterweights are less than as required by 2.4, they shall not be decreased by the speed reduction.
(b) The tripping speed of the car speed governor and the counterweight speed governor, where provided, shall be adjusted to conform to 2.18.2 for the new rated car speed.
(c) The capacity and loading shall conform to 2.16.
(d) Capacity and data plates shall conform to 2.16.3, except the information required by 2.16.3.2.2(d) shall include the name of the company doing the alteration and the year of the alteration.
(e) New electrical equipment and wiring shall conform to 2.26.4.1, 2.26.4.2, and 2.26.4.3.

8.7.2.18 Car and Counterweight Safeties
**8.7.2.18.1** Where the alteration consists of the installation of new car safeties, the car safeties, car speed governor, and car guide rails shall conform to 2.17, 2.18, and 2.23, except as noted in 8.7.2.19.

**8.7.2.18.2** Where the alteration consists of the installation of new counterweight safeties, the counterweight safeties, counterweight speed governor, and counterweight guide rails shall conform to 2.17, 2.18, and 2.23, except as noted in 8.7.2.19.

**8.7.2.18.3** Where any alterations are made to existing car or counterweight safeties, the affected safeties, governors, and guide rails shall conform to 2.17.1 through 2.17.9, 2.17.15, 2.18, and 2.23, except as noted in 8.7.2.19.

**8.7.2.18.4** Where existing rail reactions are not increased by the installation of new safeties, the existing hoistway construction for bracket support need not be modified.

**8.7.2.19 Speed Governors and Governor Ropes.**
Where any alteration is made to a speed governor, or where a new governor is installed, it shall conform to 2.18. Where there is a releasing carrier, it shall conform to 2.17.15. Governor ropes of a different material, or construction than originally specified by the governor manufacturer shall be permitted, provided that
- (a) there is conformance with 2.18.6 and 2.18.7, except that the pitch diameters of existing governor sheaves and tension sheaves are not required to conform to 2.18.7
- (b) a test is made of the car or counterweight safety and speed governor with the new rope to demonstrate that the safety will function as required by 2.17.3

**8.7.2.20 Ascending Car Overspeed and Unintended Car Movement Protection.**
The requirements of 2.19 shall be conformed to where a device for protection against ascending car overspeed and unintended car movement is altered or installed.

**8.7.2.20★1**
If elevator controllers are pre-B44-00 and the installation is already equipped with Ascending Car Overspeed (ACO) and Unintended Car Movement (UCM) protection, the installation shall conform to 2.19 except the detection means is permitted to meet B44-M90 or the code at the time of the alteration. The means shall require manual reset. The code data tag shall reflect under which code edition the ACO and UCM detection was provided.

**8.7.2.20★2**
If elevator controllers are pre-B44-00 and the installation is equipped with only ACO protection, the installation shall conform to 2.19.1, 2.19.3, and 2.19.4, except the detection means is permitted to meet B44-M90 or the code at the time of the alteration. The means shall require manual reset. The code data tag shall reflect under which code edition the ACO detection was provided.

**8.7.2.20★3**
Where the alteration includes the voluntary addition of ACO and UCM protection, the installation shall conform to; 2.19 except the detection means is permitted to meet B44-M90 or the code at the time of the alteration and 2.7 as applicable to the installation of the equipment. The means shall require manual reset. The code data tag shall reflect under which code edition the ACO and UCM detection was provided.

**8.7.2.21 Suspension Means and Their Connections**
**8.7.2.21.1 Change in Suspension Members.**
Where the material, grade, number, or size of suspension members is changed, the new suspension members and their fastenings shall conform to 2.20. When existing sheaves are retained using suspension members different from those originally specified, the original elevator manufacturer or a licensed professional engineer shall certify the sheave material to be satisfactory for the revised application.

**8.7.2.21.2 Addition of Suspension-Member Equalizers.**
Where suspension-member equalizers are installed, they shall conform to 2.20.5.
8.7.2.21.3 Addition of Auxiliary Suspension-Member-Fastening Devices.
Where auxiliary suspension-member-fastening devices are installed, they shall conform to 2.20.

8.7.2.21.4 Exception for Suspension-Means Monitoring and Protection.
(a) Where there is a change to the type of suspension means the installation shall conform to 2.20.8 and 2.20.11.
(b) If a traction-loss detection means is provided, it shall comply with 2.20.8.1.
(c) If a broken suspension-means detection means is provided, it shall comply with 2.20.8.2.

Note: Elevators installed to editions prior to A17.1-2007, including A17.1a-2008, are exempt from all of the requirements of 2.20.8 and 2.20.11 provided that there is no change to the type of suspension means and that there is no alteration to the means themselves.

8.7.2.22 Counterweights
8.7.2.22.1 Where alterations are made to any part of a counterweight assembly, except guiding members, the installation shall conform to 2.21, except as specified by 8.7.2.22.2. See also 8.7.2.3.

8.7.2.22.2 Rod-type counterweights shall be permitted to be retained, provided they are equipped with a minimum of two suspension rods and two tie rods. The two suspension rods shall conform to 2.21.2.1 and 2.21.2.3 and shall be provided with locknuts and cotter pins at each end. The tie rods shall conform to 2.21.1.2. Means shall be provided on each side of the counterweight to maintain the distance between the top and bottom guide weights in the event the counterweight lands on the buffer.

8.7.2.22.3 Where roller or similar-type guide shoes are installed, that allow a definite limited movement of the counterweight with respect to the guide rails, the clearance between the safety jaws and rails of the counterweight shall be such that the safety jaws cannot touch the rails when the counterweight frame is pressed against the rail faces with sufficient force to take up all movement of the roller guides.

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

8.7.2.24 Guide Rails, Supports, and Fastenings.
Where alterations are made to car and counterweight guide rails, guide-rail supports, or guide-rail fastenings, or where the stresses have been increased by more than 5%, the installation shall conform to 2.23. Guide rails, supports, fastenings, and joints of different design and construction than those provided for in 2.23 shall be permitted to be retained provided they are in accordance with sound engineering practice and will adequately maintain the accuracy of the rail alignment.

8.7.2.25 Driving Machines and Sheaves
8.7.2.25.1 Alterations to Driving Machines and Sheaves
(a) Where a driving machine is replaced, or installed as part of an alteration, the installation shall conform to 2.7.2, 2.9, 2.10.1, 2.19 as required by 8.7.2.20 and 8.7.2.20★1 through 8.7.2.20★3, 2.20, 2.24, and 2.26.8. Requirement 2.7.2 applies to the extent existing installations permit.
(b) Where alterations are made to driving machine components, the affected components shall conform to 2.24.2 through 2.24.9 and 2.26.8.
(c) Where an alteration consists of a change in the driving-machine sheave, the suspension ropes and their connections shall conform to 2.20. The sheave shall conform to 2.24.2, 2.24.3, and 2.24.4.
8.7.2.25.1 Where the driving machine worm or gear is replaced, the replaced components shall conform to the applicable requirements of 2.24.

Note: Refer to 8.7.2.7.1 for the addition of machine guarding.

8.7.2.25.2 Change in Location of Driving Machine
(a) Where the location of the driving machine is changed with no increase or decrease in rise, the installation shall conform to 2.7.2, 2.9, 2.10.1, and 2.24.2.3.
(b) Where the location of the driving machine is changed with an increase or decrease in rise, the entire installation shall conform to Part 2, except for the following:
   (1) requirement 2.5 (see also 8.7.2.5).
   (2) requirement 2.11 (see also 8.7.2.10).
   (3) where the increase in rise is at the upper end of the hoistway, the existing bottom car clearance and car and counterweight runby are not required to conform to 2.4. However, if existing clearances are less than as required by 2.4, they shall not be decreased by the change in rise.

8.7.2.26 Terminal Stopping Devices.
Where an alteration is made to any terminal stopping device, the installation shall conform to 2.25.

8.7.2.27 Operating Devices and Control Equipment / Inspection Operation and Inspection Operation with Open Door Circuits
8.7.2.27.1 Top-of-Car Operating Devices.
Where there is an alteration to or addition of top-of-car inspection operation, it shall conform to 2.26.1.4.

8.7.2.27.1 Where there is an alteration to or addition of any type of inspection operation (see 2.26.1.4.1(a)), the alteration shall conform to the applicable requirements in 2.26.1.4.

8.7.2.27.2 Car Leveling or Truck Zoning Devices.
Where there is an alteration to or addition of a car leveling device, or a truck zoning device, it shall conform to 2.26.1.6.

8.7.2.27.3 Change in Power Supply.
Where an alteration consists of a change in power supply at the mainline terminals of the elevator motion controller or motor controller, involving one of the following, whichever is applicable:
   (a) change in voltage, frequency, or number of phases
   (b) change from direct to alternating current or vice versa
   (c) change to a combination of direct and alternating current Electrical equipment shall conform to 2.26.1.1, 2.26.1.2, 2.26.1.3, 2.26.1.4, 2.26.1.6, 2.26.2, 2.26.6, 2.26.7, 2.26.9, and 2.26.10. All new and modified equipment and wiring
shall conform to 2.26.4.1, 2.26.4.2, and 2.26.4.3. Brakes shall conform to 2.24.8 and 2.26.8. Winding-drum machines shall be provided with final terminal stopping devices conforming to 2.25.3.5 [see also 8.7.2.17.2(b)].

8.7.2.27.4 Controllers
(a) Where a motion controller or operation controller is installed without any change in the type of operation control or motion control, it shall conform to the following:
   (1) Terminal stopping devices shall conform to 2.25.
   (2) The operating devices and control equipment shall conform to 2.26.1.4, 2.26.1.5, 2.26.1.6, 2.26.2 through 2.26.9, and 2.26.11.
   (3) Requirement 2.27.2 applies when emergency power is provided.
   (4) not adopted.
   (5) In jurisdictions enforcing NBCC, 2.27.3 through 2.27.9 apply.
   (6) requirement 2.7.9.2
(b) Where a controller for the operation of hoistway doors, car doors, or car gates is installed, all new and modified equipment and wiring shall conform to 2.26.4.1 and 2.26.4.2.
(c) Where a controller for the elevator operation on emergency or standby power systems or firefighters' emergency operation is installed, all new and modified equipment and wiring shall conform to 2.26.4.1 and 2.26.4.2.
(d) Equipment and floors shall be identified as required by 2.29.

8.7.2.27.5 Change in Type of Motion Control.
Where there is a change in the type of motion control, the installation shall conform to the following:
(a) The protection of the hoistway landing openings shall conform to
   (1) 2.11.1 except;
      (a) existing entrance openings less than 2030mm in height or 800mm in width are permitted to be retained
      (b) requirement 2.11.1.4
   (2) 2.11.2 through 2.11.6, except 2.11.6.3
   (3) 2.11.8, 2.11.9
   (4) 2.11.11.8 for horizontally sliding center opening and single speed entrances
   (5) 2.11.12.8
   (6) 2.12, except
      (a) requirement 2.12.2.4.3 to allow a minimum engagement of 6mm
      (b) 2.12.4, and
   (7) 2.13.
(b) Car enclosures and car doors or gates shall conform to 2.14, the loading requirements specified by 2.14.1.6, and the requirements of 2.14.1.7 including the provisions of 2.14.1.7.5 for non standard guardrails, as specified in the CAD, except that where existing car enclosures and/or car doors or gates are retained, conformance with the following requirements is not required:
   (1) requirements 2.14.1.3, 2.14.1.5.1, 2.14.1.8, 2.14.1.9 and 2.14.1.10
   (2) requirements 2.14.2.1, 2.14.2.3 through 2.14.2.6
   (3) requirement 2.14.3
   (4) requirements 2.14.4.2.5, 2.14.4.3, 2.14.4.5.1(c) and 2.14.4.6
   (5) requirements 2.14.5.1, 2.14.5.6 through 2.14.5.8
   (6) requirements 2.14.7.1.3, 2.14.7.1.4 and 2.14.7.2 through 2.14.7.4
(c) The car safety, the counterweight safety (where provided), and the governor shall conform to 2.17 and 2.18, except that;
   (1) where the safety factors required by 2.17.12.1 cannot be ascertained, performance testing shall be accepted, and
(2) the pitch diameter of speed governor sheaves and governor tension sheaves are not required to conform to 2.18.7.
(d) The capacity and loading shall conform to 2.16.8 (e), (f), (g) and (h).
(e) The terminal stopping devices shall conform to 2.25.
(f) The operating devices and control equipment shall conform to 2.26. The requirements of 2.26.4.2, 2.26.4.3, and 2.26.4.4 shall not apply to electrical equipment unchanged by the alteration.
(g) not adopted
In jurisdictions enforcing NBCC, emergency operation and signaling devices shall conform to 2.27
(h) Car overspeed protection and unintended movement protection shall conform to 2.19 as required by 8.7.2.20 and 8.7.2.20 ★1 through 8.7.2.20 ★3.
(i) Equipment and floors shall be identified as required by 2.29.
(j) requirement 2.7.9.2

8.7.2.27.6 Change in Type of Operation Control.
Where there is a change in the type of operation control, the installation shall conform to the following:
(a) The protection of the hoistway landing openings shall conform to 2.11.1 through 2.11.13, 2.12, and 2.13.
(b) Car enclosures and car doors or gates shall conform to 2.14, except that where existing car enclosures and/or car doors or gates are retained, conformance with the following requirements is not required:
(1) requirements 2.14.1.3, 2.14.1.5.1, and 2.14.1.8
(2) requirements 2.14.2.1, 2.14.2.3, and 2.14.2.4
(3) requirement 2.14.3
(4) requirement 2.14.4.3 and 2.14.4.6
(c) The car safety, the counterweight safety (where provided), and the governor shall conform to 2.17 and 2.18, except that the pitch diameter of speed governor sheaves and governor tension sheaves are not required to conform to 2.18.7.
(d) The capacity and loading shall conform to 2.16.
(e) The terminal stopping devices shall conform to 2.25.
(f) The operating devices and control equipment shall conform to 2.26. The requirements of 2.26.4.2, 2.26.4.3, and 2.26.4.4 shall not apply to electrical equipment unchanged by the alteration.
(g) Emergency operation and signaling devices shall be provided and shall conform to 2.27.
(h) Equipment and floors shall be identified as required by 2.29.
(i) requirement 2.7.9.2

8.7.2.27.★6
Where a Patient Wandering feature is added, doors shall close per 2.13.5.3 and the activation of phase 1 recall shall not be prevented per 2.27.3.1.6(l).

8.7.2.27.★7
Where security / floor lockout systems are added the following shall apply:
(a) egress floor shall not be restricted when on FEO,
(b) door open buttons shall remain operative,
(c) requirement 2.11.6.2
(d) travel to all serviced landing shall be possible per 2.27.3.3.1(i).

8.7.2.27.7 On passenger elevators equipped with nonperforated car enclosures, the emergency stop switch, including all markings, shall be permitted to be removed if an in-car stop switch conforming to 2.26.2.21 is provided. The stop switch shall conform to 2.26.4.3, and a single failure shall not render the In-Car stop switch ineffective per 2.26.9.3.

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

8.7.2.28 Emergency Operations and Signaling Devices
(a) Where an alteration is made to car emergency signaling devices, the alteration shall conform to 2.27.1.
(b) Where an alteration is made to, or consists of the addition of, an emergency or standby power system, the installation shall conform to the requirements of 2.27.2.
(c) Where an alteration is made to, or consists of the addition of, firefighters’ emergency operation, the installation shall conform to 2.27.3 through 2.27.8.
(d) Where the alteration consists of the addition of an elevator to a group, all elevators in that group shall conform to 2.27.

8.7.2.28★1 (175/02)
Where the method of recall is being upgraded from manual to automatic recall, FEO features are permitted to operate as required at the time of the original FEO installation. Where the main recall level is not sprinklered, alternate floor recall shall be provided.

8.7.2.28★2 (60/88) (105/93) (219/07)
Where a firecode retrofit was required but not provided, and conformance to provide FEO is now being sought, the FEO features shall be as required by CAD 3.20.

8.7.3 Alterations to Hydraulic Elevators
8.7.3.1 Hoistway Enclosures.
Alterations to hoistway enclosures shall conform to 8.7.2.1.

8.7.3.2 Pits. Alterations made to the pit shall conform to 2.1.2.3 and 2.2. See also 8.7.3.4.

8.7.3.3 Location and Guarding of Counterweights.
Where new counterweights are installed, they shall conform to 2.3 and 2.5-1.2. The installation shall also conform to 3.5.

8.7.3.4 Vertical Car and Counterweight Clearances and Runbys.
No alteration shall reduce any clearance or runby below that required by 3.4. Existing clearances shall be permitted to be maintained, except as required by 8.7.3.22.1, 8.7.3.22.2, and 8.7.3.23.5.

8.7.3.5 Horizontal Car and Counterweight Clearances.
No alteration shall reduce any clearance below that required by 2.5. Existing clearances shall be permitted to be maintained, except as required by 8.7.3.22.1, 8.7.3.22.2, and 8.7.3.23.5.

8.7.3.6 Protection of Spaces Below Hoistways.
Where alterations are made to an elevator or the building, such that any space below the hoistway is not permanently secured against access, the affected installation shall conform to 3.6.

8.7.3.7 Machine Rooms and Machinery Spaces.
Alterations to machine rooms and machinery spaces shall conform to 8.7.2.7.2 through 8.7.2.7.7. Where an alteration consists of the construction of a new machine room or machinery space enclosure, it shall conform to 2.7 and 3.7. Electrical equipment clearances shall conform to the requirements of NFPA 70 or CSA-C22.1, whichever is applicable (see Part 9). Where alterations are made to any portion of a machinery room or machinery space, the portion that is altered shall conform to 2.7 and 3.7.

8.7.3.8 Electrical Wiring, Pipes, and Ducts in Hoistways and Machine Rooms.
The installation of any new, or the alteration of existing, electrical equipment, wiring, raceways, cables, pipes, or ducts shall conform to the applicable requirements of 2.8.

8.7.3.9 Machinery and Sheave Beams, Supports and Foundations.
Where new machinery and sheave beams, supports, foundations, or supporting floors are installed, or where alterations increase the original building design reactions by more than 5%, they shall conform to 2.9, and the adequacy of the affected building structure to support the loads shall be verified by a licensed professional engineer.
8.7.3.10 Hoistway Entrances and Openings.
Alterations to hoistway entrances shall conform to 8.7.2.10, except that emergency doors meeting the requirements of 2.11.1 are only required to be installed in the blind portion of the hoistway where required by 8.7.2.10 and
   (a) for all elevators where car or counterweight safeties are used
   (b) for elevators where safeties are not used, emergency doors are not required on elevators where a manually operated valve is provided that will permit lowering the car at a reduced speed in case of power failure or similar emergency

8.7.3.11 Hoistway Door Locking Devices.
Alterations to hoistway door locking devices, access switches, parking devices, and unlocking devices shall conform to 8.7.2.11, except that conformance with 2.24.8 is not required.

8.7.3.12 Power Operation of Hoistway Doors.
Where the alteration consists of the addition of, or alteration to, power opening or power closing of hoistway doors, the installation shall conform to 2.13, 8.7.2.10.1, 8.7.2.10.2, 8.7.2.10.3, 8.7.2.10.5, and 8.7.3.10.

8.7.3.13 Car Enclosures.
Where alterations are made to car enclosures, they shall conform to 8.7.2.14.

8.7.3.14 Car Frames and Platforms.
Where alterations are made to a car frame or platform, the frame and platform shall conform to 3.15. If safeties are used and if roller or similar-type guide shoes are installed, that allow a definite limited movement of the car with respect to the guide rails, the clearance between the safety jaws and rails of the car shall be such that the safety jaws cannot touch the rails when the car frame is pressed against the rail faces with sufficient force to take up all movement of the roller guides.

8.7.3.15 Safeties
8.7.3.15.1 Where the alteration consists of the installation of car safeties, the car safeties and car guide rails shall conform to 3.17.1, 3.23, and 3.28.

8.7.3.15.2 Where the alteration consists of the installation of counterweight safeties, the counterweight safeties and counterweight guide rails shall conform to 3.17.2, 3.23, and 3.28.

8.7.3.15.3 Where any alterations are made to existing car or counterweight safeties, the affected safeties and guide rails shall conform to 3.17, 3.23, and 3.28, except for cross-referenced 2.17.10 through 2.17.14, 2.17.16, and 2.21.4.2.

8.7.3.16 Governors and Governor Ropes.
Where alterations are made to governors or where they are added, they shall conform to 8.7.2.19.

8.7.3.17 Change in Type of Service.
Where an alteration consists of a change in type of service from freight to passenger or passenger to freight, the installation shall conform to
   (a) requirements 2.11.1, 2.11.2, 2.11.3, and 2.11.5 through 2.11.8, except that emergency doors meeting the requirements of 2.11.1 are only required to be installed in the blind portion of the hoistway
      (1) for all elevators where car or counterweight safeties are used
      (2) for elevators where safeties are not used, emergency doors are not required on elevators where a manually operated valve is provided that will permit lowering the car at a reduced speed in case of power failure or similar emergency
   (b) requirements 2.12 and 2.13
   (c) requirements 2.22 and 3.22.2, except 2.22.4.5(b), 2.22.4.7, 2.22.4.10, and 2.22.4.11
   (d) requirements 3.14, 3.15, 3.17, 3.21, and 3.23
   (e) requirement 2.18, where governors are provided, except that the pitch diameters of existing governor sheaves and tension sheaves are not required to conform to 2.18.7
   (f) requirements 3.16, 3.18, 3.19, 3.20, 3.24, 3.25, 3.26, and 3.27.
8.7.3.18 Change in Class of Loading.
Where the class of loading of a freight elevator is changed, it shall conform to 2.16.2 as modified by 3.16.

8.7.3.19 Carrying of Passengers on Freight Elevators.
Where the alteration consists of a change in type of service from a freight elevator to a freight elevator permitted to carry passengers, the elevator shall conform to 3.16.4.

8.7.3.20 Increase in Rated Load.
Where an alteration involves an increase in the rated load, the installation shall conform to 2.26.1.4, 2.26.1.5, 2.26.5, 3.14 through 3.17, 3.20, and 3.21 through 3.23 (see also 8.7.3.23.4).

8.7.3.21 Increase in Deadweight of Car.
Where an alteration results in an increase in the deadweight of the car that is sufficient to increase the sum of the deadweight and rated load, as originally installed, by more than 5%, the installation shall conform to 3.14 through 3.17, 3.20, and 3.21 through 3.23 (see also 8.7.3.23.4).

8.7.3.21★1 (171/02)
Where an alteration results in a cumulative decrease in the deadweight of the car by less than 5% of car and capacity as originally installed, or causes a cumulative increase to the deadweight of the car by 115kg (255 Lbs.) or less including all weight changes since the car was originally installed the requirements of shall 8.7.2.15 ★1 apply.

8.7.3.21★2 (171/02)
Where an alteration results in a cumulative increase in the deadweight of the car by more than 115 kg (255 Lbs.) but less then 5% of car and capacity as originally installed including all weight changes since the car was originally installed the requirements of 8.7.2.15 ★2 shall apply.

8.7.3.22 Change in Rise or Rated Speed
8.7.3.22.1 Increase or Decrease in Rise.
Where an alteration involves an increase or decrease in the rise without any change in the location of the driving machine, it shall conform to the following:

(a) The terminal stopping devices shall be relocated to conform to 3.25.
(b) Where the increase in rise is at the lower end of the hoistway, bottom car and counterweight clearances and runbys shall conform to 3.4.1, 3.4.2, and 3.4.3, and existing top car and counterweight clearances and runbys that are less than as required by 3.4 shall not be decreased.
(c) Where the increase in rise is at the upper end of the hoistway, top car and counterweight clearances, runbys, and refuge spaces shall conform to 3.4, and existing bottom car and counterweight clearances and runbys that are less than as required by 3.4 shall not be decreased.
(d) The plunger shall conform to 3.18.2.
(e) Where the decrease is at the lower end of the rise, the installation shall conform to 2.2.4, 2.2.5, and 2.2.6.

8.7.3.22.2 Increase in Rated Speed.
Where an alteration increases the rated speed, the installation shall conform to the following:

(a) Requirement 2.5.
(b) Requirement 3.4.
(c) Requirements 3.21 and 3.22.2, except that existing buffers, where retained, are not required to conform to referenced 2.224.5(b), 2.224.7, 2.224.10, and 2.224.11.
(d) Car doors or gates shall be provided at all car entrances. Where new car doors or gates are installed, they shall conform to the applicable requirements of 3.14.
(e) Car and counterweight safeties and governors, where provided, shall conform to 3.17, except that the pitch diameters of existing governor sheaves and tension sheaves are not required to conform to 2.18.7.
(f) Requirement 3.16.
(g) Requirement 3.25.
8.7.3 Decrease in Rated Speed.
When the alteration involves a decrease in the rated speed, it shall conform to the following:
   (a) If the bottom runbys and the top clearances for cars and counterweights are less than as required by 3.4, they shall not be decreased by the speed reduction.
   (b) The tripping speed of the car speed governor and the counterweight speed governor, where provided, shall be adjusted to conform to 2.18.2 for the new rated car speed.
   (c) The capacity and loading shall conform to 3.16.
   (d) Capacity and data plates shall conform to 3.16.3(b), except the information required by 2.16.3.2.2(d) shall include the name of the company doing the alteration and the year of the alteration.
   (e) New electrical equipment and wiring shall conform to 2.26.4.1 and 2.26.4.2.

8.7.3.23 Hydraulic Equipment
8.7.3.23.1 Hydraulic Jack.
Where a hydraulic jack is installed, altered, or replaced, it shall conform to 3.18.

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

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

8.7.3.23.4 Increase in Working Pressure.
Where an alteration increases the working pressure by more than 5%, the installation shall conform to 3.18, 3.19, and 3.24.1 through 3.24.4. Requirements 3.18.3.8 and 3.19.4.6 do not apply to existing equipment.

8.7.3.23.5 Change in Location of Hydraulic Jack.
Where location of the hydraulic jack is changed, the installation shall conform to Part 3.

8.7.3.23.6 Relocation of Hydraulic Machine (Power Unit).
Where the hydraulic machine is relocated so that the top of the cylinder is above the top of the storage tank, the installation shall conform to 3.26.8.

8.7.3.23.7 Plunger Gripper.
Where the alteration consists of the addition of a plunger gripper, the following conditions must be met:
   (a) the plunger gripper must comply with 3.17.3
   (b) requirement 3.1.1(b) shall apply
   (c) when buffers are compressed solid or to a fixed stop in accordance with 3.22.1, the plunger gripper shall not strike the car structure.

8.7.3.23.7★1 Plunger Gripper.
Where the alteration consists of the removal of a plunger gripper, the following conditions must be met:
   (a) the cylinder must conform to 3.18.3
   (b) an overspeed valve shall be installed in conformance with the requirements of 3.19.4.7.
   (c) bottom car runby shall conform to 3.4.2.1

8.7.3.24 Valves, Pressure Piping, and Fittings.
   (a) Where an existing control valve is replaced with a valve of a different type, make or model, it shall conform to 3.19.
   (b) Where relief or check valves or the supply piping or fittings are replaced, the components replaced shall conform to the applicable requirements of 3.19.
(c) Where electrically operated control valves are installed in place of existing mechanically operated control valves, for rated speeds of more than 0.5 m/s (100 ft/min), existing terminal stopping devices consisting of an automatic stop valve independent of the normal control valve and operated by the movement of the car as it approaches the terminals, where provided, shall be permitted to be retained.

8.7.3.25 Suspension Ropes and Their Connections
8.7.3.25.1 Change in Ropes.
Where the material, grade, number, or diameter of ropes is changed, the new ropes and their fastenings shall conform to 3.20. When existing sheaves are retained using ropes different from those originally specified, the original elevator manufacturer or a licensed professional engineer shall certify the sheave material to be satisfactory for the revised application.

8.7.3.25.2 Addition of Rope Equalizers.
Where rope equalizers are installed, they shall conform to 2.20.5.

8.7.3.26 Counterweights.
Where alterations are made to counterweights, they shall conform to 8.7.2.22 and 3.21. Where counterweights are added to a previously uncounterweighted elevator, it shall conform to 3.4, 3.6, 3.14, 3.15, 3.17.2, 3.18, 3.20, and 3.21. See also 8.7.3.3.

8.7.3.27 Car Buffers and Bumpers.
Where alterations are made to car buffers or bumpers, the installation shall conform to 3.21 and 3.22. Existing buffers are not required to conform to 2.22.4.5(b), 2.22.4.7, 2.22.4.10, and 2.22.4.11.

8.7.3.28 Guide Rails, Supports, and Fastenings.
Where alterations are made to car and counterweight guide rails, guide-rail supports, or guide-rail fastenings, or where the stresses have been increased by more than 5%, the installation shall conform to 3.23 and 3.28.

8.7.3.29 Tanks.
Where a new tank is installed or altered, the tank shall conform to 3.24.

8.7.3.29.1 Addition of Oil Cooler
Where an oil cooler is installed or altered, the following requirements apply:
(a) 8.7.3.8
(b) 2.7.2 for the installed equipment
(c) 3.10 for the installed equipment

8.7.3.30 Terminal Stopping Devices.
Where an alteration is made to any terminal stopping device, the installation shall conform to 3.25.

8.7.3.31 Operating Devices and Control Equipment
8.7.3.31.1 Top-of-Car Operating Devices.
Where there is an alteration to, or addition of, a top-of-car operating device, it shall conform to 3.26.2.

8.7.3.31.1 Where there is an alteration to or addition of any type of inspection operation (see 2.26.1.4.1(a)), the alteration shall conform to the applicable requirements in 2.26.1.4.

8.7.3.31.2 Car Leveling or Truck Zoning Devices.
Where there is an alteration to, or addition of, a car leveling device or a truck zoning device, it shall conform to 3.26.3.2.
8.7.3.31.3 Anticreep Leveling Device.
Where there is an alteration or replacement of an anticreep leveling device, it shall conform to 3.26.3.1.

8.7.3.31.4 Change in Power Supply.
Where an alteration consists of a change in power supply at the mainline terminals of the elevator motion controller or motor controller involving
(a) change in voltage, frequency, or number of phases;
(b) change from direct current to alternating current, or vice versa; or
(c) change to a combination of direct or alternating current.

8.7.3.31.5 Addition of Soft Start
Where there is an addition of a soft start feature the following shall apply;
(a) 2.26.4.1 and 2.26.4.2 for the new equipment,
(b) 3.26.5

8.7.3.31.6 Addition of Power Efficiency Devices
Where there is an addition of power efficiency increasing devices the following shall apply;
(a) 2.26.4.1 and 2.26.4.2 for the new equipment,
(b) B44.1 certification for the new equipment.

8.7.3.31.7 Controllers
(a) Where a motion controller or operation controller is installed without any change in the type of operation control or motion control, it shall conform to the following:
(1) Terminal stopping devices shall conform to 3.25.
(3) Requirement 2.27.2 applies when emergency power is provided.
(4) not adopted
(5) In jurisdictions enforcing NBCC, 3.27.1 through 3.27.4 and 2.27.3 through 2.27.9.
(b) Where a controller for the operation of hoistway doors, car doors, or car gates is installed, all new and modified equipment and wiring shall conform to 2.26.4.1 and 2.26.4.2.
(c) Where a controller for the elevator operation on emergency or standby power systems or firefighters’ emergency operation is installed, all new and modified equipment and wiring shall conform to 2.26.4.1 and 2.26.4.2.
(d) Equipment and floors shall be identified as required by 2.29.

8.7.3.31.8 Change in Type of Motion Control.
Where there is a change in the type of motion control, the installation shall conform to the following:
(a) The protection of the hoistway landing openings shall conform to 2.11.1 through 2.11.13 except 2.11.11.9,
(1) 2.11.1 except:

(a) existing entrance openings less than 2030mm in height or 800mm in width are permitted to be retained
(b) requirement 2.11.1.4
(2) 2.11.2 through 2.11.6, except 2.11.6.3
(3) 2.11.8, 2.11.9
(4) 2.11.11.8 for horizontally sliding center opening and single speed entrances
(5) 2.11.12.8 as modified by 3.11.1,
(6) and conform to 3.12.1 except
   (a) requirement 2.12.2.4.3 to allow a minimum engagement of 6mm
   (b) 2.12.4, and
(7) 3.13.
(b) Car enclosures and car doors or gates shall conform to 3.14, the loading requirements specified by 2.14.1.6, and the requirements of 2.14.1.7 including the provisions of 2.14.1.7.5 for non standard guardrails, as specified in the CAD, except that where existing car enclosures and/or car doors or gates are retained, conformance with the following requirements is not required:
   (1) requirements 2.14.1.3, 2.14.1.5.1, 2.14.1.8, 2.14.1.9 and 2.14.1.10
   (2) requirements 2.14.2.1, 2.14.2.3 through 2.14.2.6
   (3) requirement 2.14.3
   (4) requirements 2.14.4.2.5, 2.14.4.3, 2.14.4.5.1(c) and 2.14.4.6
   (5) requirements 2.14.5.1, 2.14.5.6 through 2.14.5.8
   (6) requirements 2.14.7.1.3, 2.14.7.1.4 and 2.14.7.2 through 2.14.7.4
(c) The car safety (where provided) and the counterweight safety (where provided) shall conform to 3.17, and the governor (where provided) shall conform to 2.18, except that:
   (1) where the safety factors required by 2.17.12.1 cannot be ascertained, performance testing shall be accepted, and
   (2) the pitch diameter of speed-governor sheaves and governor tension sheaves are not required to conform to 2.18.7.
(d) The capacity and loading shall conform to 8.7.2.27.5(d).
(e) The terminal stopping devices shall conform to 3.25.
(f) The operating devices and control equipment shall conform to 3.26. Requirements of 2.26.4.2 and 2.26.4.4 shall not apply to electrical equipment unchanged by the alteration.
(g) not adopted
   In jurisdictions enforcing NBCC, emergency operation and signaling devices shall conform to 2.27.
(h) Equipment and floors shall be identified as required by 2.29.

8.7.3.31.7 Change in Type of Operation Control.
Where there is a change in the type of operation control, the installation shall conform to the following:
   (a) The protection of the hoistway landing openings shall conform to 2.11.1 through 2.11.13 as modified by 3.11.1, and conform to 3.12.1 and 3.13.
   (b) Car enclosures and car doors or gates shall conform to 3.14, except that where existing car enclosures and/or car doors or gates are retained, conformance with the following requirements is not required:
      (1) requirements 2.14.1.3, 2.14.1.5.1, and 2.14.1.8
      (2) requirements 2.14.2.1, 2.14.2.3, and 2.14.2.4
      (3) requirement 2.14.3
      (4) requirements 2.14.4.3 and 2.14.4.6
   (c) The capacity and loading shall conform to 3.16.
   (d) The terminal stopping devices shall conform to 3.25.
   (e) The operating devices and control equipment shall conform to 3.26. The requirements of 2.26.4.2, 2.26.4.3, and 2.26.4.4 shall not apply to electrical equipment unchanged by the alteration.
   (f) Emergency operation and signaling devices shall be provided and shall conform to 3.27.
   (g) Equipment and floors shall be identified as required by 2.29.
   (h) requirement 2.7.9.2

8.7.3.31★8
Where a Patient Wandering feature is added, doors shall close per 2.13.5.3 and the activation of phase 1 recall shall not be prevented per 2.27.3.1.6(l).

8.7.3.31.★9
Where security / floor lockout systems are added the follow shall apply:
(a) egress floor shall not be restricted when on FEO,
(b) door open buttons shall remain operative,
(c) requirement 2.11.6.2
(d) travel to all serviced landing shall be possible per 2.27.3.1(i).

8.7.3.31.8 Emergency Operation and Signaling Devices
(a) Where an alteration is made to car emergency signaling devices, the installation shall conform to 2.27.1.
(b) Where an alteration is made to, or consists of the addition of, an emergency or standby power system, the installation shall conform to the requirements of 2.27.2.
(c) Where an alteration is made to, or consists of the addition of, firefighters’ emergency operation, the installation shall conform to 3.27.

8.7.3.31.10 (175/02)
Where the method of recall is being upgraded from manual to automatic recall, FEO features are permitted to operate as required at the time of the original FEO installation. Where the main recall level is not sprinklered, alternate floor recall shall be provided.

8.7.3.31.11 (60/88) (105/93) (219/07)
Where a firecode retrofit was required but not provided, and conformance to provide FEO is now being sought, the FEO features shall be as required by CAD 3.20.

8.7.3.31.9 Auxiliary Power Lowering Operation.
Where auxiliary power lowering operation is installed or altered, it shall conform to 3.26.10.

8.7.3.31.10 In-Car Stop Switch.
On passenger elevators equipped with nonperforated car enclosures, the emergency stop switch, including all markings, shall be permitted to be removed if an in-car stop switch conforming to 2.26.2.11, 2.26.4.3, 2.26.9.3.1(a), and 3.26.4.2 is provided.

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

8.7.4 Alterations to Elevators With Other Types of Driving Machines
8.7.4.1 Rack and Pinion Elevators.
Where any alteration is made to a rack-and-pinion elevator, the entire installation shall comply with 4.1.

8.7.4.2 Screw-Column Elevators.
Where any alteration is made to a screw-column elevator, the entire installation shall comply with 4.2.

8.7.4.3 Hand Elevators
8.7.4.3.1 Hoistway Enclosures and Machinery Space.
Where an alteration is made to any portion of a hoistway enclosure or machinery space, the altered portion shall conform to 4.3.1 and 4.3.4.

8.7.4.3.2 Top Car and Counterweight Clearances.
No alteration shall reduce any clearances or runby below that required by 4.3.3 or below the minimum clearances as originally installed.
8.7.4.3.3 Hoistway Entrances.
Where new entrances are installed, the new entrances shall conform to 4.3.6, 4.3.7, and 4.3.8.

8.7.4.3.4 Car Enclosures.
Where an alteration is made to a car enclosure, it shall conform to 4.3.9 and 4.3.11.

8.7.4.3.5 Car Frame and Platform.
Where an alteration is made to a car frame or platform, the frame or platform shall conform to 4.3.11, 4.3.12, 4.3.13, and 4.3.16.

8.7.4.3.6 Capacity and Loading.
No alteration shall reduce the rated load below that required by 4.3.14.1 and 4.3.14.2. Where the alteration involves an increase in rated load, the driving machine sheave shall comply with 4.3.19.1, 4.3.19.2, and 4.3.16.

8.7.4.3.7 Increase in Rise.
Where the alteration involves an increase in the total rise to exceed 4 600 mm (15 ft), it shall conform to 4.3.3.1, 4.3.3.2, 4.3.15, and 4.3.16.

8.7.4.3.8 Guide Rails and Fastenings.
Where an alteration involves the installation of guide rails, the guide rails and fastenings shall comply with 4.3.18.1, 4.3.18.2, and 4.3.18.3.

8.7.4.3.9 Overhead Beams and Supports.
Where the alteration involves a change in the arrangement of or load on the overhead beams and sheaves, the new arrangement shall conform to 4.3.5.1 and 4.3.5.2, except that wood shall be permitted to be retained if it is structurally sound.

8.7.4.3.10 Power Attachments.
No alteration shall implement the use of a power other than hand power.

8.7.5 Alterations to Special Application Elevators
8.7.5.1 Inclined Elevators.
Where any alteration is made to an inclined elevator, the entire installation shall comply with 5.1.

8.7.5.2 Limited-Use/Limited-Application Elevators.
Alterations to Limited-Use/Limited-Application Elevators, shall conform to the 8.7.3 and the requirements of Part 3 except as modified in section 5.2.

8.7.3 Private Residence Elevators
8.7.3.1 When a building code occupancy classification of a private residence is changed in which a private residence elevator is located, the elevator shall comply with the applicable requirements in Parts 2, 3, 4, or Section 5.2.

8.7.4 Private Residence Inclined Elevators
8.7.4.1 When a building code occupancy classification of a private residence is changed in which a private residence inclined elevator is located, the elevator shall comply with the applicable requirements in Parts 2, 3, 4, or Section 5.1.
8.7.5.5 Power Sidewalk Elevators
8.7.5.5.1 Changes in Electrical Wiring or Electrical Equipment.
Where electrical wiring or equipment is installed as part of an alteration, it shall conform to 5.5.1.8.

8.7.5.5.2 Sidewalk Door.
Where a sidewalk door is installed as part of an alteration, it shall conform to 5.5.1.11.2, 5.5.1.11.3, and 5.5.1.11.4.

8.7.5.5.3 Change in Car Enclosure, Car Doors, and Gates.
Where the car enclosure, car door, or car gate is installed as part of an alteration, it shall conform to 5.5.1.14.

8.7.5.5.4 Bow Irons and Stanchions. Where the bow iron and stanchion is installed as part of an alteration, it shall conform to 5.5.1.15.2.

8.7.5.5.5 Increase in Rated Load.
Where the alteration consists of an increase in rated load, the bottom and top clearances and runbys shall conform to 5.5.1.16, 5.5.1.18, 5.5.1.21, and 5.5.1.25.4.

8.7.5.5.6 Increase in Rated Speed.
Where the alteration consists of an increase in rated speed, the capacity and loading shall conform to 5.5.1.15, 5.5.1.16, 5.5.1.19, and 5.5.1.22.

8.7.5.5.7 Existing Driving Machine.
Where the driving machine is installed as part of an alteration, it shall conform to 5.5.1.8, 5.5.1.9, 5.5.1.23, and 5.5.1.25.

8.7.5.5.8 Change in Type of Operating Devices and/ or Control Equipment.
Where the alteration consists of a change in the existing type of operation or control equipment, or both, the new operating devices and control equipment shall conform to 5.5.1.8 and 5.5.1.25.

8.7.5.6 Rooftop Elevators.
Where any alteration is made to a rooftop elevator, the entire installation shall comply with 5.6.

8.7.5.7 Special Purpose Personnel Elevators.
Where any alteration is made to a special purpose personnel elevator, the entire installation shall comply with 5.7.

8.7.5.8 Shipboard Elevators.
Where any alteration is made to a shipboard elevator, the entire installation shall comply with 5.8.

8.7.5.9 Mine Elevators
8.7.5.9.1 General Requirements.
Where any alteration is made to a mine elevator, the alteration shall conform to the requirements of 8.7.1 and 8.7.2, except as modified by 5.9.

8.7.5.9.2 Ascending Car Overspeed and Unintended Car Movement Protection.
Ascending car overspeed and unintended car movement protection shall be provided and shall conform to 2.19.

8.7.5.9.3 Car Top Protection. The car top access panel size requirements in 5.9.14.1(b) do not apply where the existing car top is retained. The dimensions of the existing car top access panel shall not be reduced by the alteration.

8.7.6 Alterations to Escalators and Moving Walks
8.7.6.1 Escalators
8.7.6.1.1 General Requirements.
A change in component parts that are interchangeable in form, fit, and function is not considered an alteration and need not comply with the requirements in this Section. See 8.6.3.1. The addition of a component or a device that was not part of the original design is an alteration and must conform to the requirements of 8.7.6.1 for that device or component.

When multiple driving machines per escalator are utilized, operating and safety devices required by 8.7.6.1 shall simultaneously control all driving machines. The requirements of 6.1.3.6.5 do not apply to existing escalators that were not required to comply with this requirement at the time of the original installation.

8.7.6.1.2 Relocation of Escalator.
(a) Where an escalator is relocated, it shall comply with 6.1. The requirements of 6.1.7.4.2 do not apply to electrical equipment unchanged by the relocation. The requirements of 6.1.3.6.5 do not apply to existing escalators that were not required to comply with this requirement at the time of the original installation.
(b) Where an escalator is repositioned within the same building, CAD requirement 3.18 applies and the installation shall conform to the following;
(1) requirement 6.1.3.3.11, 6.1.3.3.12, 6.1.3.3.13
(2) requirement 6.1.3.4.3
(3) requirement 6.1.3.6.3, 6.1.3.6.4
(4) requirement 6.1.3.12
(5) requirement 6.1.3.13
(6) requirement 6.1.6.9
(7) requirement 6.1.7.4.1 and
(8) requirement 8.7.6.1.3

8.7.6.1.3 Protection of Floor Openings.
Any alteration to the floor openings in escalators shall comply with 6.1.1.1.

8.7.6.1.4 Protection of Trusses and Machinery Spaces Against Fire
Any alteration to the sides and/or undersides of escalator trusses and machinery spaces shall conform to 6.1.2.1.

8.7.6.1.5 Construction Requirements
(a) Angle of Inclination. No alteration of an escalator shall change the angle of inclination, as originally designed, by more than 1 deg.
(b) Geometry. Any alteration to the geometry of the escalator components shall conform to 6.1.3.2.
(c) Balustrades. Any alteration to the balustrades shall conform to 6.1.3.3 for the altered components.
(d) Skirt Deflector Devices. Any alteration or addition of skirt deflector devices shall conform to 6.1.3.3.10

NOTE [8.7.6.1.5(c)]: The balustrade does not include the handrail.
NOTE [8.7.6.1.5(d)]: The vertical dimensions on existing skirt panels may not allow full compliance. See 1.2.

8.7.6.1.6 Handrails.
Any alteration to the handrails or handrail system shall require conformance with 6.1.3.2.2, 6.1.3.4.1 through 6.1.3.4.4, 6.1.3.4.6, 6.1.3.4.12, and 6.1.3.4.14.

8.7.6.1.7 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, 6.1.3.8, 6.1.3.9.4, 6.1.3.10.4, 6.1.3.11, 6.1.3.13.3, 6.1.3.3.3, 6.1.3.3.9, 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.

8.7.6.1.8 Combplates.
Any alteration of the combplates shall require conformance with 6.1.6.3.13.

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

8.7.6.1.10 Step Wheel Tracks.
Any alteration to the tracks shall result in the escalator’s conformance with 6.1.3.8, 6.1.3.9.4, 6.1.3.10.1, and 8.7.1.4.

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 conformance with 6.1.

8.7.6.1.12 Driving Machine, Motor, and Brake
(a) Driving Machine. An alteration to the driving machine shall result in the escalator’s conformance 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 conformance 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 conformance to 6.1.3.9.3, 6.1.3.10.2, and 6.1.5.3.1.

8.7.6.1.13 Operating and Safety Devices.
Any alteration to or addition of operating and or safety devices shall conform to 6.1.6 for that device.

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

8.7.6.1.15 Entrance and Egress.
Any alteration to the entrance or egress end shall comply with 6.1.3.6.1 through 6.1.3.6.4.

8.7.6.1.16 Controller.
Where a controller is installed, it shall conform to 6.1.6.10 through 6.1.6.15, and 6.1.7.4.

8.7.6.1.17 Controller Replaced (226/07)
Where a controller is replaced it shall conform to 8.7.6.1.16.

8.7.6.1.18 Relocation of Controller (226/07)
Where an escalator controller is relocated and requires disconnection and reconnection of field wiring, requirement 2.8.2 applies. The installation shall be tested to verify functionality of all circuits impacted by the relocation.

8.7.6.1.19 Addition of Soft Start (226/07)
Where there is an addition of a soft start feature the follow shall apply:
(a) for control systems built to B44-00 and later, 6.1.7.4, 6.1.6.10.1, 6.1.6.10.2, 6.1.6.10.3
(b) for control systems built prior to B44-00 6.1.7.4.

8.7.6.1.20 Power Efficiency Devices
Where there is an addition of power efficiency increasing devices the follow shall apply:
(a) 2.26.4.1 and 2.26.4.2 for the new equipment,
(b) B44.1 certification for the new equipment.
8.7.6.2 Moving Walks

8.7.6.2.1 General Requirements.

A change in component parts that are interchangeable in form, fit, and function is not considered an alteration and need not comply with the requirements in this Section. See 8.6.3.1.

The addition of a component or a device that was not part of the original design is an alteration and must conform to the requirements of 8.7.6.2 for that device or component. When multiple driving machines per moving walk are utilized, operating and safety devices required by 8.7.6.2 shall simultaneously control all driving machines.

8.7.6.2.2 Relocation of Moving Walk.

Where a moving walk is relocated, it shall comply with 6.2.

8.7.6.2.3 Protection of Floor Openings. Any alteration to the floor openings for moving walks shall comply with 6.2.1.1.

8.7.6.2.4 Protection of Trusses and Machinery Spaces Against Fire.

Any alteration to the sides or undersides, or both, of moving walk trusses and machinery spaces shall conform to 6.2.2.1.

8.7.6.2.5 Construction Requirements

(a) Angle of Inclination. Alteration of a moving walk that increases the angle of inclination shall require conformance with 6.2.

(b) Geometry. Any alteration to the geometry of the moving walk components shall require conformance with 6.2.3.2.

(c) Balustrades. Any alteration to the balustrades shall require conformance with 6.2.3.3.

NOTE [8.7.6.2.5(c)]: The balustrade does not include the handrail.

8.7.6.2.6 Handrails.

An alteration to the handrails or handrail system shall require conformance with 6.2.3.2.3, 6.2.3.4, 6.2.6.3.10, and 6.2.6.4.

8.7.6.2.7 Treadway System

(a) An alteration to the treadway system shall require conformance with 6.2.3.2.3, 6.2.3.3.5, 6.2.3.3.6, 6.2.3.5, 6.2.3.6 [except as specified in 8.7.6.2.7(b)], 6.2.3.8, 6.2.3.9, 6.2.3.10.4, 6.2.3.11.4, 6.2.3.11.5, 6.2.3.12, 6.2.6.3.3, 6.2.6.5, and 6.2.6.3.9.

(b) The minimum width of the moving walk shall be permitted to be less than that required by 6.2.3.7. The existing width, if less than required by 6.2.3.7, shall not be decreased by the alteration.

8.7.6.2.8 Combplates.

An alteration of the combplates shall require conformance with 6.2.3.8 and 6.2.6.3.11.

8.7.6.2.9 Trusses and Girders.

Any alterations or welding, cutting, and splicing of the truss or girder shall conform to 8.7.1.4. Alterations shall result in the 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.

8.7.6.2.10 Track System.

Any alteration to the tracks shall result in the moving walk’s conforming to 6.2.3.9, 6.2.3.10, 6.2.3.11.1, and 8.7.1.4.

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 moving walk’s conforming to 6.2.

8.7.6.2.12 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, 6.2.3.11.2, 6.2.3.11.3, 6.2.3.14, 6.2.3.15, 6.2.4, 6.2.5.1, 6.2.5.3.1, 6.2.5.3.2, 6.2.6.3.4, and 6.2.6.3.8.

(b) Drive Motor. An alteration to the drive motor shall result in the moving walk’s conforming to 6.2.3.10.2, 6.2.3.11.2, 6.2.3.11.3, 6.2.4, 6.2.5.2, 6.2.5.3.1, 6.2.6.3.2, 6.2.6.3.7, and 6.2.6.3.8.
(c) Machine Brake. An alteration to the machine brake shall result in the moving walk’s conforming to 6.2.3.10.3, 6.2.3.11.2, 6.2.3.11.3, 6.2.5.3.1, and 6.2.5.3.2.

8.7.6.2.13 Operating and Safety Devices.
An alteration to or addition of operating and/or safety devices shall conform with the specific requirements within 6.2.6 for that device.

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

8.7.6.2.15 Controller.
Where a controller is installed as part of an alteration, it shall conform to 6.2.6.9 through 6.2.6.14, and 6.2.7.4.

8.7.6.2.1 Controller Replaced *(226/07)*
Where a controller is replaced it shall conform to 8.7.6.1.16.

8.7.6.2.2 Relocation of Controller *(226/07)*
Where an escalator controller is relocated and requires disconnection and reconnection of field wiring, requirement 2.8.2 applies. The installation shall be tested to verify functionality of all circuits impacted by the relocation.

8.7.6.2.3 Addition of Soft Start *(226/07)*
Where there is an addition of a soft start feature the following shall apply:
   (a) for control systems built to B44-00 and later, 6.1.7.4, 6.1.6.10.1, 6.1.6.10.2, 6.1.6.10.3
   (b) for control systems built prior to B44-00 6.1.7.4.

8.7.6.2.4 Power Efficiency Devices
Where there is an addition of power efficiency increasing devices the following shall apply:
   (a) 2.26.4.1 and 2.26.4.2 for the new equipment,
   (b) B44.1 certification for the new equipment.

8.7.7 Alterations to Dumbwaiters and Material Lifts
8.7.7.1 Dumbwaiters and Material Lifts Without Automatic Transfer Devices
8.7.7.1.1 General. When any alteration is made to a dumbwaiter or material lift, all work performed as part of the alteration shall comply with 7.1 through 7.6.

8.7.7.1.2 Increase in Rated Load.
Where an alteration involves an increase in the rated load, the installation shall conform to either of the following:
   (a) requirement 7.2, except 7.2.1 for hand and electric dumbwaiters
   (b) requirement 7.3, except 7.3.4.1 for hydraulic dumbwaiters
   (c) requirement 7.4,
   (d) requirement 7.5,
   (e) requirement 7.6.

8.7.7.1 Alteration to Freight Platform Lifts Type A
Where an alteration is made to a Type A freight platform lift, the alteration shall conform to the applicable requirements of 7.4, 7.5 and 7.6 for Type B material lifts, except any reference to in-car operating devices and riders shall not apply.

8.7.7.2 Alteration to Freight Platform Lift Type B
Where an alteration is made to a Type B freight platform lift, the alteration shall conform to the applicable requirements of 7.4, 7.5 and 7.6 for Type B material lifts.
8.7.7.2 Addition of Automatic Transfer Device.  
Where an automatic transfer device is installed on an existing elevator or dumbwaiter, the resultant combination of material lift or dumbwaiter with automatic transfer device shall conform to Part 7.

8.7.7.3 Material Lifts and Dumbwaiters With Automatic Transfer Devices  
8.7.7.3.1 Where any alteration is made to a material lift or dumbwaiter with an automatic transfer device, the entire installation shall comply with 7.7 through 7.10.

8.7.7.3.2 Where an automatic transfer device is removed from a dumbwaiter or material lift and is not replaced, the installation shall conform to 7.1 to 7.3 for dumbwaiters and 7.4 to 7.6 for Materials Lift Without Transfer Device.

8.7.7.3.3 Where a material lift is altered to be an elevator, it shall comply with Part 2 or Part 3.

8.7.7.3.4 Where a material lift or dumbwaiter with an automatic transfer device is altered to a dumbwaiter, it shall comply with 7.1 through 7.3.

3.5 Rated Load

3.5.1 For the purpose of this Document and subsection 31.(3) of the Regulation, “rated load” in the code adopted in subsection 3.1, means “maximum capacity”.

3.6 Rope Clips

3.6.1 Rope clip fastenings shall not be used when suspension ropes are changed on an existing elevator.

3.7 Access to Machine Rooms and Spaces

3.7.1 Every elevator shall have a safe and convenient access to its machine room and machinery space. [CAD Amendment 246-11]

3.8 Requirements for Existing Passenger and Freight Elevators (245/10) (173/02)

3.8.1 Notwithstanding section 4 of the Regulation, every existing passenger and freight elevator that was installed before the 1st day of May, 1981 and that does not have car safeties, a speed governor, a braking system and hoistway-door interlocks or hoistway-door locks and contacts conforming to the requirements of CSA B44, Safety Code for Elevators – edition 1975 as amended in 1977 and 1980, or any subsequent edition, shall conform to the applicable requirements of CSA B44, Safety Code for Elevators – edition 1975 as amended in 1977 and 1980, or any subsequent edition. [CAD Amendment 246-11]

3.8.2 Not later than December 1, 2013, all elevators equipped with a car top that is intended to serve as a platform for a worker, “where the perpendicular distance between the edges of the car enclosure top and the adjacent hoistway enclosure exceeds 300 mm (12 in.) horizontal clearance and on sides where there is no hoistway enclosure”, shall be equipped with a guardrail in conformance with 2.10.2 as modified by 2.14.1.7 of the code adopted in 3.1 [CAD Amendment 250-11]

3.8.3 All existing passenger and freight elevators with full or partial car tops shall be equipped with a car top maintenance station and a structurally sound working surface. [CAD Amendment 250-11]
3.9 Requirements for Existing Dumbwaiters or Freight Platform Lifts

3.9.1 Every existing power dumbwaiter or freight platform lift that was installed before the 1st day of May, 1981 and that does not have hoistway-door interlocks or hoistway-door locks and contacts shall be provided with a locking device that shall prevent the device from moving until the door or gate is closed and that shall prevent the door or gate from being opened unless the device is at the corresponding landing. [CAD Amendment 246-11]

3.10 Platform Apron Requirements (166/01)

3.10.1 Every passenger elevator installed before the 1st day of May, 1981 and currently operated in an apartment building, condominium apartment building or educational institution and every passenger elevator installed after that date in any building, shall be provided at the entrance side with a smooth apron made of metal not less than 1.5 millimetres thick, or made of material of equivalent strength and stiffness, reinforced and braced to the car platform such that:

(a) it does not extend less than the full width of the widest hoistway door opening;

(b) it has a straight vertical face, extending below the floor surface of the car-platform, of not less than 1,200 millimetres, except that for an existing elevator this may be reduced where the hoistway pit is not deep enough to accommodate a larger vertical face;

(c) its lower portion is bent back at an angle not less than 60 degrees and not more than 75 degrees from the horizontal; and

(d) it is securely braced and fastened in place to withstand a constant force of 500 newtons applied at right angles to and:

(1) at 450 millimetres from the top without deflecting more than six millimetres, or

(2) at 1,150 millimetres from the top without deflecting more than 50 millimetres,

and without permanent deformation.

3.10.2 Every passenger elevator referred to in subsection 3.10.1 shall have a pit deep enough to accommodate the apron required in subsection 3.10.1, and to provide a minimum twenty-five millimetres clearance between the bottom edge of the apron and the pit floor when the car is on fully compressed buffers.

3.10.3 Traction drive Limited Use/Limited Application (LULA) elevators serving 3 or more floors shall conform to 3.10.1 and 3.10.2, otherwise 2 stop traction, hydraulic or roped hydraulic drive Lulas’ are exempt from these requirements provided that;

(a) a supplementary owners report for Lula elevators has been filed with the Director and;

(b) a permanent and readily visible sign viewable from the hall landing has been provided on the apron in lettering not less than 16mm in height, that advises;

(1) of a potential fall hazard below the car,

(2) to lower the car prior to rescue and,

(3) that lower and rescue shall be undertaken by trained personnel only. [CAD Amendment 246-11]

3.11 Door Safety Retainers for Single Slide Doors (61/88, 97/92,109/93)
3.11.1 Every existing passenger elevator with single slide landing doors shall be equipped with safety retainers and shall ensure that:

(a) the retainer shall withstand without detachment or permanent deformation, a force of 1000 Newtons applied upward at any point along the width of the door panel and, while this force is maintained, an additional force of 1000 Newtons applied perpendicular to the door at its centre over an area of 300 x 300mm

(b) the installation of retainers was done in accordance with instructions supplied by the manufacturer of the door safety retainers. [CAD Amendment 246-11]

3.12 Low Pressure Switch (*160/01*)

3.12.1 Every hydraulic elevator where the top of the cylinder when at its highest elevation is above the storage tank, shall be equipped with a low pressure switch to prevent operation of the lowering valve(s) and other requirements specified by the code at time of installation or alteration. [CAD Amendment 246-11]

3.13 Hoarding Between Hoistways Required

3.13.1 No elevator shall be operated where it is located adjacent to a hoistway of another elevating device in which installation or alteration work is being performed and where the operation of the elevator may be hazardous to the persons performing the work, unless the hoistways are separated from the bottom to a level a minimum of 2,000 millimetres above the point where the work is being performed by a separating structure so supported and braced that when subjected to a force of 450 newtons applied horizontally at any point the deflection does not exceed twenty-five millimetres.

3.13.2 Where the separating structure referred to in subsection 3.13.1 is made of perforated material, it shall reject a ball 50 millimetres in diameter.

3.14 Installation Number

3.14.1 Every elevator shall have its installation number engraved or painted on the car crosshead or other conspicuous location on the top of the car, visible from the point of access.

3.15 Attendant Operation

3.15.1 Where an elevator is controlled from one location only, an attendant shall be stationed at the controls while the elevator is available for operation.

3.16 Persons Permitted to Ride

3.16.1 Except for a freight elevator-P, no person other than an attendant(s) or freight handler(s) shall ride or be permitted to ride in a freight elevator.

3.16.2 No person other than an attendant(s) or a designated freight handler(s) shall ride or be permitted to ride in a freight platform lift-Type B or a material lift Type-B. [CAD Amendment 246-11]

3.16.3 No person shall ride or be permitted to ride on a freight platform lift-Type A or a material lift Type-A. [CAD Amendment 246-11]
3.16.4 Despite 3.16.1 and 3.16.2, a person(s) may remain inside a motor vehicle that is on an elevating device if the device is designated as a Class B- motor vehicle loading, and the device is operated by a trained attendant or operator. [CAD Amendment 246-11]

3.17 Escalator Caution Signs

3.17.1 Every escalator installed prior to March 23, 2002 shall be fitted with a caution sign that meets the requirements of clause 8.10 of CSA B44-94; Safety Code for Elevators, as amended by Supplements B44S1-97 and B44S2-98. [CAD Amendment 246-11]

3.18 Repositioning of an Escalator

3.18.1 Despite subsection 2.5 of this Document repositioning of an escalator within the same building or premises shall not constitute a new installation.

3.19 Escalator Brake Setting Data (85/91)

3.19.1 Escalators installed under B44-M90 or later editions of the code shall have a data tag as required by the code at the time of the installation. Escalators installed under a prior code edition shall have a data tag in conformance with 3.19.2.

3.19.2 Every escalator shall have a permanent and readily visible data plate affixed to the brake or machine, indicating:

(a) the method of checking the brake setting and as a minimum shall include:

(1) the minimum torque, or
(2) the maximum spring length, or
(3) other checking method; and

(b) the maximum no-load stopping distance as related to the torque, spring length, or other method, and;

(c) the testing procedure and interval. [CAD Amendment 246-11]

3.20 Fire Code Retrofits (60/88, 105/93, 127/96, 149/99, 219/07)

3.20.1 Where an alteration is in response to a Fire Code Retrofit order, all elevators in the group, affected by the retrofit order shall be provided with:

(a) manual phase one recall operation

(b) automatic phase one recall operation if required by the Ontario Building Code at time of installation.

(c) phase two in-car operation

(d) Firefighter’s Emergency Operation conforming to any code edition after and including CAN/CSA – B44-00 Update No. 2 Safety Code for Elevators, but in no case shall the code edition be less than the code under which the device was originally installed.

(e) FEO-K1 keys for all FEO switches.
An FEO-K1 key for each switch location. [CAD Amendment 250-11]

D. Explanatory Notes:

d.1 This code adoption document (CAD) amendment is primarily used to adopt the ASME A17.1-2010/CSA B44-10 Safety Code for Elevators and Escalators.

d.2 Reference Symbols Used in this CAD, have the following meaning,

7.5 is a reference to a section in the CAD

7.2.4 is a reference to a section in an external document or code

(197/06) is a reference to a predecessor document related to this CAD requirement

Implementation timelines:

d.3.1 Design submissions received on or after May 1, 2012 shall conform to the requirements of CAD Amendment 250/11.

d.3.2 A maintenance control program shall be implemented not later than May 1, 2013.

d.3.3 Mitigation of failures related to single bottom cylinders shall occur not later than May 1, 2015.

d.3.4 Escalator skirt panels shall conform to the skirt step performance index not later than May 1, 2015.

Notable Code & CAD changes:

d.4.1 The CAD introduces a definition and requirements for “dedicated function fire alarms”

d.4.2 The maintenance of elevating devices will require the establishment and implementation of a Maintenance Control Program (MCP) which differs in requirements from current maintenance requirements.

d.4.3 The CAD introduces an annual requirement to verify elevator brakes.

d.4.4 Single bottom cylinders and escalator skirt panels will require upgrading.

d.4.5 Machine guarding submissions will require additional documentation and will be deemed a Minor A requirement.

d.4.6 Interior glazing and mirrors shall conform to the code requirements of 2.14.

d.4.7 Requirements for roof top walkways and railings on all sides exposed to a fall hazard are clarified.

d.4.8 Log books will require alignment with MCP’s, once MCP’s are implemented.

d.4.9 Category 5 testing introduces requirements for testing with rated load.

d.4.10 All cars shall be weighed prior to any cab alteration or other alteration impacting car weight.

d.4.11 All newly undertaken fire code retrofits must meet the latest specified CAD requirements.

d.4.12 Where hazards exist, car top railings are required on existing elevators not later than December 1, 2013.

d.4.13 Car top areas have new requirements for clearance, refuge space, guarding, strength of guards, markings.

d.4.14 New requirements to monitor communication/telephone lines on a daily basis.

d.4.15 Annual testing of the FEO system (effective now) are restated in code requirement 8.6.11.

d.4.16 Recognition of alternative testing methods.

d.4.17 An MCP must include a record of trouble calls and availability of the record by elevator personnel.

d.4.18 Enforcement of code required ACO/UCM protection in all operating modes.

d.4.19 MCP’s shall include an onsite emergency evacuation procedure.

Roland Hadaller, P.Eng.,
Director, Ontario Regulation 209/01 (Elevating Devices), appointed under the Technical Standards and Safety Act, 2000.

This Code Adoption Document amendment has been developed in consultation with the Elevating Devices Advisory Council, the Field Advisory Committee, and various industry stakeholders.